

Lepidoptera of North America 15

Butterflies of southern California in 2018: updating Emmel and Emmel's 1973 Butterflies of southern California



By Ken Davenport

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

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by

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**Front cover: Ford's Swallowtail, *Papilio indra fordii*
J.A. Comstock and Martin
Image courtesy of Chuck Harp, LepNet project,
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The purpose of this paper and progress made in the study of butterflies of southern California since 1973.

It has now been more than 44 years since Thomas C. Emmel and John F. Emmel's *The Butterflies of Southern California* was published on November 30, 1973. The Emmels' provided a history of previous leaders in gathering information on the fauna of southern California butterflies, information on life zones and butterfly habitats and season progression. They also listed areas little visited that needed more field study. They covered 167 species and an additional 64 subspecies or segregates (many of those have since been elevated to species status or removed as segregates for not being all that distinct since 1973) known from southern California based on the boundaries they set and provided a list of rarely recorded or doubtful records, ten color plates, and literature cited. More than 100 contributors helped provide them information and observations for the project.

What about now? At the start of 2018 with the addition of some added territory in this work, those numbers have increased. In this updated study, I will include all of San Luis Obispo County, extend the northern boundaries about 20 to 25 miles north in the Sierra Nevada (the Kern Plateau was excluded in the 1973 publication, possibly because that area was still poorly known at that time) and Greenhorn Mountains to include part of the Sierra Nevada on the Kern Plateau north to the Sherman Pass Road as the north boundary and extend territory in Inyo County north to Lone Pine and Whitney Portal which is the northern limit of the Mojave Desert. Emmel & Emmel had included the southern part of Death Valley National Monument (now a National Park) in their work. That now brings us to 209 species (five subspecies are now given species status herein) and 160 subspecies or segregates.

Most of the added species or subspecies were either discovered or recognized inside the Emmel and Emmel's originally defined southern California boundaries, were elevated to species or subspecies status through descriptions and naming and only a few were added by extending the boundaries. Seven species are added by adding the Kern Plateau in the Sierra Nevada which was excluded by the Emmels. Two more of those on the Kern Plateau are now also known from what was previously defined as southern California. Only two species are added by extending the boundaries of San Luis Obispo County northward. Only one is added by moving the Inyo County boundaries northward. There are 47 taxa listed in rarely recorded or doubtful records. Thirteen of those have specific records inside California which would bring the southern California total to 222 species, a few more than if I used the Pelham list exclusively.

A number of other butterflies could have been placed on that list of rarely recorded species because of doubtful status but were placed on the main list because of multiple records or the possibility they may be "resident" butterflies. A number of butterflies in 1973 are not in this updated work because of taxonomic revisions or changed status and some segregates are no longer recognized as all that different. Some were believed to be in southern California but were based on misidentifications, mislabeling or misinformation.

Another reality is that there are many species or subspecies of controversial status. A great number of new subspecies or butterflies of changed status are to be found in the Systematics of Western North America book, many that are in southern California. Thomas and John Emmel made major contributions in that work and so did Sterling Mattoon, George T. Austin and others. Other major contributors in other publications include James A. Scott and many others are noted in literature cited.

The Emmels in 1973 encouraged further exploration in the Colorado River Valley and the mountains bordering that river. Few have gone there in the last 44 years. John Emmel, Gordon Pratt and Derham Giuliani did quite a lot of research in the Death Valley region under permit and their work is evident in the Systematics book. The Piute Mountains area has been well explored in those areas accessible by a poor dirt road but much is inaccessible or on private property. The higher mountains in Ventura and Santa Barbara Counties are now much better known. On the Kern Plateau, the Sherman Pass road, and areas south to SR 178 are now much better known. John Emmel and Gordon Pratt have sampled many small ranges in the eastern Mojave Desert but many desert ranges and portions of the Mojave Desert are now legally off limits to collecting. Few butterfly photographers go to those harsh lands of high temperatures, poor roads, and many dangerous desert hazards, animals and plants.

Looking at the tremendous amount of work done in the past 44 years, there is a real need to bring all of this information together. There are 42 more species on the list now, and nearly 100 new subspecies or segregates. Many species or subspecies not well known then are now. Many books and scientific papers or articles have been published that have increased our knowledge of southern California. There have been many names changes. There have been many range changes with some species extending their ranges while others are disappearing from past well-known localities due to habitat loss, fires, drought, disease, predators, lethal pesticides and flooding.

Photographs were not included in this publication. Most of the butterflies in southern California can be seen in publications published already (including the 10 colored plates in the Southern California book by the Emmels, though names to those colored plates may be outdated or changed) in various field guides and in regional works on San Diego County butterflies or in Yosemite Butterflies, the color plates issue (Davenport, N. Kondla, Grisham & Grisham, 2007) which illustrates every butterfly that was known in the Yosemite region as of 2007, although two more have been added since then – *Hemiargus ceraunus gyas* and *Euphilotes glaucon intermedia*.

Wanda Dameron published a book entitled "Searching for Butterflies in Southern California" (1997) of butterflies to be found in every geographical area of southern California as defined by the Emmel's (1973) using NABA names but included subspecies names. It also provided localities to search and host plant information.

The best place to go for all of the very little-known subspecies that were described from National Parks or Preserves off limits to collecting or "endangered species" is to the Butterflies of America website, where the excellent color photographic work by Mike Stangeland and Kim Davis are on display. Often types are pictured. Andrew Warren did an excellent job with that web site. Black and white photographs were used picturing new butterfly species or subspecies in the Systematics of Western North American Butterfly book edited by Thomas C. Emmel (1998). The latter book is a must for those with a serious interest in the details of southern California butterfly names changes and new taxa.

Methods: How this information was gathered.

A number of publications cover regional butterflies at the county level since 1973. Larry Orsak published a book (year end 1977) covering the butterflies of Orange County and provided many specific collecting records. Lynn and Gene Monroe (2004) published an excellent pictorial publication covering the butterflies and hostplants of eastern San Diego County centered on

Anza-Borrego State Park. Kojiro Shiraiwa (2009) followed that up with a book covering the butterflies of San Diego County as a whole. There is very little text but the reader can obtain information on status of the butterfly as resident or rare stray, flight times and host plants. The photographs are excellent and well picture many of the butterflies in southern California.

The author published an article in the Journal of the Lepidopterists' Society covering the butterflies of Kern County in 1983 with a publication published by the C. P. Gillette Museum of Arthropod Diversity at Colorado State University covering the butterflies of Kern and Tulare County in three editions 2003-2014. Only a very small part of Tulare County is covered in the present publication, with an extended boundary in the Greenhorn Mountains and north to about the Sherman Pass road and the Kern Plateau south of there. Those wanting more records can consult those publications which are now served on-line

(<https://dspace.library.colostate.edu/browse?type=subject&value=butterflies+---+California+--+Tulare+County+--+Classification>).

Another book "An Introduction to Southern California Butterflies" with the text by Fred Heath and photographs by Herbert Clarke appeared in 2004 and provides an introduction to the regions butterflies and photos of many species of living butterflies. John S. Garth and J. W. Tilden (1986) published a book on California Butterflies which shares considerable information and has 24 plates, many in color. Paul Opler (writer) and Amy Bartlett Wright (who did the drawings) produced a Peterson Field Guide to Western Butterflies (1999) that covers many butterflies that occur in southern California. Robert Allen, William Bouton and Josiah Gilbert have taken an interest in San Luis Obispo County and shared their finds with me as has Nick Lethaby who has been studying the butterflies of Santa Barbara County.

Much work was done obtaining information for this publication, 129 citations are referenced in this work with the Systematics of Western North American Butterflies a monumental task for those many authors and for me to review it and use their information. This author has been California Season Summary Coordinator for the Lepidopterists' Society since the year 2000 and went through yearly season summaries from 1973 through 2017 to review records. I also had to review articles in scientific journals, News of the Lepidopterists Society and many articles not used in this publication. As California Coordinator for BAMONA, some of those records were used in this publication, names given here were by their permission.

I have also corresponded with many workers on southern California butterflies through the United States mail and emails. I went through three binders of relevant letters regarding issues related to southern California butterflies. That included considerable correspondence with John F. Emmel that provided much helpful information over the years as well as Paul A. Opler, Robert Langston, Ray Stanford, Richard P. Meyer, Allen Rubbert, James A. Scott, Kilian Roever, Jonathan Pelham, Andrew Warren, George T. Austin, Jim Brock, John G. Pasko, Paul Johnson II, Fred Heath, William Bouton, James R. Mori, Nick Lethaby, Robert Allen, Josiah Gilbert, J. W. Tilden, Robert Gorman and others listed in the acknowledgements.

Introduction to headings in the species accounts:

All species, subspecies and major segregates are considered but not all butterflies on this list are well known. Some species segregates are not discussed in the literature because they may be listed in a checklist with no other information given. Not much is discussed in this publication with many butterflies from Death Valley National Park because little is known or published, few go there to study or observe butterflies and because of the Park's choice to lump some admittedly

difficult groups. In many cases, I can't be sure what actual butterfly (especially *Euphilotes* blues) match the provided information in the Death Valley National Park Report.

Scientific names: are mostly the same as in the Pelham Catalogue (2008), or in the more recent working paper by Pohl, Patterson & Pelham, 2016. In some cases, I use the Emmel, Emmel & Mattoon names. I also considered comments of Paul Opler, Gordon Pratt and John Emmel regarding names issues. Readers can choose which names they believe are best. I also list the authors of the scientific names used in the Pelham Catalogue and give the date described, useful in this publication as the date tells the reader when the butterfly was named. If after 1973, it was not used in Emmel and Emmel's book and it updates Emmel & Emmel's work. Common names are also used which may or may not be the same others use. Many common names I use predate currently used names.

I also follow Pelham's use of generic names. Those who want to use older names will often find those names continue to be used as subgenus names. Those interested in seeing which literature was the basis for name changes within a particular genus should consult the Pelham Catalogue.

Taxonomic notes and names choices: are used to discuss names issues or changes, new descriptions or how subspecies differ or what characters distinguish them with a brief comment or discussion. Many believe the simple answer to knowing what a species is or is not can be done by using "DNA testing". Mitochondrial =MtDNA testing works with many groups but appears to be inconclusive in others. In some butterflies that have similar mitochondrial DNA there is a consensus among scientists that they are different species. So other methods used to resolve relationships are observations in nature of what happens when two of those problem species come together. Male or female genitalia may differ. Host plant preferences may be really important in some groups in keying out two similar looking species. While this paper does not cover host plants as the Emmel's did, specific plants are often mentioned when such issues are involved as with buckwheat feeding species. Field marks are often a good basis for identifying species, but with southern California butterflies, there are many exceptions

Southern California type localities: The purpose of this is for the reader to know which butterflies have been described from southern California. The sheer numbers of these illustrates the diversity of butterflies in southern California with many endemics to the region. I rarely provided type localities for those described from outside of southern California, unless it has a bearing on changed taxonomy.

Updated status: This may include names issues or that a butterfly is now threatened or endangered or is now requiring research, collecting permits by the state of California or is federally endangered. It may also include range changes or fluctuations or becoming more or less rare, or threats to the butterfly in question. A butterfly believed rare or extinct may reappear, sometimes commonly after a wet winter.

Habitat: Brief comments are made to state what habitat the butterfly is found in. It may or may not include host plant information or life zones. Host plant information may be important in

making identifications, especially with buckwheat feeding butterflies. Finding butterflies depends on knowing where to look for them.

Flight: There is a California early and late flight publication (self published, those up to 2010 may be found at The International Lepidopterists' Survey website up until 2010. The updated version authored by Ken Davenport, Ray Stanford and the late Robert Langston can be shared electronically on-line. However, the flights for southern California may be different than those for the state as a whole so flights used herein are general estimates. I avoided using the absolute early and late dates for southern California, since such records are not kept. Extreme dates could be misleading, they are the exceptions and not the rule.

Distribution: This covers which counties a butterfly is recorded in and may designate what part of a county a butterfly may occur in or share its status as a rare stray, migrant, or transient. Other relevant comments might be made.

Records: This listing is not exhaustive and it is not my intent to give records for every county for every butterfly. Many species will not have any records given, especially common ones that are found in most or all counties or in areas well known when the Emmel's published their 1973 book. When butterflies are in National Parks or Preserves, military bases or on the California Fish & Wildlife restricted list, I am less likely to share many localities because of the sensitive issue of doing so, except when needed to establish a species or subspecies occurrence in southern California.

Records are given to document records from poorly known counties in 1973, recent changes in a species range or to share ranges of newly described subspecies. *Urbanus proteus*, *Papilio rumiko* (formerly believed to be *P. cresphontes* in the state), *Phoebis agarithe*, *Phoebis philea*, *Chlorostymon simaethis* and *Anthanassa texana* have had dramatic changes of status or influxes into the state so records were used to document such historic events.

Records may be collected specimens, good or adequate photographs or sight records in a very few cases.

Contributor codes are given to save space under records.

Contributor Codes:

BB: Brian Banker

BBX: Brett Badeaux

DBG: Diane Brodeur & Robert Gorman

JB: Jim Brock

WB: William Bouton

KD: Ken Davenport

JFE: John F. Emmel

TCE: Thomas C. Emmel

BG: Bill Gendron

JG: Josiah Gilbert

RG: Robert Gorman.

FH: Fred Heath.

KH: Keith Hughes

NL: Nick Lethaby

RLL: Robert L. Langston

RPM: Richard P. Meyer

PAO: Paul A. Opler

JGP: John G. Pasko

GP: Gordon Pratt

AR: Al Rubbert

KR: Kilian Roever

CS: Charles Sekerman

OS: Oakley Shields

KS: Koji Shiraiwa:

RES: Ray Stanford

MW: Mark Walker

JZ: Joseph Zarki

The Butterflies of southern California. This includes residents, strays or butterflies which may actually be residents in this part of the state.

Skippers--Family *Hesperiidae*.

1. Silver-spotted Skipper--*Epargyreus clarus californicus* MacNeill, 1975.

Updated status: Much better known now than in southern California in 1973. This species has appeared to expand its range into the Greenhorn Mountains in Kern County and on the Sherman Pass area on the Kern Plateau in Tulare County following major fires. The subspecies *huachuca* Dixon, 1955 listed in the Emmel's 1973 southern California checklist list for southern California was dropped in their 1998 state checklist.

Habitat: This popular skipper is usually found in higher mountains along small streams, often in mixed coniferous forests. A common host plant in southern California is *Lotus crassifolius*. (Bentham).

Flights: Single brooded: May to July, sometimes early August.

Distribution: Kern, Los Angeles, Orange, Riverside, San Bernardino, Santa Barbara, San Diego, San Luis Obispo, Tulare and Ventura Counties.

Records: **Kern County:** Greenhorn Mountains, 1 to 1.3 miles south of Tiger Flat July 15, 2000; Old State road lower end Greenhorn Mtn. Park, July 2, 2005; Shirley Meadows at top of Ski Slope, June 11, 2006 (all KD). This species apparently colonized the range following a major forest fire 10 years previously. **Los Angeles County:** Mint Canyon, Apr 25, 1927 (J. D. Gunder); Westlake Park, Sep 12, 1920 (J. D. Gunder); upper Santa Monica Canyon, July (Rivers). **Orange County:** 2.6 mi. from Hwy. 74 on USFS 3SO4 3200', Santa Ana Mountains, July 1, 1973 (Phil McNally). **Riverside County:** Omstott Creek, Santa Rosa Mountains, June 23, 1974 (JFE); Santa Rosa Mountain, May 19, 2012 (MW & Pete Spino). **San Bernardino County:** San Bernardino Mountains: Radford road, June 24, 1978 (KD). **Santa Barbara County:** Santa Barbara Canyon on trail towards Malduce Peak, 3600', June 15, 1975 (Richard Priestaf and Scott Miller); San Rafael Mountains, May 13 & 14, 2004 (NL & Michael Caterino), and June 9, 2006 (NL); Little Pine Camp, June 26, 2006 (NL). **San Luis Obispo County:** Lopez Canyon: 1954 (R. Hart) and 1966 (R. Taylor); Oak Creek Canyon (near San Miguel, now called Mahoney Canyon), May 26, 1960 (R. Taylor). Hi Mountain to road ½ to 1 mile below summit, June 2, 1984 (KD and AR). **San Diego County:** City of San Diego and Henshaw Dam, no date (W. G. Wright). **Tulare County:** Sherman Pass road at Alder Creek 6800', July 3 and 9, 2005, and May 22 and 29, 2012 (KD), this species first appeared at this locality three years after a catastrophic forest fire and was still there in 2017. Greenhorn Mountains: Marshall Meadow, July 6, 2002 (RES). **Ventura County:** Sespe Gorge, June 30, 1963 (T. P. Webster III); "Piru Creek" and "Ridge Piru", June 22, 1965 (T.P. Webster III). The "Piru" localities are probably from the upper portion of Piru Creek and not in the town of Piru. (Scott Miller, 1976); Alamo Mountain, 6150', June 26, 1976 (R. H. Vanderhoff). Many of these records were published by Scott Miller (1976) to provide supplementary records to show the range of this skipper in southern California was more than just in the San Bernardino Mountains. This butterfly only showed up in Kern County in the year 2000!

2. Hammock Skipper--*Polygonus leo arizonensis* (Skinner), 1911.

Updated status: This species continues to be a regular stray into southern California. It had a large migration into the Kern County portion of Mojave Desert and in Inyo County in 1983. This species has become much better known and documented in many parts of southern California.

Habitat: Strays are usually found in the Colorado or Mojave Deserts (even in alfalfa fields) but have sometimes been found on the coastal plain, city gardens and one turned up in the southern Sierra Nevada on heliotrope flowers! There are no known hosts in California.

Flight: Late August and September. Flights are based on rainfall patterns in Arizona and Mexico as well as in California.

Distribution:

Imperial, Inyo, Kern, Los Angeles, Orange, Riverside, San Bernardino and San Diego Counties. This species occurs in the state as rare strays or migrants in the late summer and early fall.

Records: Kern County: Mojave Desert: Cantil near the Randsburg cutoff in alfalfa field, 14 individuals, Aug 25, 1983 and 3 there Sep 23, 1983. Five individuals at Cinco (a few miles to the west) in alfalfa field, Sep 23, 1983 (all KD), what was amazing was that these appeared to travel in groups of individuals. Tehachapi Mountains: 5 mi. E of Caliente, Sep 6, 1973 (JB); mountains south end of San Joaquin Valley: north of Mt. Abel near Valle Vista Camp, Sep 5 and 11, 1983 (Art Strong). Sierra Nevada in Kern River Valley: at Weldon, south fork of the Kern River on heliotrope flowers, Aug 22, 2006 (KD). **Orange County:** San Clemente, Aug 11, 2014 and Aug 21, 2016 (DBG).

3. Long Tailed Skipper--*Urbanus proteus proteus* (Linnaeus, 1758).

Updated status: The records below are all the published records since 1972. I know of no records since 1992. Most of the reports were of individuals visiting lantana.

Habitat: This species formerly bred in bean fields in southern California prior to human development eliminating such agricultural areas. Most recent records have been on lantana in cities.

Flight: Usually late summer and fall, but see records below for exceptions.

Distribution: Imperial, Los Angeles, Orange, Riverside, San Bernardino, San Diego and Ventura Counties.

Records: San Diego County: El Cajon, Apr 26, 1973 (KH); two in Sorrento Valley, Oct 1, 1978; one on Torrey Pines road, N of La Jolla, Oct 22, 1978 on lantana, (KH). **Orange County:** Garden Grove, singletons June 22, July 26 and Sep 14, 1992 (W. P. Socher).

4. Northern Cloudywing--*Thorybes pylades indistinctus* Austin & J. Emmel, 1998.

Taxonomic note: The name *indistinctus* refers to the less distinct pattern on the ventral hindwing of this subspecies and this subspecies tends to be smaller than other populations (Austin & J. Emmel, 1998a.).

Southern California TL: San Diego County, Laguna Mts., Boiling Springs.

Updated status: This species has become much better known and documented in many parts of southern California.

Habitat: This species often occurs in montane riparian habitats on the coastal plain or in well watered riparian areas in higher Upper Sonoran or Transition life zones. The host plant is often *Lotus crassifolius*. This species often occurs together with *Epargyreus clarus*.

Flight: As early as late March near the coast but occurs from late May to mid-July in the higher mountains inland.

Distribution: Kern, Los Angeles, Riverside, San Bernardino, San Luis Obispo, Santa Barbara, San Diego, Tulare and Ventura Counties.

Records: **Kern County:** Greenhorn Mountains: near Shirley Meadows, July 6, 1975 and June 13, 1977 (KD); Old State road near Greenhorn Mtn. Park, June 19, 1993 (KD); Breckenridge Mountain, June 10, 1985 and June 30, 1989, and at Squirrel Meadow, June 7, 2003 (all KD). **San Luis Obispo County:** See Canyon, Apr 4, 1994 (KD); Cerro Alto Camp, west of Atascadero, Apr 13, 2006 (WB) and Apr 30, 2014 (JG); west of Atascadero off Hwy. 44, San Miguel road, June 11, 2015 (JG). **Santa Barbara County:** San Marcos Pass, Mar 22, 1931 (C. W. Kirkwood). **Tulare County:** Sherman Pass road, Alder Creek 6800', June 18, 1983 and west of Sherman Pass 7700', July 9, 2005 (KD); Bald Mountain Lookout, 9400', June 20, 1999 (KD).

5. Nevada Mexican Cloudywing--*Thorybes mexicana nevada* Scudder, 1872.

Updated status: This butterfly is now in southern California by including the Kern Plateau in what is here considered southern California.

Habitat: This species occurs above 7000' on the Kern Plateau. It favors high elevation rocky outcrops, brushy canyons and wet mud on the dry edges of subalpine meadows.

Flight: One flight late May to early August.

Distribution: Tulare County.

Records: **Tulare County:** Kern Plateau: Big Meadow, June 15, 1976 and July 12, 1978 (KD); west of Sherman Pass, 8700 to 9100', June 25, 1985, July 5, 1986, and rocky outcrop west of Sherman Pass, May 22, 2012, unusually early flight; and Bald Mountain Lookout 9400', June 20, 1999 (all KD).

6. Golden-Headed Scallopwing--*Staphylus ceos* (W. H. Edwards), 1882.

Updated status: Probably unchanged. Few go to the inhospitable hot deserts around Blythe in Riverside County and Imperial Counties to look for rarities in the state such as this species.

Habitat: This species is often found in rocky canyons with a semi-permanent stream in the Sonoran Desert in Arizona.

Distribution: Imperial, Riverside and San Diego Counties. This is a very rare stray to this region. The species is an uncommon resident in the Hualapai Mts. south of Kingman, Mohave County, Arizona.

Records: **Riverside County:** Cibola Conservation area, south of Blythe, May 24, 2015 (Jennifer Tobin, 2015).

7. Common Sootywing--*Pholisora catullus* (Fabricius, 1793).

Taxonomic note: Until 2017, no one had recognized any subspecies of *catullus* although several authors have noted forms with a series of white star like crescent-spots on the hind wings above. This species needs to be studied to learn which populations are *Pholisora catullus crestar* J. A. Scott & K. Davenport and which are nominotypical *catullus*.

Updated status: The status of this species in the southern Sierra Nevada is now much better known. It appears that development and long-term drought has impacted this skipper in the southern San Joaquin Valley.

a. Common Sootywing--*Pholisora catullus catullus* (Fabricius, 1793).

Updated status: As pointed out above, subspecies status for most of southern California *Pholisora catullus* is unstudied.

Habitat: Montane-desert interfaces; arid valley wastelands and drier Upper Sonoran Zone oak woodland and chaparral covered hills. Adults favor the base of cliff walls and small ravines along roads or in riparian canyons.

Flight: March to October. Many populations seem to have one brood in the spring and early summer. Others have a second flight in late summer and early fall. Higher elevation populations may fly during the summer. Summer rainfall and local environmental conditions must influence such flights and whether they occur. **Distribution:** Imperial, Kern, Los Angeles, Orange, Riverside, San Bernardino, San Luis Obispo Santa Barbara, San Diego, Tulare?, and Ventura Counties.

Records: **Imperial County:** In-Ko-Pah Gorge, Mar 26, 1960 (KH). **Los Angeles County:** Emma Mountain Road near Little Rock, Mar 10, 2015 (seen, KD). **San Luis Obispo County:** Los Berros Canyon road, Feb 17, 2018 (JG). **Santa Barbara County:** Upper Santa Ynez River, Apr 9, 2014 (NL); Colson Canyon near Sisquoc, Apr 14, 2017 (NL).

b. Common Sootywing--*Pholisora catullus crestar* Scott & K Davenport, 2017.

Updated status: This subspecies was just described by Scott and Davenport (2017). It is a localized butterfly but often common where found.

Habitat: Mojave Desert ravines and washes in the southern Sierra Nevada N of Kelso Valley, the arid west and east slopes of the Piute Mountains and in the low elevation Sierra Nevada up the Kern River Drainage up to about 5000'. Adults favor riparian canyons and ravines along road cuts.

Flight: Mostly late March to early June with occasional fall flights at Havilah.

Distribution: Kern and Tulare Counties. San Joaquin Valley populations of *P. catullus* are scarce with phenotypes mixed between nominotypical *catullus* and *crestar*. The range of new subspecies *crestar* (Scott & K Davenport, 2017) is unknown and needs study.

Southern California TL: Dry Creek Canyon 4300' off Sherman Pass road in the southern Sierra Nevada.

Records: **Kern County:** Ravine 0.7 to 1-mile SW of Sageland N of Kelso Valley, May 15, 1976; Apr 3 and 5, 1977; Havilah area, Sep 5 and 12, 1976 and June 6, 1979; E side of Piute Mountains 3 mi W of Sageland, Apr 16, 2000 and Piute Mountains 2-3 miles south of Bodfish, May 8 to 30, 1976 (all KD). **Tulare County:** Dry Creek Canyon, Mar 17 to Apr 28, 2016 (all KD). Sherman Pass road 4300-4800', May 17, 1984 and Mar 21, 2002; Kern River north of Roads End to Limestone Camp, along roadside ravines, Apr 14, 1987 and Apr 21, 1997; Kern River, east of Ant Canyon, at base of canyon walls, Apr 6 and 21, 2006 (all KD).

8. Mojave Sootywing--*Hesperopsis libya* (Scudder, 1878).

There are two subspecies and a segregate in southern California. Long term drought in the deserts and southern San Joaquin Valley seem to have adversely affected many populations in Kern County.

a. Mojave Sootywing *Hesperopsis libya libya* (Scudder), 1878.

Updated status: This skipper was formerly placed in the genus *Pholisora* until Ray Stanford (1981), in Ferris and F. Brown in Butterflies of the Rocky Mountains States, detailed the genus-level status of the placement to genus.

Habitat: Saltbush flats in desert scrub or mesquite woodland, often near water.

Flight: April-June; September-October. Second flight may depend on rainfall patterns.

Distribution: Imperial, extreme southern Kern (Antelope Valley), Los Angeles, Riverside, San Bernardino, San Luis Obispo and San Diego Counties. Nominotypical *libya* occurs from the south end of the state northward barely reaching Kern County, then blends with an unnamed Great Basin segregate that occurs in the Owens Valley in the Mojave Desert.

Records: **Kern County:** Edward's AFB at Branch Park and near Buckhorn Dry Lake, May 31, June 28 and Sep 20, 1994 (GP) and June 6, 1995 (KD), under permit from military base). **San Bernardino County:** 11 mi SE of Needles along Colorado River near Topock, Arizona, Apr 5, 1988 and Apr 24, 1994 (KD). **San Luis Obispo County:** Lopez Canyon (old records).

b. San Joaquin Valley Sootywing -- *Hesperopsis libya joaquina* J. Emmel, T. Emmel & Mattoon 1998.

Taxonomic note: "This subspecies is distinguished by its large size, extensive development of white markings dorsally in the females, and a very pale, "washed out" appearance to the underside, a result of a combination of large white spots and a very pale ground color on the hindwing," (Emmel, Emmel & Mattoon, 1998g).

Southern California TL: McKittrick, Kern County.

Updated status: This sootywing was abundant in the southern San Joaquin Valley into the 1980's but it has become very rare. Possible reasons are a falling water table, long term drought or disease and continued human development, though much habitat area remains.

Habitat: Saltbush (*Atriplex canescens*), wastelands in hills on the south and west ends of the San Joaquin Valley.

Flight: May-June with a small flight in September.

Distribution: Kern, San Luis Obispo and Santa Barbara Counties (Ballinger Canyon only). This skipper occurs in the southern San Joaquin Valley, in nearby surrounding mountain ranges.

Records: **Kern County:** San Joaquin Valley: McKittrick, May 11, 1954 (Truxal & LM Martin); McKittrick, Apr 28, 1977 and May 13, 1987 (KD, holotype male and female on latter date.); Kern River at Hart Park near Bakersfield, June 21, 1983 (KD); Temblor Range west of summit SR 58, June 4, 1987 (KD); Poso Creek, 8 mi. N of Oildale, 11 May 87 and 15 May 1992 (KD).

San Luis Obispo County: Hwy.166 west of Kern/SLO County line, May 28 and June 10, 1983 (KD); Temblor Range west and east of summit SR 58, June 4, 1987 (KD); Carrizo Plains NM at Padrone Springs, June 5, 2004 (Peter Jump). **Santa Barbara County:** Ballinger Wash and Canyon (one dead individual killed by crab spider on rabbitbrush), Sep 16, 2007 (Peter Jump) and June 6, 2010 (NL).

c. Mojave Sootywing--*Hesperopsis libya* (Scudder, 1878), Owens Valley segregate.

Taxonomic Notes: The name *lena* (W. H. Edwards, 1882) was formerly assigned to this population but these do not match well with the *lena* from Montana. This leaves the Owens Valley population without a name at the subspecies level.

Status update: Probably unchanged in southern California but cattle grazing in the Owens Valley seems to have negatively affected many butterflies.

Habitat: Saltbush wastelands in lower foothills and canyons;

Flight: May to September. One or two broods.

Distribution: Northeastern Kern and Inyo Counties.

Records: **Inyo County:** Argus Mountains, Homewood Canyon, Aug 24, 2009 and May 28, 2010 (KD). Owens Valley: Lubken Canyon 1/3 to 1 mile west of US 395, 2 miles south of Lone Pine, Aug 25, 1998 and Sep 1, 2002 (both KD). **Kern County:** Blend zone between subspecies *libya*

and Owens Valley segregate, SR 395 near Homestead, Aug 29, and Sep 18, 1978; Jawbone Canyon, May 6 and May 26, 1978; Cantil area, June 24 to Sep 23, 1983 (all KD).

9. Saltbush Sootywing--*Hesperopsis alpheus oricus* (W. H. Edwards, 1879).

Updated status: This species was formerly placed in the genus *Pholisora* until Ferris & Brown, 1981. This species is much better known now in the dry southern Sierra Nevada where it was unknown until collecting there in and after 1976.

Habitat: Higher desert slopes with *Atriplex canescens*, often on arid slopes and canyons.

Flight: Mid-April to early June.

Distribution: Inyo, Kern, Los Angeles, Riverside and San Bernardino Counties.

Records: Inyo County: Titanother Canyon 5000', Grapevine Mountains, Apr 24, 1978 (JFE).

Kern County: Toms Hill, May 15, 1976; canyon 1.5 mi. south of Butterbredt Peak, May 22, 1981 and May 9, 1986; Bird Spring Pass, microwave hill, May 13, 2000; Butterbredt Peak on ridge 5500', May 21, 1988 (all KD).

10. MacNeill's Sootywing--*Hesperopsis graciellae* MacNeill, 1970.

Updated status: This species was also formerly placed in the genus *Pholisora* until Ferris & Brown (1981), reflected in the Ferris supplementary checklist in 1989. Long term drought may or may not have affected populations. Desert species often delay flights during dry years. How long they can do that varies. California Fish & Wildlife now requires a permit to collect this butterfly because it is rarely seen. The flights of desert species are dependent on good rainfall and the timing of those rains.

Southern California TL: San Bernardino County, Bennett Wash, vicinity of Parker Dam

Habitat: This butterfly is associated with *Atriplex lentiformis* (Torr.) thickets along the Colorado River and occurs in the Indio area as well in vacant lots with the host plant.

Flight: April and July to October in two broods.

Distribution: Imperial, Riverside and San Bernardino Counties.

Records: Riverside County: Indio, Sep 21, 1974 (Larry Orsak) and in vacant lot, Mar 26, 1977 (KD). **San Bernardino County:** US 95, 15.4 mi south of Vidal Jct., Apr 11, 2010 (JB); Needles near Colorado River below levee with abundant *Atriplex lentiformis*, common Apr 5, 1988 (KD).

11. Sleepy Duskywing--*Erynnis brizo* (Boisduval & Le Conte, 1837).

There are two subspecies in southern California.

a. Lacustra Sleepy Duskywing *Erynnis brizo lacustra* (W. G. Wright, 1905).

Updated status: A surprising development with this species was the discovery it occurs on the west slope in the Sierra Nevada, first reported by Oakley Shields (1978), and then found in Kern and Tulare Counties in the Kern River drainage in both the north and south forks of the Kern River based on collecting by Jim Brock and the author.

Habitat: Hilltops, with scrub oaks in chaparral, usually in lower mountains but as high as 9400'. Adults also favor riparian canyons within the scrub oak association.

Flight: Second week of March to June.

Distribution: Kern, Los Angeles, Riverside, San Bernardino, San Luis Obispo, Santa Barbara, San Diego, Tulare and Ventura Counties.

Records: Kern County: Tehachapi Mountains, ridge N end of Sand Canyon, May 13, 2001 (KD). Hill, 2 mi east of Frazier Park, Apr 29, 1988 (KD); Ridge west of Lamont Peak, Apr 29, 2001 (KD). **Riverside County:** Joshua Tree National Park: Smithwater Canyon, Apr 23 & 30

(JZ and butterfly count group). **San Luis Obispo County:** Summit Caliente Mountain, May 5, 1980 (WLS). **Santa Barbara County:** Sierra Madre Range: McPherson Peak 5750', June 28, 1995 (KD); stream where Santa Barbara and Dry Canyons meet, Apr 20, 2006 and Apr 17, 2009 (KD); Cachuma Mountain, San Rafael Mountains Apr 22, 2017 (NL). **Tulare County:** Bald Mountain summit 9400' high elevation June 20, 1992; ridge west of Lamont Peak, south end of Kern Plateau, Apr 29, 2001 (KD); upper Kern River N of Roads End at Dam, Apr 2, 5 and 14, 1987 (KD); Lower Sherman Pass road at Dry Creek Canyon 4300', and on the nearby hill above the helipad at the road junction to Brush Creek (many dates from late March into May). **Ventura County:** Owls Barn on hilltops, May 20, 1980 and May 29, 1981 (KD); Frazier Mountain on hilltop near Chuchupate Camp, June 30, 1977 and June 22, 1979 (KD).

b. Burgess's Sleepy Duskywing *Erynnis brizo burgessi* (Scudder & Burgess, 1870).

Updated status: Probably unchanged. Few search for this butterfly in the eastern Mojave Preserve or travel to such harsh and difficult to access locations.

Habitat: Desert Mountain ranges with scrub oaks. In the Hualapai Mountains in Mohave County, Arizona, *burgessi* was often found on willow catkins at standing water and seeps in canyons.

Flight: Late March to early May.

Distribution: San Bernardino County.

Records: **San Bernardino County:** Keystone Canyon 5500', New York Mountains, Apr 30, 1979 (JFE & OS); Ivanpah Mountains 2.75 mi SE of Ivanpah, Apr 26, 2016 (Dawn Nelson).

12. Propertius Duskywing--*Erynnis propertius* (Scudder & Burgess, 1870).

Updated status: Unchanged

Habitat: Oak woodland and mixed coniferous forest, often near water.

Flight: Late February to early August.

Distribution: All counties except Imperial. This duskywing flies in Inyo County in upper Nine Mile Canyon.

13. Meridian Duskywing--*Erynnis meridianus meridianus* E Bell, 1927.

Updated status: This species was found to occur in the New York Mountains by Kilian Roever shortly after the Emmel's book appeared. There are breeding colonies in the Spring Mountains, Nevada and in the Hualapai Mountains, Mohave County, Arizona, the latter a classic locality for this species.

Habitat: Well-watered canyons with the right oak hosts in the eastern Mojave Desert mountain ranges with reliable summer rains.

Flights: California records are August-September but in the Hualapai Mountains this duskywing flies April into October.

Distribution: San Bernardino County.

Records: **San Bernardino County:** New York Mountains, Keystone Canyon, Aug 26, 1977 and Sep 8, 2007 (KR).

14. Mournful Duskywing--*Erynnis tristis tristis* (Boisduval, 1852).

Updated status: This species is much better known in the northern counties than it was in 1973. There are four oaks used as hosts. Emmel & Emmel (1973) reported it from the Coast Ranges, the Tehachapi Mountains, San Gabriel, San Jacinto and Laguna Mountains and they had one

record from the Central Valley. Actually *E. tristis* is a resident species in Bakersfield and along the Kern River and reaches the Sierra Nevada in the Greenhorn and Piute Mountain Ranges as well as the Kern River Valley. Elsewhere, *tristis* is rarely seen in Kern or Tulare Counties. It is common in the Coast Ranges.

Habitat: Oak woodland, usually below 4000'. Adults have been seen hilltopping in numbers on Hooper Hill south of Lake Isabella.

Flight: February-October.

Distribution: Kern, Los Angeles, Orange, Riverside, San Bernardino, San Luis Obispo, Santa Barbara, San Diego, Tulare and Ventura Counties.

Records: Kern County: San Joaquin Valley: Bakersfield, June 10, 1963; Kern River at Hart Park near Bakersfield, June 6, 1992 and Apr 7, 2004; Piute Mountains on Hooper Hill summit ridge, Sep 10, 1979 and Apr 25, 1980 (all KD). **Tulare County:** Greenhorn Mountains N end of Linn's Valley and Poso Creek area, Aug 4-11, 1997 (KD); 4 mi E of White River June 15, 1957 (PAO). **Ventura County:** Frazier Mountain on hilltop near Chuchupate Camp, Oct 12, 2017 (KD).

15. **Pacuvius Duskywing--*Erynnis pacuvius*** (Lintner, 1878).

There are two subspecies in southern California.

a. **Artful Duskywing--*Erynnis pacuvius callidus*** (F. Grinnell, 1904).

Southern California TL: Mt. Wilson, Sierra Madre mountains, Los Angeles County. The name Sierra Madre Mts. now applies to a range in Santa Barbara County. Mt. Wilson is now in the San Gabriel Mountains.

Updated status: Unchanged.

Habitat: Usually found at higher elevations in the coastal mountains, with the buckthorn hosts often above 7000'. Adults often hilltop or visit wet spots, this subspecies is usually found in mixed coniferous forest.

Flight: One brood mid-March to July in northern counties. In the San Diego County mountain ranges, there can be a second brood which flies in the fall.

Distribution: Western Kern, Los Angeles, Riverside, San Bernardino, SLO (rare), Santa Barbara, San Diego and Ventura Counties.

Records: Kern County: Tehachapi Mountain on ridge, June 22, 1975; McGill Camp area on Mt. Pinos, June 23 and 30, 2003; N side of Mt. Pinos on Mil Potrero road, June 11, 1987 and June 22, 1989; Frazier Park (at low elevations), June 5 and 12, 2007 (all KD). I have collected individuals on *Yerba santa* at Frazier Park. **San Luis Obispo County:** Cerro Alto Peak 2600', June 12, 2014 (JG). Top of Hi Mountain, June 2, 1984; Lopez Canyon, May 17, 1981 (both KD). **Santa Barbara County:** San Rafael Mountains and Wilderness, June 9, 2006 (NL). Sierra Madre Range: McPherson Peak, June 28, 1995 (KD). **Ventura County:** Frazier Mountain on hilltop near Chuchupate Camp, July 2, 1986 (KD).

b. **Dyar's Duskywing--*Erynnis pacuvius lilius***. Dyar, 1904

Updated status: Dyar's Duskywing was first found in the region in 1978, but not identified until John Burns determined the specimen at the Smithsonian Institution in 1980. This butterfly tends to be common on the Kern Plateau and not uncommon in the Piute and Greenhorn Ranges.

Habitat: Mixed coniferous forests, often near seeps and creeks. Adults sometimes hilltop or occur on ridges.

Flight: June-July.

Distribution: Kern and Tulare Counties.

Records: Kern County: Piute Mountains near Liebel Peak, July 21, 1978 (KD), the first record for Southern California; Piute Mountain Lookout, June 19, 1981; Greenhorn Mts. on summit of Sunday Peak 8326', July 31, 1995 (all KD). **Tulare County:** Bald Mountain Lookout 9400' July 10, 1982; west of Sherman Pass 6800-8200', June 25 and July 13, 1981 (KD); Greenhorn Mountains, Baker Ridge 7753', June 11, 1981 (KD).

16. Funereal Duskywing--*Erynnis funeralis* (Scudder & Burgess, 1870).

Updated status: Unchanged.

Habitat: Unrestricted up to Canadian Life Zone. Adults frequent flowers in more open areas, often on roadsides or open hillsides.

Flight: March to October.

Distribution: All counties. This species tends to be found regularly in most of southern California.

17. Afranius Duskywing--*Erynnis afranius* (Lintner, 1878).

Updated status: It is not well documented how far north this species goes north in southern California. The range of this species in southern California appears unchanged. It is very difficult to identify this species based on photographs and even actual specimens may not be identifiable without checking male genitalia. This species and *Erynnis pacuvius callidus* and *Erynnis persius* are often confused with each other. Close observations in the field can often separate the two. Fortunately, *afranius* and *persius* do not appear to overlap ranges in the southern half of the state. Genitalic examination of duskywings is often necessary to make identifications with certainty. John Emmel has noted (pers. comm.) that the larvae of *afranius* and *Erynnis persius* are virtually identical.

Habitat: My observations of this species in the San Bernardino Mountains have been at well watered areas at higher elevations. In Arizona, they also occur at more arid areas where the host plants grow and apparently, this occurs in the Anza-Borrego State Park area as well (Munroe & Monroe, 2004).

Flight: March to late August.

Distribution: Los Angeles, Orange, Riverside, San Bernardino and San Diego Counties.

18. Persius Duskywing--*Erynnis persius* (Scudder, 1863).

Updated status: This species has occurred in Kern County at least twice and is common on the Kern Plateau in Tulare County, added to inside the southern California boundaries for this study.

Habitat: Common at Alder Creek 6800' on the Sherman Pass road. The host plant there is likely *Lotus crassifolius*. The species has a much larger range on the Kern Plateau. Adults often visit mud on meadows edges or turn up on roadside flowers and in dry ravines.

Flight: May into August.

Distribution: Kern and Tulare Counties.

Records: Kern County: San Joaquin Valley: Delano July 12, 1955 (Jerry Powell).

Greenhorn Mountains, 1 mi south of Tiger Flat, July 20, 2009 (KD). **Tulare County:** Sherman Pass Road at Alder Creek 6800', Aug 8, 1980 and July 3 and 27, 2005; ravine off Sherman Pass Road at 7800', Aug 11, 2016; Big Meadow on Kern Plateau June 20, 1980 and ridge north of Cannell Meadow, June 10, 2006, southernmost record in the Sierra Nevada (all KD). **Ventura County:** A reported record from Frazier Mountain above Chuchupate Camp July 1, 1984 in the

Season Summary by "JAS" is doubtful. It is more likely *Erynnis pacuvius callidus*. James A. Scott was not the collector (pers. comm) and the collector code does not match names in the contributors list for that Season Summary.

This species and *Erynnis pacuvius lilius* occur together on the Sherman Pass area and on the Kern Plateau in the southern Sierra Nevada and may require genitalic examination to identify but are often separable visually using field marks and coloration clues.

19. Arizona Powdered Skipper--*Systasea zampa* (W. H. Edwards, 1876).

Taxonomic note: This skipper was known as *Systasea evansi* (Bell) in 1973. See Pelham (2008) for several literature citations related to a misapplication of the name *zampa* and how that was corrected.

Updated status: This species has been found in the eastern Mojave Desert since 1973. See those added records below.

Habitat: Colorado and Mojave Deserts, often in canyons, especially those with water.

Flight: February to October. Specific flights are tied in with rainfall and temperature.

Distribution: Imperial, Riverside, San Bernardino and San Diego Counties.

Records: Riverside County: Chuckwalla Mountains, Apr 22, 2013 (MW) and Mar 20, 2015. (MW & BB); Joshua Tree National Park: Lower Covington Trail, Oct 13, 2014 (Marilyn Lutz & Tom Haworth). **San Bernardino County:** Providence Mountains: near Mitchell Caverns State Park, Mar 23, 1988 (RPM) and Sep 29, 1991 (JFE); near Foshay Pass Sep 20, 1993 (KD). Joshua Tree National Park: Prescott Trail, Oct 12, 2014 (JZ).

20. Two-Banded Checkered Skipper--*Pyrgus ruralis* (Boisduval, 1852).

Taxonomic note: There are two subspecies in southern California and the Laguna Mountains Skipper (*lagunae*) has become a protected federally endangered species. It had not yet been named in 1973 and the taxonomy had not been resolved. The second subspecies occurs within Emmel & Emmel's original southern California boundaries in Lopez Canyon in San Luis Obispo County. It also occurs on the Kern Plateau in Tulare County.

a. Two-Banded Checkered Skipper--*Pyrgus ruralis ruralis* (Boisduval, 1852).

Updated status: This has turned out to occur in Lopez Canyon in southern California as defined by the Emmels at very low elevation. It was not realized that nominotypical *ruralis* occurred in southern California in 1973. This species is also widespread above 7000' on the Kern Plateau.

Habitat: Riparian areas along stream at Lopez Canyon. On the Kern Plateau in Tulare County this species favors wet spots or the drier edges of subalpine meadows or in ravines.

Flight: June to mid-July on the Kern Plateau, late March to May in coastal canyons.

Distribution: Tulare and San Luis Obispo Counties.

Records: San Luis Obispo County: Lopez Canyon, March 10, 1934 (Homer Edgecomb) and May 18 and 23, 2005 (WB). **Tulare County:** Kern Plateau: Big Meadow near Salmon Creek, June 15, 1976 and June 20, 1980; subalpine meadow about 1-mile east of Sherman Pass, July 3, 1978 and Powell Meadow, June 23, 1994 (all KD).

b. Laguna Mountains Checkered Skipper--*Pyrgus ruralis lagunae* Scott 1981.

Taxonomic note: James A. Scott described and named this skipper in Papilio (New Series) #1 (Scott, 1981). Emmel and Emmel placed this as a *ruralis* in 1973 *but* had not yet ruled out an affinity with Rocky Mountain *Pyrgus xanthus* (Edwards).

Updated status: This skipper was added to the federally endangered species list and reportedly, its numbers have dropped.

Habitat: Large open dry meadows in Ponderosa Pine Forest in the high elevation meadows of the Laguna Mountains.

Flight: May.

Southern California TL: North end, E Laguna...Laguna Mts., San Diego County.

Distribution: San Diego County.

21. Small Checkered Skipper--*Pyrgus scriptura*: (Boisduval, 1852).

There are two subspecies in southern California, one of which was recently named.

a. Small Checkered Skipper *Pyrgus scriptura scriptura* (Boisduval, 1852).

Updated status: Unchanged but more specific records are known for several counties.

Pesticides may be negatively impacting populations in the southern San Joaquin Valley.

Habitat: Often found on disturbed land, edges of agricultural fields or arid wastelands where the alkali mallow host grows.

Flight: March to October.

Distribution: Kern, San Luis Obispo, Santa Barbara, Tulare and Ventura Counties.

Records: **Kern County:** Four miles west of Buttonwillow, Sep 2 to Oct 3, 1980 and Aug 27, 1982 (KD); 2 mi east Lost Hills, Aug 22, 1987 (KD) and July 14, 1988 (KD). **San Luis Obispo County:** Coast Ranges: Davis Road, south of Cholame, Sep 7, 2007 (WB); Davis Road 2 mi south junction of Hwys 41 & 46, Mar 28, 2015 (JG). **Tulare County:** Kern/Tulare County line on Rowlee road in San Joaquin Valley 6.3 mi southwest of Alpaugh, Aug 11 and 23, 1984 (KD).

b. Small Checkered Skipper--*Pyrgus scriptura apertorum* Austin, 1998.

Taxonomic note: This subspecies is paler on the dorsal and ventral surfaces and smaller in size than nominotypical *scriptura*. The white macules average narrower on subspecies *scriptura* (Austin, 1998a). Based on 24 specimens I collected from Brawley, California on September 11, 2017 and 6 other specimens of *apertorum* from Brawley, California; Utah and Arizona, I noted a number of usually three white spots or macules located together near the center of the dorsal hindwings (only one, sometimes two in ssp. *scriptura*) that readily differentiate this subspecies from those from the California San Joaquin Valley in Kern County.

Updated status: Desert and the Imperial Valley populations were described as a new subspecies (Austin 1998a). This species is very rare in the Mojave Desert.

Habitat: Open desert, disturbed land in agricultural areas in the Imperial Valley where alkali mallow grows. This butterfly occurs on alkaline soils and is very rare in the Mojave Desert in California.

Flight: March to October.

Distribution: Imperial, Inyo, Kern, Riverside, San Bernardino and San Diego Counties.

Records: **Imperial County:** Very abundant south of Brawley near junction of Dogwood & Mead roads, Oct 5, 1986 and Sep 11, 2017 (KD). **Kern County:** Edward's AFB, N of Leumann Ridge, Bissell Hills, no date (GP). **Riverside County:** Joshua Tree National Park: Wall Street Mill Trail, Oct. 13, 2014 (JZ). **San Bernardino County:** Mojave Desert: Rock Corral, Feb 12, 2006, (BG & Greg Chatman); near west entrance to Joshua Tree NP, Apr 27, 2013 (Frank Model) and in Joshua Tree NP: Indian Cove Nature Trail, Oct 13, 2014 (JZ); Mescal Range, near Mountain Springs Summit off I-5, Mar 29, 2017 (MW) and Apr 5, 2017 (BB). **San Diego**

County: Cool Canyon below Granite Mountain, Anza Borrego SP, Mar 19, 2014 (Jim & Susan Hengeveld).

22. Common Checkered Skipper--*Pyrgus communis communis* (Grote, 1872).

Taxonomic note and updated status: When John Burns determined (Burns, 2000) that this species and *Pyrgus albescens* were two species and not one, it also became apparent that both were in southern California. Since both are very similar in appearance it became obvious that checking genitalia of the males was required, at least in areas where both occur. So, in this paper, only genitally determined males were used. I collected specimens for John Burns who determined most of what I sent as *Pyrgus albescens* and he published those results. John F. Emmel, Julian Donahue and Paul Opler determined many specimens from Kern, Tulare, San Luis Obispo and Santa Barbara Counties that were *communis*. There are many locations where both species occur along the northern portion of southern California. Fordyce et al. (2008) published a further refinement of this Pair of species using DNA analysis including mitochondrial DNA and one nuclear gene. Although they presented data from throughout the United States and Mexico, their most intensive sampling was in California. They found that the DNA variation did not separate the species well and that some haplotypes were shared by both species. Of particular interest to southern California were their findings that most Sierra Nevada populations were of the *Pyrgus communis* 'form' their DNA was of a *Pyrgus albescens* haplotype. Of further notes was the fact that a sample of 15 *Pyrgus albescens* from Los Angeles County (locality not specified) had individuals with 4 different haplotypes, one of which was unique to southern California and 3 that were shared only with a *Pyrgus communis* sample from Nevada County, California.

Habitat: Wastelands, vacant fields, edges of alfalfa fields and wet pastureland.

Flight: March-early November. **Distribution:** Inyo, Kern, Riverside, San Luis Obispo, Santa Barbara and Tulare Counties.

Records: **Inyo County:** Base of road going up grade to Whitney Portal, June 18, 2006 (KD det. P. Opler). **Kern County:** San Joaquin Valley: Temblor Range near SR 58 road summit, June 4, 1987 (KD det. JFE); west of Delano on Hwy. 43 at Cecil Avenue on both sides of the Kern/Tulare County line, Nov 4, 1994 (KD det. Julian Donahue); Greenfield in moist pastureland, July 17, 2005 (KD, det. PAO); east Bakersfield, Aug 22, 2009 (KD, det. PAO). Tehachapi Mountains: Cummings Creek, Sep 27, 1990 (KD, det. PAO). Kern River Valley: Hanning Flat near Lake Isabella, Sep 20, 2008 and below Auxiliary Dam at Lake Isabella (town), June 7, 2008 (KD det. PAO). **Riverside County:** San Jacinto Mountains: Tahquitz Canyon, Oct 21, 1939 (F.H. Rindge, AMNH) (see Burns, 2000). **Santa Barbara County:** Cuyama Valley, Foothill Road, June 24, 2004 and Jun 22, 2009 (KD det. PAO); Hwy 166, 10 mi east of Santa Maria, Mar 19, 2007, (KD, det. PAO). **San Luis Obispo County:** Cuyama Valley, Foothill Road, June 24, 2004 (KD det. P. Opler), the road is the county line boundary meeting Santa Barbara County.

23. White Checkered Skipper--*Pyrgus albescens* Plotz, 1884.

Taxonomic note: This is the dominant *Pyrgus* species in most of southern California. Few specimens have been collected and genitally checked so in the interest of accurate determinations in this work I am not reporting such unchecked records. Many individuals can likely be determined by locality data alone.

Updated status: See comments under *Pyrgus communis*. Most of southern California records are this species (Burns, 2000).

Habitat: Wastelands, agricultural field edges, vacant fields, weedy lawns and dry areas with mallows. This skipper is often common in weedy areas in cities

Flight: March-early November. **Distribution:** All counties.

Records: Kern County: Sierra Nevada in Kern River Valley: Hanning Flat near Weldon, Sep 20, 2008 (KD det PAO). Tehachapi Mountains, Cummings Creek, Sep 27, 1990 (KD det. PAO).

Tulare County: Fairview along Whisky Flat Trail and Kern River, June 29, 2014 (KD det. PAO).

24. Erichson's Skipper--*Heliopyrgus domicella domicella* (Erichson, 1849).

Updated status: This was placed in a different genus and no longer is in *Heliopetes* (Pelham, 2008). There have been no additional records reported in the past 44 years. Likely, this species is not a permanent resident in southern California.

Habitat: Occurs in Sonoran Desert canyons and riparian areas in southeast Arizona.

Flight: The only two records are given below. The Parker Dam record lacks a date. Most Arizona records are from late summer and fall.

Distribution: San Bernardino and San Diego Counties.

Records: San Bernardino County: Parker Dam along the Colorado River, no date (James Scott). **San Diego County:** Sentenec Canyon in Anza Borrego State Park, Oct 23, 1976 (Stan Dvorak).

25. Large White or Northern White Skipper--*Heliopetes ericetorum* (Boisduval, 1852).

Updated status: Unchanged.

Habitat: Occurs commonly in wide variety of habitats in valleys, deserts, city gardens and in mountains. Likes canyons and is a frequent flower visitor.

Flight: March to early November.

Distribution: All counties.

26. Gentry's Giant Skipper--*Agathymus gentryi* Roever, 1998.

Taxonomic note and updated status: This was the undescribed and unnamed *Agathymus baueri* in Emmel & Emmel (1973). Instead it was described as a very similar but different species. *Agathymus gentryi* has a haploid chromosome number of 13, that for *baueri* is 15. On the primaries (dorsal) of *Agathymus baueri* (both ssp. *baueri* and *freemani*), the outer margin of spots comprising the postmedial band in spaces 1-3 does not form a comparatively straight line as in *A. gentryi* because the spot in space 1 is offset distally (Roever, 1998).

Updated status: I have heard of no sightings since 1987. When all collecting was banned in the eastern Mojave Desert Preserve, collectors stopped going to the Providence Mountains.

Watchers don't accept *gentryi* as a species and rarely go to the eastern Mojave Desert. The current health of *gentryi* populations in the Providence Mountains is unknown. One problem with having a permit (which I had one year), one had to check in at Baker after the office opened, then travel far away to the destination. By the time one could do that, that days flight for this butterfly would likely be over. This species only tends to fly in the early morning.

Habitat: Dry eastern Mojave Desert rocky limestone slopes, with the *Agave deserti* host plant. Those few *gentryi* I have seen were in rocky canyons or ravines. That was in 1987 before the Providence Mountains became off limits to collecting.

Flight: Late September to late October.

Distribution: San Bernardino County in the Granite and Providence Mountains and in parts of southern Arizona. The hostplant is *Agave deserti*, ssp. *simplex* Gentry.

Records: San Bernardino County: See Emmel & Emmel (1973) and Roever (1998). There were sight records near Foshay Pass in the Providence Mts. Oct 4 and 5, 1987 (KD). I was unable to collect this very fast flying wary species. What did I learn? Sweep giant skippers into the net, don't clamp down on them when they are on solid rock. They escape from under the net rims uneven surface.

27. Stephen's Giant Skipper--*Agathymus stephensi* (Skinner, 1912).

Southern California TL: Eastern edge of San Diego County: Mason Valley (La Puerta).

Updated status: Unchanged except more of the locations for this butterfly are in the expanded Anza-Borrego State Park.

Habitat: The Anza Borrego Desert with the *Agave deserti* host plant.

Flight: September-October.

Distribution: Imperial, Riverside and San Diego Counties.

Records: Riverside County: Cactus Springs Trail off the Palm to Pines Hwy., Santa Rosa Mountains, Oct 1 and 8, 2017 (RG).

28. Mojave or Allie's Giant Skipper--*Agathymus alliae paiute* Roever 1998.

Taxonomic note: This subspecies was awaiting description as to subspecies in 1973. The haploid chromosome number is 36. The hostplant is *Agave utahensis utahensis* Engelm. This subspecies differs from nominotypical *alliae* by its smaller size, orange, not yellow, coloration of maculation on the upperside and below this subspecies has a blue-gray overtone (not brownish, Roever, 1998).

Updated status: Unchanged.

Habitat: This butterfly occurs on rocky, arid limestone slopes at 3000-5000' with the *Agave utahensis* Engelm var. *nevadensis*. ex Greenm. & Roush (Agavaceae) host plant.

Flight: September to October.

Distribution: Southern Inyo and eastern San Bernardino Counties.

Records: Inyo County: Nopah Range, Nopah Peak 6200' (larvae on *Agave utahensis*), May 16, 1997 (JFE & GP), Richard P. Meyer has seen this butterfly in the Mescal Range off Interstate 15 and the Bailey road in early October in the early 1990's.

29. Yucca Giant Skipper--*Megathymus yuccae* (Boisduval & Le Conte, 1837).

Taxonomic note: This butterfly in the western United States was regarded as a different species, *Megathymus coloradensis* in checklists until Pelham (2008).

a. Martin's Giant Skipper *Megathymus yuccae martini* D. Stallings & Turner, 1956.

Southern California TL: Little Rock, Los Angeles County.

Taxonomic notes: Maude's Giant Skipper *Megathymus yuccae maudae* S. Stallings, Turner & V. Stallings is combined with *martini* in this paper. The Emmel's stated in 1973 that *maudae* was barely recognizably different than *martini*. **Southern California**

TL: San Bernardino County, 21 miles north of Essex, on Cima Rd. in Providence Mts. The Pelham Catalogue (2008) lists *maudae* as a synonym of *martini* as the two are visually difficult to separate. This seems to be controversial. Emmel, Emmel and Mattoon still recognized *maudae* as a valid subspecies in their 1998 state checklist

Updated status: Subspecies *maudae* may be a synonym of *martini*. That is unresolved here. Otherwise, status is unchanged.

Habitat: Stands of Joshua Trees in desert mountain ranges and canyons. I have seen females (but not males) hilltop on Butterbrecht Peak (Kern County) and the hills running to the southwest and have aerial combat with *Papilio indra phyllisae*. Males seem to stay in the canyon bottoms. The colors of the two unrelated species match!

Flight: Late March to late May.

Distribution: Inyo, Kern, Los Angeles, Riverside, San Bernardino Counties. A Tulare County sighting was likely a stray.

Records: **Inyo County:** Death Valley National Park: Two tents of larvae in *Yucca brevifolia*, 1 mi. SW Tin Mountain summit 8400', Cottonwood Mountains, July 2, 1979 (JFE) and 1 mile west White Top Mountain 6400', June 3, 1980 ((JFE). Nine Mile Canyon 5500', larvae in *Yucca brevifolia* Sep 8, 1980 (JFE); and there is an adult record in lower Nine Mile Canyon below bridge Apr 12, 2005 (KD). **Kern County:** Walker Pass summit, May 10 and 12, 1976 (KD); Tehachapi Mountains, 4.7 mi SE of Oak Creek Pass, off Willow Springs Road Apr 28 and 30, 1998 (KD). **Riverside County:** Near Conejo Well, Eagle Mountains Mar 24, 1974 (JFE and R. Highton). **San Bernardino County:** Rock Corral 3900', Apr 3, 1993 (Paul Thompson); Kingston Range, Mar 17 and Apr 5, 2017 (BB).

b. Harbison's Giant Skipper--*Megathymus yuccae harbisoni* J. Emmel & T. Emmel, 1998.

Southern California TL: San Diego County, 1 mile west of Scissors Crossing

Taxonomic note: This subspecies (Emmel & Emmel, 1998e) differs from *martini* and *maudae* by having much smaller pale cream and pale-yellow spots, as well as a narrower pale cream outer margin. This reduction in lighter spots gives this subspecies a darker appearance.

Updated status: This butterfly was updated well in the original 1998 description (cited above) in the Systematics publication.

Habitat: Stands of Joshua Trees in desert mountain ranges mostly in San Diego County and a very small part of Riverside County.

Flight: Late March and April.

Distribution: Riverside and San Diego Counties.

30. Orange Skipperling--*Copaeodes aurantiaca* (Hewitson, 1868).

Updated status: This species seems to have disappeared from the Inyo, Kern and Tulare County locations for it in the past 30 years.

Habitat: Desert canyons and ravines.

Flight: February to mid-November

Distribution: Imperial, southern Inyo, Kern, Los Angeles, Orange, Riverside, San Bernardino and San Diego Counties:

Records: **Inyo County:** Nine Mile Canyon, June 8, 1985 (KD). **Kern County:** East of Walker Pass, Aug 8, 1977 (KD); 0.8 mi. SW of Sageland, Aug 15, 1978 and Apr 30, 1984 (KD); Homestead along SR 14, Sep 18, 1978 (KD); Tehachapi Mountains, Caliente Canyon, Oct 22, 1978 (AR). **Tulare County:** Sierra Nevada: Sherman Pass Road near Brush Creek 4900', June 18, 1983 (AR) and June 25, 1985 (KD); side canyon, Chimney Peak road just west of Lamont Meadows June 20, 1992 (KD).

31. Brazilian Skipper--*Calpodus ethlius* (Stoll, 1782).

Updated status: There have been very few records for the state since 1973.

Habitat: This species can occur in cities where *Canna* grows.

Flight:

Distribution: Los Angeles, Orange, Riverside and San Diego Counties. This species occurs only as a rare stray or transient in the state.

Flight: August to early November.

Records: Los Angeles County: Two specimens at the LACM are labeled “larva on *Canna*/Emgd 1905 Los Angeles, Calif.”; North Hollywood in back yard on *Canna*, Aug 26, 1996 (CS).

Riverside County: Riverside, Nov 1942 (collector unknown). Records from Emmel & Emmel, 1973 are included here.

32. Wandering Skipper--*Panoquina errans* (Skinner, 1892).

Updated status: The big change is that most of the populations of this species now occur in State Parks and Nature Preserves. This species seems to be doing well and occasionally does stray to city gardens.

Habitat: Coastal grasslands along a narrow strip bordering the Pacific Ocean.

Flight: As early as late March; July through September.

Southern California TL: Specific location not given in the description.

Distribution: Los Angeles, Orange, Santa Barbara, San Diego and Ventura Counties.

Records: Santa Barbara County: Carpinteria Salt Marsh, Oct 17, 2004 (NL.) Known localities since 1973 have not changed.

33. Julia’s Skipper--*Nastra julia* (H. Freeman, 1945).

Updated status: There have been few if any records in California in the past 40 years. Changes in agricultural practices, irrigation and the use of pesticides in SE California are the likely reasons (fide Kilian Roeber).

Habitat: Formerly found in agricultural areas from Blythe southward

Flight: April through October.

Distribution: Kern County, Riverside and San Bernardino Counties.

Records: Kern County: There was one record from east Bakersfield in late summer, 1962 (KD). John Emmel examined the specimen and made a tentative confirmation but it could be an aberrant *Lerodea eufala*. I have found no *N. julia* in Kern County since. **Riverside County:** Only one individual at Blythe Oct 28, 1973 (KH). **San Bernardino County:** Needles, April 1, 1918 (J. C. Bradley).

34. Eufala Skipper--*Lerodea eufala eufala* (W. H. Edwards, 1869).

Updated status: There are now several records for San Luis Obispo and Ventura Counties.

Habitat: City gardens and edges of alfalfa fields.

Flights: April to early November.

Distribution: All counties.

Records: San Luis Obispo County: Oceano on Pacific Coast, Apr 7, 1985 (KD); Cuyama Valley, Foothill road, near junction with SR 33, Sep 20, 2012 (KD). **Riverside County:** 2 mi N of Blythe, May 17, 2015 (KD). **Santa Barbara County:** Foothill road, near SR 33, common Sep 20, 2012 (KD). **San Bernardino County:** Needles, May 29, 1990 and Sep 9, 2007 (KD).

Ventura County: Cuyama Valley along SR 33 near Santa Barbara/Ventura County line marker,

Sep 16, 1997 (KD); Fillmore, Sep 10, 2001 (Mary Shepherd). This species is well documented in most counties but is scarce in some of the counties listed above.

35. Fiery Skipper--*Hylephila phyleus* (Drury, 1773).

Taxonomic note and updated status: In Emmel, Emmel & Mattoon's California checklist (1998h), nearly all populations of this species in the state were called *muertovalle* which was originally applied to only Death Valley populations by James Scott in his Papilio (New Series). Scott recently (2007) clarified what populations that name referred to. Pelham (2008) treats the lighter colored *muertovalle* as a synonym of nominotypical *phyleus* which it may be if the lighter coloration is environmentally caused. Most populations in the state are nominotypical *phyleus*. Emmel & Emmel (1973) referred to this species as monotypical *Hylephila phyleus*, as *muertovalle* was named in 1981 when the confusion started.

a. Fiery Skipper--*Hylephila phyleus phyleus* (Drury, 1773).

Taxonomic note: Scott (2008) clarified the actual range of *muertovalle* in California, so most of California is nominotypical *phyleus*.

Habitat: City gardens and lawns with Bermuda grass. Adults avidly visit lantana.

Flight: April to November.

Distribution: All counties.

b. Death Valley Fiery Skipper--*Hylephila phyleus muertovalle* Scott, 1981.

Taxonomic note: This subspecies was named by James Scott in Papilio (New Series) #1. Males and females are notably more lightly marked than nominotypical *phyleus* which some still believe is monotypic.

Updated status: Described after the Emmel's book. The correct use of the name of *muertovalle* has been clarified, but questions remain as to the name's actual status as a subspecies or as just a lighter form.

Habitat: This skipper occurs in grassy areas with Bermuda grass in the hot Death Valley region to Las Vegas, Nevada and south to Needles, California.

Flight: April to November.

Southern California TL: Furnace Creek date grove, Death Valley, Inyo County.

Distribution: Inyo and San Bernardino Counties, blends to this subspecies occur in eastern Kern County at Ridgecrest.

Records: **Inyo County:** Furnace Creek Date Grove, Sep 19, 1973 (J. Scott). **Kern County:** Mojave Desert: Ridgecrest, Sep 10, 2013 (KD), this population is mostly the *muertovalle* phenotype but many appear like normal *phyleus*. **San Bernardino County:** Needles in sump near golf course, Aug 11 and Sep 9, 2007 (KD).

36. Alkali Skipper--*Pseudocopaeodes eunus* (W. H. Edwards, 1881).

There are three subspecies in southern California. This skipper has also been called the **Eunus Skipper**. The host plant is Desert Saltgrass, *Distichlis spicata* (L. (Greene)). This skipper is attracted to heliotrope flowers.

a. Alkali Skipper--*Pseudocopaeodes eunus eunus* (W. H. Edwards, 1881).

Southern California TL: Bottomlands of the Kern River near Bakersfield, Kern County. This location became unsuitable for this species to exist when Lake Isabella Dam was built and the

water was diverted to agriculture and city use. Form “wrighti” (W. H. Edwards, 1882) was described from what is now known as Victorville along the Mojave River, San Bernardino County.

Updated status: The population from the type locality was rediscovered at Weldon in the Kern River Valley in 1981. Since then, the population formerly common on the Preserve there has disappeared since the land was managed to climax state. It may still exist in nearby ranches that are grazed.

Habitat: Riparian desert saltgrass near the South Fork of the Kern River. Adults visit heliotrope as a nectar source.

Flight: Late March to mid-October; April to late August at Weldon. There can be two broods.

Distribution: Kern, Los Angeles, San Bernardino and San Diego (probably extirpated) Counties.

Records: **Kern County:** South Fork of Kern River on Nature Preserve at Weldon, June 13 and 14, 1981 (Ron Leushener); Weldon and Onyx, August 4 and 21, 1981 (KD). **Los Angeles County:** Piute Ponds just SW of Rosamond, Oct 11, 1995 (JFE). **San Bernardino County:** Victorville N side of Mojave River, Mar 31, 2016 (MW).

b. Alkali Skipper--*Pseudocopaeodes eunus alinea* Scott, 1981.

Taxonomic note: This new subspecies (Scott, 1981) differs from nominotypical *eunus* in being more uniform bright fulvous in color above and beneath. The dark veings near the margins are nearly gone above and beneath, the brown patches on the dorsal forewing are reduced in extent, and the ventral hindwing brown and white streaks are reduced and nearly absent. Scott states it looks so different one does not immediately identify it as a *eunus*.

Southern California TL: Afton, San Bernardino County.

Updated status: Unknown. Long-term drought may have impacted this population and the *alinea* habitat is reportedly now on protected government land.

Habitat: It is unknown if suitable habitat (saltgrass flats) still exists at Afton.

Flight: April to mid-September.

Distribution: Eastern San Bernardino County:

c. Alkali Skipper--*Pseudocopaeodes eunus flavus* Austin & J. Emmel, 1998.

Distribution: Inyo and Kern Counties.

Taxonomic note: The ground color of this subspecies is more pallid than the nominotypical subspecies; dull yellowish-orange as compared to a brighter orange of nominotypical *eunus* (Austin & J. Emmel, 1998a).

Updated status: Cattle grazing in the Owens Valley may have negatively affected the numbers of this skipper along the Owens River.

Habitat: Desert saltgrass riparian grasslands, often found along the Owens River but much of this land is closed to the public by ranchers.

Flight: Late April to early September.

Distribution: Inyo and NE Kern County.

Records: **Inyo County:** Lubken Canyon road, 2 mi south of Lone Pine and west of US 395, along road on Heliotrope flowers, Aug 13, 2001 and Sep 1, 2002 (KD): Olancho on edges of pasture off US 395, Aug. 29, 1978 and Aug 21, 1981 (both KD). **Kern County:** Cantil at west side of Koehn Dry Lake, May 11 and 16, 1992 (KD), this locality is now barred to public access.

37. Juba Skipper--*Hesperia juba* (Scudder, 1874)

Updated status: Unchanged.

Habitat: Ravines on the east slope of the Sierra Nevada and canyons and drier slopes in the southern Sierra and in southern California Mountain ranges, including the western edge of the Mojave Desert.

Flight: This species is double brooded with spring and fall flights. At higher elevations, there may be one flight in the summer. This species tends to be common where it occurs.

Distribution: Inyo, Kern, Los Angeles, Orange, Riverside, San Bernardino, Tulare, San Diego and Ventura Counties.

Records: Ventura County: Rose Valley, Aug 2, 1994 (Ed Ballard). There are no records for Imperial or San Luis Obispo Counties. This is a very common species in many areas but missing entirely in some areas where it might be expected.

38. Western Branded Skipper--*Hesperia colorado* (Scudder, 1874)

Taxonomic note: Emmel & Emmel (1973) used the name *harpalus* as the species name but since then the status and assignment of *harpalus*, *yosemite* and *idaho* has been revised by Scott. The name *harpalus* (with *yosemite* as a synonym) now applies to late spring to mid-summer high elevation subspecies on the Sierra Nevada west slope as far south as Stony Creek in Tulare County and possibly that name may apply to a population at Freeman Creek Grove about 20 air miles to the north of my arbitrary boundary for southern California. The name *idaho* now refers to populations from the Great Basin (formerly called *harpalus*) east into Colorado.

The name to use for the species remains controversial. Some including James Scott now believe *Hesperia comma* (Linnaeus, 1758) is the best name while others believe there are three species (including *comma*) in North America in that complex.

a. Great Basin Branded Skipper--*Hesperia colorado idaho* (W. H. Edwards, 1883).

Taxonomic note and updated status: James Scott replaced the name *harpalus* with *idaho* and the name *yosemite* was replaced with *harpalus* for reasons given in Papilio (New Series) #11 (Scott, 1998)

Habitat: The aridlands on the east slope of the Sierra Nevada including the Kennedy Meadows area in Tulare County and in the Great Basin. Adults favor arid canyons and flowers and hilltop at very high altitudes.

Flight: Mid-May to early October.

Distribution: Inyo, Kern and Tulare Counties.

Records: Inyo County: Nine Mile Canyon, no date (KD). **Kern County:** E slope Walker Pass, June 4, 2004 (KD); Sageland area N of Kelso Valley, June 15, 1980 (KD); NW of Birdspring Pass, July 1, 2000 (KD). **Tulare County:** Lamont Peak area, May 22 and June 25, 1982 (KD); Big Pine Mountain N of Kennedy Meadows, Aug 3, 1981 (KD); Kennedy Meadows, July 10, 1982 (KD) and Bald Mountain Lookout 9400' July 10, 1982 and July 4, 2003 (KD).

b. Tilden's Branded Skipper--*Hesperia colorado tildeni* H. Freeman, 1956.

Taxonomic notes: Emmel & Emmel (1973) treated populations in the southern Sierra and in the Tehachapi Mountains as a blend zone population. Populations in the Mt. Pinos/Frazier Park area, in the Tehachapi Mountains area and in Santa Barbara County may be close to *tildeni*. Emmel, Emmel & Pratt (1998h) did not treat these as a segregate in their 2012 state checklist.

John Emmel in personal communication stated it best to call these “blend zone” populations near *tildeni*. They are similar in appearance.

Status update: The Sierra Nevada fall flying populations at Sherman Pass, the Greenhorns and Piutes show influence between the fall flying Sierra Nevada population studied by Shapiro and Forister (2005), *idaho* and *leussleri*. Those Sierran populations are not treated as *tildeni* in this publication.

Habitat: Dry canyons with blooming rabbitbrush. Adults often go to hilltops.

Flight: August to early October.

Distribution: Kern, Santa Barbara, San Luis Obispo and Ventura Counties.

Records: **Kern County:** Temblor Range near SR 58 road summit, Aug 27, 1982; Aug 28, 1987 and Sep. 1, 1994 (KD); Tehachapi Mountain Park and top of Water Canyon Aug 28, 1995 and Sep 5, 2005 (KD). **San Luis Obispo County:** Temblor Range west of SR 58 summit, Aug 27, 1982 (KD). **Santa Barbara County:** Sierra Madre Range: Santa Barbara Canyon, Aug 21 and 28, 2004 (KD). Road to Big Pine Mountain, Sep 2, 2011 (NL). **Ventura County:** Hilltop near Owls Barn, Oct. 3, 1980, Sep. 26, 1985 (KD); Frazier Mountain near Chuchupate Camp, Sep 26, 1985 (KD); SR 33 near Ventura/Santa Barbara County line, Sep 16, 1997 (KD).

c. Leussler’s Branded Skipper--*Hesperia colorado leussleri* Lindsey, 1940.

Southern California TL: Warner’s Hot Springs, San Diego County.

Updated status: Fall flying populations in ranges where *leussleri* occurs may be something other than *leussleri* biologically (fide John F. Emmel).

Habitat: Open forest openings. This butterfly is common in grassy forests in other counties within its range.

Flight: May to August.

Distribution: Kern (June flyng population west side Piute Mts.), Los Angeles, Orange, Riverside, San Bernardino and San Diego Counties.

Records: Kern County: Small colony west slope Piute Mountains on Piute Mountain road, near MP 6, June 4 and 10, 2004 (KD).

d. Western Branded Skipper--*Hesperia colorado* (Scudder, 1874), fall flying Sierra Nevada segregate.

Taxonomic note: Shapiro & Forister, 2005 explored the taxonomic implications of a fall flying *Hesperia colorado* in the Sierra Nevada. Those could possibly be what has been called subspecies *yosemite* Leussler, 1933, but was treated as a form of *harpalus* (W. H. Edwards, 1881 in the Pelham Catalogue (2008). There are both spring and fall flying *Hesperia colorado* along the Kern River drainage and in the Greenhorns, Piutes and southern Sierra Nevada. Neither *Hesperia colorado harpalus* nor *yosemite* quite reach southern California as defined in this publication.

Updated status: The fall flying populations on the Sherman Pass road, Greenhorns and Piutes are different from the ones studied by Shapiro & Forister. Perhaps these are a mixed blend zone population of subspecies *idaho*, *harpalus*, *tildeni* and *leussleri*.

Habitat: Arid canyons and roadsides in mixed oak-juniper woodland, chaparral and blooming rabbitbrush. In the Greenhorn Mountains, adults are often easily found along Old State road or on the Sawmill road in the Isabella Highlands visiting blooming rabbitbrush or the flowers of *Eriogonum nudum* among the more common *Ochloides sylvanoides*.

Flight: August to early October.

Distribution: Kern and Tulare Counties.

Records: **Kern County:** Greenhorn Mountains: Old State road above Wofford Heights, Aug 31, 1993 and Aug 22, 2003 (KD); Sawmill road 3-6 mi above SR 155, Sep 17, 2015 (KD). **Tulare County:** Kern River, Limestone Camp, Aug 8, 2011; Sherman Pass road near Alder Creek 6800-7000', Aug 8, 2011 and Aug 31, 2012 (KD).

39. Pahaska Skipper--*Hesperia pahaska martini* MacNeill, 1964.

Southern California TL: 4.5 miles southeast of Ivanpah, New York Mts., San Bernardino County.

Updated status: Likely unchanged. There have been few records since 1973 and few are going to the eastern Mojave Preserve to watch or study butterflies.

Habitat: Desert mountain ranges with the bunchgrass *Tridens pulchellus* (H. B. K.) Hitchc (Poaceae). Adults tend to be hilltoppers.

Flight: Two flights: June-early July and September.

Distribution: Eastern Mojave Desert, San Bernardino County.

Records: **San Bernardino County:** New York Mountains: Carruther's Canyon 5600', Sep 21, 1988 (JFE & GP) and near Mail Spring 5100', May 28, 2010 (JFE, under permit).

40. Columbian Skipper--*Hesperia columbia* (Scudder, 1972).

Southern California TL: "Southern California".

Distribution: All counties but Imperial.

Updated status: The biggest find since 1973 has been that this species occurs fairly commonly in the southern Sierra Nevada. Numbers in many areas seem to have markedly decreased in recent years, possibly because of prolonged drought or plant succession replacing the bunch grass hosts. This species and *Erynnis brizo lacustra* often occur together in the spring and Oakley Shields (1978) reported that this species also was not limited to the coastal mountains, but also occurred on the west slope of the Sierra Nevada in scrub oak/serpentine habitats.

Habitat: Upper Sonoran Zone chaparral with scrub oaks and sometimes junipers. Males go to hilltops or visit mud at nearby streams. Females are rarely seen but many females have been collected in Tulare County along the Kern River going to asters or blooming rabbitbrush.

Flight: Double brooded, Late March to early June; late September to early November.

Records Kern County: Piute Mountains, hillside 3.2 mi. south of Bodfish on Bodfish/Havilah road, Mar 31, 1972 (Ralph Wells); 4 mi south of Bodfish, May 11, 1975 (JB); Sierra Nevada: Chimney Peak road SW of the summit, Oct 6, 2001 (possibly east for the Sierra Nevada (KD). Two mi east of Frazier Park on hilltop overlooking Cuddy Creek, Apr 29, 1988 (KD). **San Luis Obispo County:** Cuesta Ridge, May 6, 1996 and Apr 30, 2013 (KD). **Tulare County:** Sherman Pass road 4300' in Dry Creek Canyon about one mile E of Kern River, May 21, 1990 (KD); Limestone Camp area along Kern River, Apr 21 and 29, 1997 (KD); Kern River at Calkin's Flat, Sep 15 and 21, 2002 (KD), two months after a major wildfire there; Sherman Pass road near Bald Mountain, at a rocky outcrop east of the Sierran Divide, July 2, 2010 (KD). **Santa Barbara County:** McPherson Peak, 5750' June 28, 1995 (KD); Cachuma Mountain, San Rafael Mountains Apr 22, 2017 (NL). **Ventura County:** Owls Barn on hilltops and ridges, May 23 and Oct 3, 1980 (KD); June 13 and 19, 1998 (KD). Hilltop near Chuchupate Camp, May 29 and Oct 9, 1981 (KD); Cuyama Valley on alfalfa near Santa Barbara County line marker on SR 33, Sep 16, 1997 (KD).

41. Lindsey's Skipper--*Hesperia lindseyi lindseyi* (W. Holland, 1930), includes unnamed southern California segregate.

Taxonomic note: Almost all *lindseyi* populations in southern California are actually a lighter colored *lindseyi* with fewer markings than the nominate subspecies in the Coast Ranges. Those *lindseyi* from the Temblor Range off SR 58 seem to be close to the nominotypical *lindseyi* which is common further north in the Coast Ranges in the Parkfield Grade area of Monterey and Fresno Counties.

Distribution: Kern, Los Angeles, Riverside, San Bernardino, San Luis Obispo, Santa Barbara, Tulare and Ventura Counties.

Updated status: Unchanged. More localities have been found for Santa Barbara and San Luis Obispo Counties.

Habitat: Oat grass in oak woodlands. Adults readily visit thistles for nectar.

Flight: Second week of May to early July.

Records: **Kern County:** Temblor Range: SR 58, E below summit, May 13 and June 4, 1987 (KD). Piute Mountains 1-3 mi. south of Bodfish, May 14 and 21, 1976; and Hooper Hill, May 30, 1979 (KD); Erskine Creek Canyon, May 23, 2001 and June 5, 2005 (KD); Tehachapi Mountains, Cummings Creek, June 9 and 11, 1982 (KD). **Los Angeles County:** Sawmill Camp near Lake Hughes, June 17, 2005 (BG & Chris Hanzlik). **San Luis Obispo County:** West of SR 58 summit in Temblor Range, May 13, 1987 (KD). **Santa Barbara County:** Sierra Madre Range: Aliso County Park, June 10, 1983 (KD); Cottonwood Canyon, May 18, 1999 (KD); Bates Canyon, May 18, 2009 (KD) and May 22, 2009 (NL). **Tulare County:** Greenhorn Mountains, 3-4 mi east of White River, June 14-15, 1957 (PAO).

42. Carus Skipper--*Polites carus* (W. H. Edwards, 1883).

Taxonomic note: Burns (1994) moved this skipper out of *Yvretta* and placed it in *Polites*.

Updated status: It is unknown if this species is still found in California.

Habitat: This species was formerly reaching the state in agricultural areas in the eastern deserts along the Colorado River.

Flight: August to September.

Distribution: Riverside and San Bernardino Counties, no recent records have been reported. This may be because few are collecting or watching butterflies in this very warm part of the southeastern California deserts.

43. Sandhill Skipper--*Polites sabuleti* (Boisduval, 1852).

There are four subspecies in southern California. One occurs right on the Kern/Tulare County line in the Greenhorn Mts. and on the Kern Plateau and another was described from the Channel Islands in 1998.

a. Sandhill Skipper--*Polites sabuleti sabuleti* (Boisduval, 1852).

Updated status: Unchanged.

Habitat: Saltgrass flats and pastureland, coastal plains with saltgrass.

Flight: April to October.

Distribution: Inyo, Kern, Los Angeles, Orange, Riverside, San Bernardino, San Luis Obispo, Santa Barbara, San Diego, Tulare and Ventura Counties. This tends to be a common butterfly on the coastal plains with saltgrass and also occurs inland in the Kern River Valley and in the Owens Valley in Inyo County. Rare strays occasionally turn up in Tulare County along the Kern

River and this skipper is a resident in the Lamont Meadows area at the south end of the Kern Plateau.

Records: Tulare County: Lamont Meadows (Chimney Peak road), May 20 and 21, 1983 (Sterling Mattoon); May 25 and Aug 16, 1985 (both KD).

b. Channel Islands Skipper--*Polites sabuleti channelensis* J. Emmel & T. Emmel, 1998.

Taxonomic note: This subspecies is distinguished from nominotypical *sabuleti* by its larger size and overall duller and darker appearance.

Southern California TL: Santa Barbara County: Santa Rosa Island, China Camp 50' elevation.

Updated status: This has been recognized as a distinctive subspecies and was named in 1998, otherwise unchanged.

Habitat: Sand dunes, saltgrass areas with frequent fog and high winds on the Channel Islands.

Flight: Late March-early September.

Distribution: San Miguel, Santa Rosa, Santa Cruz and Anacapa Islands.

Records: Santa Barbara County: Santa Rosa Island, Acapulco Canyon 400' May 12, 1989 and Mar 18, 1990 (TCE & JFE); Water Canyon, common July 4, 2011 (NL).

c. Tecumseh Skipper--*Polites sabuleti tecumseh* (F. Grinnell, 1903).

Updated status: This subalpine species occurs as far south as the Kern/Tulare County line in the Greenhorn Mountains near Sunday Peak and in meadows at Pine Flat at the south end of the Kern Plateau. This butterfly was not known to occur in those areas in 1973.

Habitat: Drier edges of subalpine meadows

Flight: June-August.

Distribution: Inyo, Kern and Tulare Counties.

Records: Tulare County: Greenhorn Mountains near Tobias Peak, Aug 7, 1995 (KD) and near Kern/Tulare County line in meadow just north of Sunday Peak, 7000' June 10 and 24, 1996 (KD). South end of Kern Plateau, meadow at Pine Flat June 2, 2011 (KD).

d. Chusca Skipper--*Polites sabuleti chuska* (W. H. Edwards, 1873).

Distribution: Imperial, Inyo, Kern, Los Angeles, Riverside, San Bernardino and San Diego Counties.

Updated status: Unchanged.

Habitat: Seeps, springs or watercourses in the deserts with saltgrass.

Flight: April through October.

Records: Inyo County: (Apparent *sabuleti-chuska* intergrades) Owens Valley along US 395 at Olancho, Aug 29, 1978 (KD); Lone Pine, May 7, 1992 (KD). **Kern County:** Mojave Desert: Cantil west side of Koehn Dry Lake, May 11 and 16, 1992 and Apr 29, 1993 (KD); West Rosamond Dry Lake, June 28, 1994 (GP). Sierra Nevada: at spring, 1-mile SW of Sageland, May 15, 1976 and common, Oct 13 and 21, 2008 (KD).

44. Sonora Skipper--*Polites sonora sonora* (Scudder, 1872)

Updated status: This species was rare in southern California using the earlier southern California boundaries. But this species enters Kern County in the Greenhorns near Tiger Flat and is common on the Kern Plateau.

Habitat: Wet meadows and streamsides.

Flight: Late May or June to mid-August.

Distribution: Kern, Los Angeles, San Bernardino and Tulare Counties.

Records: **Kern County:** Greenhorn Mountains: Tiger Flat area, June 11, 1996 and July 2, 2005 (KD). Sierra Nevada: At south end of the Kern Plateau at Pine Flat, July 5, 2003 (KD). **Los Angeles County:** Big Pines, San Gabriel Mts. 6850', (JFE). **San Bernardino County:** San Bernardino Mountains, Barton Flats, June 29, 1934 (C. Dammers). **Tulare County:** Big Meadow, June 15, 1976 and Aug 24, 1985 (KD); West of Sherman Pass at Alder Creek 6800', Aug 5, 1982 (KD); Greenhorn Mountains near Portuguese Pass, June 10-24, 1996 (KD). This butterfly is very common at many locations on the Kern Plateau.

45. Sachem or Field Skipper--*Atalopedes campestris campestris* (Boisduval, 1852).

Updated status: Probably unchanged but now known to be extremely abundant at Weldon in the Kern River Valley in late September and early October.

Habitat: Pastureland or disturbed areas with weedy edges in valleys.

Flight: Late March to early November.

Distribution: All counties.

Records: **Inyo County:** Owens Valley at Olancho along US 395, Aug 29, 1978 (KD). **Kern County:** San Joaquin Valley: Bakersfield June 22, 1976 and Aug 26, 1977 (KD); Tehachapi Mountains, at Frazier Park and Lake of the Woods, including dark form "tenebricosus" common, Oct 16, 2012 (KD). Kern River Valley: Weldon, Oct 23, 2013 including dark form "tenebricosus." **San Luis Obispo County:** Cuyama Valley, Sep 6, 1997 (KD), **Tulare County:** Greenhorn Mountains: Linn's Valley, Aug 4, 1997 (KD).

46. Umber Skipper--*Poanes melane melane* (W. H. Edwards, 1869).

Taxonomic note: John Burns (1990) moved this species from the genus *Paratrytone* into *Poanes*.

Updated status: Unchanged but we now know this species occurs sparingly in the southern Sierra Nevada

Habitat: City gardens in the coastal cities from San Diego to Los Angeles and northward. This species occurs in shaded areas along small streams inland, where this species can be scarce or rarely seen.

Flight: Year-round in the San Diego to Los Angeles region. In the southern Sierra Nevada these appear to be sharply double brooded: May-June and September-October.

Distribution: Kern, Los Angeles, Orange, Riverside, San Bernardino, San Luis Obispo, Santa Barbara, San Diego, Tulare and Ventura Counties.

Records: **Kern County:** Kernville, June 14 and 21, 1998 (KD). Kern Canyon at Hobo Camp (=Miracle Hot Springs), May 14, 1972 (KD) Erskine Creek Canyon E of Lake Isabella, May 23, 2001 (KD). **San Luis Obispo County:** Lopez Canyon, May 13, 1978 and May 17, 1981 (KD).

Tulare County: Upper Kern River, Roads End to Limestone Camp, Oct 1 to Nov 19, 2005 (KD), this species appeared and disappeared at this location abruptly following a major wildfire in 2002.

47. Woodland Skipper--*Ochlodes sylvanoides* (Boisduval, 1852).

There are four subspecies which occur in southern California. Three were described in the Systematics book in 1998.

a. Woodland Skipper--*Ochlodes sylvanoides sylvanoides* (Boisduval, 1852).

Updated status: Unchanged.

Habitat: Usually most common in the lower mountain areas but occurs up into the Transition Zones with mixed coniferous forest.

Flight: Late June to early October.

Distribution: Imperial, Kern, Los Angeles, Orange, Riverside, San Bernardino, Santa Barbara, San Diego, Tulare and Ventura Counties. This species tends to be very abundant but is probably scarce in Imperial County.

b. Santa Cruz Island Skipper--*Ochlodes sylvanoides santacruza* Scott, 1981.

Taxonomic note: This subspecies (Scott, 1981) has a dark often chocolate brown ventral hind wing with cream postmedian spots. The upperside is brown with distinct orange postmedian bands, several orange subapical dorsal forewing spots, and a broad orange band on the dorsal forewing costa and discal cell.

Southern California TL: Santa Barbara County: Santa Cruz Island: Central Valley.

Updated status: Probably unchanged. The Channel Islands are in a National Park.

Habitat: Well distributed on Santa Cruz Island.

Flight: Late April to late August.

Distribution: Santa Cruz Island, Santa Barbara County.

c. Santa Catalina Island Skipper--*Ochlodes sylvanoides catalina* J. Emmel & T. Emmel, 1998.

Taxonomic Note: This subspecies differs from subspecies *santacruza* and *sylvanoides* by its smaller size, lighter markings dorsally and ventrally (J. Emmel & T. Emmel, 1998b).

Southern California TL: Los Angeles County: Santa Catalina Island, Toyon Bay.

Updated status: Unchanged.

Habitat: Probably generally distributed on the Island

Flight: Late May to mid-August.

Distribution: Known only from Santa Catalina Island.

Records: Los Angeles County: Santa Catalina Island, Toyon Bay, May 29-31, 1981 (J. Bennett, Gill, Magano, Miller, Paddock, Johnson, Mercer, Moody & Chao); Avalon, July 10, 1929 (Don Meadows); Black Jack, June 28, 1930 (Don Meadows) and others in the type series.

d. Great Basin Woodland Skipper--*Ochlodes sylvanoides omnigena* Austin, 1998.

Taxonomic note: This Great Basin subspecies (Austin, 1998) is smaller and paler than the nominotypical *sylvanoides*. It has a tendency towards heavier marginal overscaling which enhances its paler aspect.

Updated status: This subspecies was only recently recognized as occurring as far south as southern California. It appears to be uncommon in Nine Mile Canyon and in the Kennedy Meadows area. Populations at Walker Pass in Kern County appear to be the nominate subspecies.

Habitat: Foothill woodland above the Mojave Desert.

Flight: July – September.

Distribution: Inyo and extreme SE Tulare Counties. I was surprised to find this subspecies ranges as far south as Nine Mile Canyon and the area south of Kennedy Meadows, an example of how sampling even “unattractive common species” can have its’ rewards.

Records: Inyo County: Nine Mile Canyon, Aug 23, 1983 (KD det. JFE) and Whitney Portal, Sep 1, 2002 (KD). **Tulare County:** Spring 5-7 miles south of Kennedy Meadows, Aug 3, 1981 and Sep 22, 2001 (KD).

48. Rural Skipper--*Ochlodes agricola* (Boisduval, 1852).

There are three subspecies in southern California. Subspecies *verus* was unseen for many years and some believed it extinct. It has been rediscovered at several localities and it is sometimes common.

a. **Rural Skipper--*Ochlodes agricola agricola*** (Boisduval, 1852).

Updated status: Unchanged.

Habitat: Foothill woodland in ravines that are well watered. This butterfly can also be common in well wooded canyons in the Coast Ranges.

Flight: April to early July.

Distribution: Kern, Los Angeles, Orange, Riverside, San Bernardino, San Luis Obispo, Santa Barbara, San Diego and Ventura Counties. This is the Coast Ranges subspecies.

Records: Kern County: Side canyon, Mil Potrero road approx. 1 mi south of Pine Mountain Club near Mt. Pinos, June 28, 2006 (KD), two specimens that are very lightly marked were collected. These are likely the very light inner Coast Ranges form of nominate *agricola* or possibly a westward extension of subspecies *verus*. This is a very rare species in the Frazier Park-Mt. Pinos area, seen at Cuddy Creek at Frazier Park, June 2, 2012 (KD). A small population in the Tehachapi Mountains near Cummings Creek, June 9 and 11, 1982 (KD) may be this subspecies or *verus*. **San Luis Obispo County:** Hi Mountain, common June 22 and 25, 1977 and June 2, 1984 (KD & AR); Lopez Canyon, May 13, 1978 and May 17, 1981 (KD).

b. **Forest Skipper--*Ochlodes agricola nemorum*** (Boisduval, 1852).

Updated status: Unchanged.

Habitat: Foothill woodland, especially in riparian areas.

Flight: May to mid-July.

Distribution: Kern and Tulare Counties. This is a Sierra Nevada subspecies.

Records: Kern County: Greenhorn Mountains: Cedar Creek, July 6 to 21, 1975; Old State road, June 20, 2002 and July 2, 2005; Kernville, May 19, 1980; Kern Canyon, Democrat Hot Springs, June 9, 1971 (all KD). **Tulare County:** Sherman Pass road E of Kern River at 4900', June 18, 1983 and June 25, 1985; south end of Kern Plateau at True Meadow, June 20, 1980; Greenhorn Mountains: Baker Point, July 24, 1995 (all KD).

c. **Verus Skipper--*Ochlodes agricola verus*** (W. H. Edwards, 1881).

Southern California TL: Kern County, Havilah.

Updated status: Now known to be much more widespread than just occurring at Havilah.

Habitat: This skipper can occur in elevated Mojave Desert canyons, is well distributed in the Piute Mountains and also occurs in the arid south end of the Sierra Nevada.

Flight: Late May to July.

Distribution: Inyo, Kern and Tulare Counties.

Records: Kern County: Southwest of Sageland in side canyon off Kelso Valley road, June 14 and 29, 1978 (common); Rocky Point along Kelso Valley road, May 26, and June 14, 1978 (KD); Piute Mountains, common near Bald Eagle Peak, 6200' July 21, 1978 (KD). **Inyo County:** Upper Nine Mile Canyon, May 25, 1985 (KD). **Tulare County:** Lamont Peak, June 25, 1982 (KD); Chimney Peak road 1 mi E of Lamont Peak, June 14, 1986 (KD).

49. Yuma Skipper--*Ochlodes yuma yuma* (W. H. Edwards, 1873).

Southern California TL: Inyo County: vicinity of Owens Lake with neotype from Darwin Falls. The LACM has a long series from Olancha which is on the edge of Owens Lake.

Updated status: This species was found in San Bernardino County in 1966, unknown to the Emmel's in 1973. The Emmel's questionnaire went to California collectors, not Arizona residents who also collect heavily in California. The status of *Ochlodes yuma* in Inyo County may have deteriorated because of increased drought and diversion of the Owens River to Los Angeles.

Habitat: Along water courses with the larval host, *Phragmites australis*.

Flight: Two broods: Late May-July; late August-September.

Distribution: Inyo and San Bernardino Counties with a single Tulare County record along the Kern River likely an accidental introduction.

Records: Inyo County: Streambeds in Alabama Hills along Whitney Portal road and stream in Lubken Canyon road, Sep 8, 1984 (KD & AR) and Sep 20, 1986 and many other dates (KD). Other known locations in the region include Olancha, Darwin Falls, Hunter Canyon, near Creek Canyon, near Whitney Portal, Haiwee Reservoir, Surprise Canyon- Panamint Range (Scott, Shields & Ellis, 1977). **San Bernardino County:** Colorado River Topock Marsh, 15 mi. SSE of Needles 500', Sep 1, 1966 (KR); Avawatz Mountains, 3 air miles WSW of Old Mormon Spring, June 18, 1989 (JFE & GP). **Tulare County:** Spring along roadside at Limestone Camp, July 3 and 9, 2005 (KD). This individual was seen but not captured during a butterfly count on the first date. I tentatively believed this was an individual of *yuma* but that seemed impossible. I returned on the latter date in hopes of finding this skipper and was able to capture the individual and confirm its identity.

50. Harbison's Dun Skipper *Euphyes vestris harbisoni* J. Brown & McGuire, 1983.

Taxonomic note: This subspecies was described in 1983. Emmel & Emmel (1973) mentioned this population appears distinct and is highly isolated from populations in northern California.

Southern California TL: 13.3 km east of Dulzura, north slope of Tecate Peak, elevation 500 m, San Diego County.

Updated status: This skipper has always been considered rare because of its specialized habitat and limited distribution. It is now considered to be a species of concern by California Fish & Wildlife, which now requires a special permit to do scientific research or collect this butterfly.

Habitat: This skipper typically flies where there is a seep or spring.

Flight: Mostly June with some late May and early July records.

Distribution: Orange, Riverside and San Diego Counties.

Records: Orange County: Silverado Canyon 1800', June 29, 1972 (Charles Sexton) and July 16, 1972 (Gary Felton). **San Diego County:** Black Mountain near Ramona, 2 mi west of Lake Sutherland, June 23, 2007 and June 2, 2013 (KS); Boden Canyon Ecological Preserve June 9, 2016 (BBX).

Swallowtails--Family Papilionidae.

51. Clodius Parnassian--*Parnassius clodius* near *baldur* W. H. Edwards, 1877.

Taxonomic note: While I used the name *baldur* for these populations, it must be noted that these Parnassians are generally smaller and whiter than populations further north in the Yosemite area. Many butterfly species become lighter in color as they reach the south ends of their ranges which many Sierran species do on the Kern Plateau.

Updated Status: This species is added to the southern California fauna by adding the Kern Plateau to the area covered as southern California., but I was also shocked to find it on the north facing slope of Baker Ridge in the Greenhorn Mountains just a few air miles N of Kernville in a place Jim Brock and I had visited several times without seeing this species before.

Habitat: These Parnassians fly below the the trail to Baker Ridge Lookout in the Greenhorn Mountains on very steep slopes with precarious footing. On the Sherman Pass road, these butterflies occur as low as the Alder Creek Crossing at 6800', and occur up to about 9000', often in well wooded streambeds or visiting mints on slopes above the road. Along the Cherry Hill road near Poison Meadow, they visit mint flowers right along the road.

Distribution: Kern (two sightings) and Tulare Counties.

Flight: Usually late June and the first three weeks of July.

Records: Kern County: Sight records for N of Tiger Flat, Greenhorn Mountains, June 24, 1961 (RES) and below Lake Isabella Dam, June 23, 1995 (John L. Richards). **Tulare County:** 5 mi. west of Siretta Peak (near Poison Meadow), June 16, 1974 (JB); side canyon upstream off Sherman Pass road, west of Sherman Pass above 8000', Aug 8, 1980 (KD); Cherry Hill road at Poison Meadow, 4 mi. N of Big Meadow, July 4 (FH) and July 5, 2003 (vouchers by KD); SE of Poison Meadow and 2 mi N of Horse Meadow, July 15, 2006 (KD & RPM); the most southern end of range known on the Kern Plateau. Greenhorn Mountains, several found on north slope of Baker Ridge 7000'+, July 4 and 24, 1995 (KD), southern limit of range for this species in the Greenhorns (Davenport, 1995).

52. Pipevine Swallowtail--*Battus philenor* (Linnaeus, 1771).

There are apparently two subspecies in southern California.

a. Pipevine Swallowtail--*Battus philenor philenor* (Linnaeus, 1771).

Updated status: This remains a regular stray to southern California, but with butterfly gardening in residential areas, there are now many more spring records, This species may now becoming a resident, and is at least transiently established at Claremont in butterfly gardens and elsewhere.

Habitat: This butterfly strays into our deserts and also to the coastal plains along the Pacific Ocean. This butterfly seems to be adopting city gardens that grow pipevines.

Flight: Formerly late summer and fall, now spring to fall.

Distribution: All counties except San Luis Obispo and possibly Santa Barbara.

Records: Kern County: San Joaquin Valley: Edison 2 mi E of Bakersfield, Sep 20, 1984 (KD). Sierra Nevada: Canyon south of Butterbrecht Peak, June 28, 1983 (seen, KD); Mojave Desert west end of Koehn Dry Lake in alfalfa field, July 8, 1992 (KD). **Los Angeles County:** Claremont, Mar 12, 2010 (Laura Camp) and San Marino, July 13, 2010 (Dave Wikle). **San Diego County:** San Diego near west side of Point Loma, Aug 27, 2012 (Pete Spino). **Tulare County:** near Kennedy Meadows, June 24, 1973 (seen JB and CS).

b. California Pipevine Swallowtail--*Battus philenor hirsuta* (Skinner, 1908).

Updated status: The below records came to light after the Emmels book was published. John Comstock apparently regarded his Santa Barbara County records as *hirsuta* and the photo from Cuyama appeared to be *hirsuta*.

Habitat: I have collected in See Canyon where Richard Skalski collected his two *B. philenor*. That coastal canyon has very luxurious plant growth and pipevine may be growing there.

Flight: This subspecies tends to have flights in the spring, another in the summer and there are occasional fall fliers.

Distribution: San Luis Obispo County: There were records of two adults of what appear to be this subspecies in See Canyon near Avila Beach, June 23, 1981 (Richard Skalski). **Santa Barbara County:** Santa Barbara Apr 11, 1911 (J. A. Comstock, LACM); Carpinteria Aug 11, 1956 (N. W. Baker), SBMNH (Miller, 1984(85); Cuyama, Salisberry Canyon Ranch, Apr 9, 2015 (photo Ellen Easten). **Tulare County:** It is possible a very small fresh individual of *philenor* seen at the parking area at Baker Ridge in the Greenhorn Mountains June 25, 1997 (KD) was *hirsuta*.

53. Baird's Swallowtail--*Papilio machaon bairdii* W. H. Edwards, 1866.

Taxonomic note: This butterfly was formerly given species status as *Papilio bairdii* but research done by Felix Sperling and others concluded that *bairdii* is better viewed as a *machaon* subspecies (Sperling, 1987). This is difficult for some to accept because *bairdii* is a predominately black butterfly with yellow bands that has occasional yellow forms (form "brucei") in the San Bernardino Mountains in southern California and in other states. *Papilio machaon* otherwise is a predominately yellow swallowtail which yellow form "brucei" does resemble.

Michael Fisher (2012) recently proposed a status change. which would make black subspecies *bairdii* a form of *brucei* W. H. Edwards 1895 which would now be given subspecies status (TL: Glenwood Springs, Garfield County, Colorado) because the latter more closely resembles *machaon* the parent species. However, a problem with that approach is that predominately black *bairdii* is what is at the end of a cline and range in the south, Glenwood Springs has both yellow and black forms in numbers so appears to be an intergrade population and the name *bairdii* has date priority over *brucei*. So the name *bairdii* is retained in this work in following with the rules of the International Commission of Zoological Nomenclature.

Interestingly, what is now known as the Desert Black Swallowtail (*Papilio polyxenes coloro*) was formerly known as a *Papilio bairdii* in J. A. Comstock's "Butterflies of California" book (1927).

Updated status: This swallowtail was unseen in the San Bernardino Mountains for several years according to reports on Leps Serves but Brett Badeaux and Robert Gorman photographed several individuals in that range on June 20, 2017. Their photographs were of both black and yellow individuals (form "brucei") which were shared with me. They chose not to share the specific locality because of conservation concerns. This was one of the few cases I've seen that a photograph without locality data was still very important!

Habitat: This swallowtail tends to fly in the higher transition zone in mixed coniferous forest and males frequently hilltop.

Flight: April to July, sometimes August in wet years.

Distribution: San Bernardino Mountains, San Bernardino County.

Records: San Bernardino County: This species is well known from many locations in that range. A record for "*P. bairdii*" in the annual Season Summary from Erskine Creek Canyon, Kern County, May 20, 2001 by Ken Davenport actually is a female *P. polyxenes coloro* with an unusual yellow abdomen and a spot on the hindwing like *bairdii*.

54. Black Swallowtail--*Papilio polyxenes* Fabricius, 1775.

There may be a record for the Eastern Black Swallowtail from Needles but this would be controversial.

Desert Black Swallowtail--*Papilio polyxenes coloro* W. G. Wright, 1905.

Taxonomic note: This swallowtail was formerly known as Rudkin's Swallowtail (= *Papilio rudkini*). Ferris & Emmel (1982) provided evidence that "*rudkini*" was actually a junior synonym of *coloro* and that this desert swallowtail is actually a subspecies of the Black Swallowtail, *Papilio polyxenes*.

Southern California TL: Riverside County: Colorado Desert of southeastern California: Whitewater Hill, Coachella Valley.

Updated status: Changed since 1973.

Habitat: Desert Mountain ranges where the hostplant Turpentine Broom grows. The host plant in the southern Sierra Nevada is *Tauschia parishii* (C. & R) Macbr. (Apiaceae). Males frequent hilltops and ridges and are often encountered in canyons.

Flight: The main flight is generally in the spring, but summer rains can trigger major emergences in the summer and fall.

Distribution: Imperial, Inyo, Kern, Los Angeles, Riverside, San Bernardino, San Diego and Ventura Counties (one record).

Records: **Inyo County:** Lake Diaz, Lone Pine May 1, 2011 (Robert Allen). Death Valley National Park: Hunter Mountain, June 3, 1980 (JFE & OS); Hanging Rock Canyon, Last Chance Range, May 18, 1984 (JFE); Dante's Peak 5704, Apr 19, 2016 (Mary Maki). Empasse Benchmark N end of Slate Range 3433', Apr 9, 2017 (Mary Maki). **Kern County:** Bakersfield, San Joaquin Valley, May 14, 1973 (KD); Piute Mountains: several in Erskine Creek Canyon east of Lake Isabella, May 20 and 23, 2001 (KD); east slope of Piute Mountains at rocky outcrop 4 mi west of Sageland, May 29, 2001 (KD). **Los Angeles County:** Junction Hwy. 14 & Vazquez Canyon road, Santa Clarita Oct 6, 1984 (Chris Hanzlik); Claremont Feb 17, 2015 (photo, Nancy Hamlet); Bob's Gap east side of the San Gabriel Mountains, Apr 18, 2015 (photo, David Horner). **Riverside County:** Moreno Valley in residential area, black form "clarki", Apr 30, 2017 (Rodney D. Kimoto). **San Bernardino County:** Needles near the Colorado River, May 26, 1973 (KD), this black female may be form "clarki" but closely resembles *asterius*. **Tulare County:** near top of Bald Mountain 9342', June 20, 1992 (KD); Greenhorn Mountains, Baker Ridge near Lookout 7253', July 4 and 24, 1995 (KD). **Ventura County:** Ojai, early instar in garden reared to adult, May 18, 2015 (photo Joneane Neville det. JFE and JGP).

55. Anise Swallowtail--*Papilio zelicaon* Lucas, 1852.

Updated status: Unchanged.

Habitat: Citrus groves, city gardens and mountains. Males commonly go to hilltops. This species range meets and overlaps with that of *P. polyxenes coloro* on the east slopes of several mountain ranges at the west ends of the Colorado and Mojave Deserts.

Flight: Late February to early November.

Distribution: All counties except Imperial.

56. Indra or Short-tailed Black Swallowtail--*Papilio indra* Reakirt, 1866.

There are seven subspecies in southern California.

a. Phyllis' Swallowtail--*Papilio indra phyllisae* J. Emmel, 1982.

Taxonomic note: This subspecies has relatively wide yellow bands and resembles *P. indra nevadensis* Emmel & Emmel (1971) and has longer tails than nominotypical *indra*. This subspecies seems most closely related to the *P. indra* population found further north in the central Sierra Nevada (J. Emmel, 1981).

Southern California TL: Kern County: Butterbredt (=Butterbread) Peak and ridge running to the southwest 4900-5900’.

Updated status: Many new localities for this butterfly have been found since 1973. This butterfly was called *Papilio indra indra* in the southern California book, but differs as stated above. The status of this butterfly at and around the type locality, Butterbredt Peak is not good. Looking downwards from the summit of Butterbredt Peak at about 5900’, one can see that wind farms on the nearby privately-owned peaks and ridges and service roads built on these now private lands have obviously damaged the *indra* habitat and number of *indra* on Butterbredt Peak as well as those peaks and ridges to the southwest, entry is forbidden on those lands. Sometimes “green energy” may not be so good for the birds and butterflies of an area. The Audubon Society fought to keep windfarms out of this area but lost in court. This area is a migratory route for birds, at risk by the moving blades of the wind turbines. Newspaper reports have verified that birds have been seriously affected as well.

Habitat: Desert mountains in the southern Sierra Nevada or the arid eastern slopes of the Piute and Greenhorn Mountains. This butterfly is very easily seen below the summit of Bald Mountain Lookout 9400’ off the Sherman Pass road, several miles east of Sherman Pass. This butterfly favors sandy soils and rocky outcrops or slopes. The host plant is *Tauschia parishii*.

Flight: As early as the last week of March and as late as mid-August. There is sometimes a small second brood in wet years.

Distribution: Southern Inyo, Kern and Tulare Counties.

Records: **Inyo County:** Nine Mile Canyon 1.5 mi below Tulare County line, Apr 19, 2003 (KD); up grade to Whitney Portal, June 18, 2006 (seen, KD); Cottonwood Canyon south of Lone Pine May 28, 1974 (JFE). **Kern County:** Tom’s Hill and ridge to the southwest, May 15, 1976 (JB & KD); summit area of Butterbredt Peak May 21, 1988 (KD, AR & RPM). Piute Mountains, several on E slope at rocky outcrop 4-5 miles west of Sageland, May 29, 2001 (KD). **Tulare County:** Greenhorn Mountains: Baker Ridge Lookout 7253’, July 4, 1998 (KD) and July 3, 2004 (KD & BG). Kern Plateau: Bald Mountain, July 10, 1982 and June 21, 1985 (KD); rocky outcrop about 1 mi west of Sherman Pass, July 3, 2010 and June 12, 2012 (KD).

b. Edward’s Swallowtail--*Papilio indra pergamus* Hy. Edwards, 1874.

Southern California TL: Near Santa Barbara corrected to Devil Canyon, about 11 km NNW of San Bernardino, San Bernardino Mts. and County.

Updated status: Unchanged except there are apparently no valid records for Santa Barbara County so the type locality has been emended.

Habitat: Drier mountain summits with sandy soils that support the host plants (*Tauschia arguta* (T. & G.); *T. parishii* and *Lomatium lucidum* (Nutt.) Jeps. (Apiaceae)) growth.

Flight: Last week of March to the last week of June.

Distribution: Los Angeles, Orange (very rare), Riverside, San Bernardino and San Diego Counties.

Records: **Los Angeles County:** Sunset Peak near Mt. Baldy, May 1, 2011 (David Horner).

Orange County: Santa Ana Mountains: Modjesta Peak, 5496’, May 5, 1963 and Santiago Peak 5687’, May 5, 1963 (Stan Dvorak). **Riverside County:** Apple Canyon 6 mi north of Lake Hemet 5400’, June 24, 2007 (Dave Wikle). **San Bernardino County:** San Bernardino Mountains, Onyx Peak 9200’, June 15, 2004 (BG). **San Diego County:** Laguna Mountains, Noble Canyon, Mar 23, 2014 (KS); Garnet Peak, common May 3, 2017 (Mike Mulligan).

c. Panamint Mountains Swallowtail--*Papilio indra panamintensis* J. Emmel, 1982.

Taxonomic note: This subspecies seems most closely related to *P. indra martini*. The wings in *panamintensis* have a deep jet-black ground color whereas in *martini*, the ground color is dull black. The light markings on the wings are pale yellow in *panamintensis* and cream in *martini*. The forewing row of markings is much narrower in *martini*, often obsolescent; whereas, it is well developed in *panamintensis*. See the original description for more details (Emmel, 1981).

Southern California TL: Inyo County: Thorndike Campground, Wildrose Canyon 7400,' Panamint Range, larvae collected June 16, 1974 and June 20, 1976 (JFE) and reared to adult.

Updated status: Unchanged since original description was 9 years after the Emmel's book appeared.

Habitat: High peaks with sandy soils with *Lomatium parryi* (Apiaceae), the sole larval host at high elevations in the Panamint Mountains.

Flight: May to mid-August.

Distribution: Inyo County.

Records: Inyo County: Panamint Range: Rogers Peak Summit 9994', July 10, 1978 (JFE); summit of Telescope Peak 11,049' Panamint Range, May 25, 1974 (Steve Bellinger); Mahogany Flat, 8143', Panamint Range, May 25, 1974 (James Wells); Mahogany Flat 8300', Aug 11, 1974 (James Wells). Tin Mountain summit 8953', Cottonwood Mountains, July 2, 1979 (JFE & OS); ridge above Last Chance Spring 7000', Last Chance Range, June 21, 1977 (Derham Giuliani) Locations for this subspecies are now inside Death Valley National Park so collecting is restricted to those with NPS and state permits. An *indra* population in the White Mountains to the north has some individuals that resemble subspecies *indra*, *nevadensis*, *panamintensis* and *martini*.

d. Ford's Swallowtail--*Papilio indra fordii* J.A. Comstock & Martin, 1956.

Southern California TL: Granite Mountains, a few miles north and east of Apple Valley, San Bernardino County.

Updated status: Unchanged.

Habitat: Flies in several of the lower Mojave Desert mountain ranges where the larval host *Cymopterus panamintensis* C & R grows. This wary and fast flying butterfly flies in jumbles of boulders and is hard to approach by either a collector or watcher.

Flight: Late February to early May.

Distribution: Riverside and San Bernardino Counties.

Records: Riverside County: Joshua Tree National Park: E end Cottonwood Mountains, Apr 9, 1980 (JFE). **San Bernardino County:** Hill 2154' 3.5 miles SE of Newberry Springs, Apr 6, 1993 (RLL & WLS). Calico Mountains, hills above Calico Ghost Town, seen Apr 10, 1978 (KD); Granite Mountains near Lucerne, May 2, 1980; Apr 12 and 16, 1982 and Mar 12, 1983 (all KD).

e. Martin's Swallowtail--*Papilio indra martini* J. Emmel & T. Emmel, 1966.

Southern California TL: Gilroy Canyon, elevation 5000', Providence Mountains, San Bernardino County.

Updated status: The Providence Mountains have been placed in the eastern Mojave Preserve. Collecting this swallowtail in any life stage is not allowed even by permit.

Habitat: High peaks and canyons in this desert mountain range. The host plant is *Lomatium parryi*.

Flight: Late March to late April.

Distribution: San Bernardino County in the Providence Mountains.

f. Pygmy Swallowtail--*Papilio indra pygmaeus* J. Emmel, T. Emmel & Griffin, 1998.

Taxonomic Note: This subspecies is distinguished by its small size, tapering postmedian band on the hindwing with an irregular outer border, and general darkening of the hindwing in the area of the anal angle as compared to other *P. indra* subspecies. The name *parvindra* was substituted for *pygmaeus* in error in the Pelham Catalogue (2008), but per Pelham (email to Desert Leps, March 28, 2018), the name *pygmaeus* is available.

Southern California TL: San Bernardino County: Eastern Mojave Desert, Dead Mountains NNW of Needles, peak of Mt. Manchester 3560-5600’.

Updated status: Unchanged.

Habitat: Mojave Desert at Dead Mountain, difficult to reach on foot in hostile terrain with poisonous snakes.

Flight: Likely March and April.

Distribution: Found only at the type locality.

Records: San Bernardino County: Dead Mountains on Mt. Manchester 3600’, Apr 3, 1993 (JFE & Bruce Griffin); Apr 8 and 10, 2005 (Michael Leski).

g. Limestone Indra Swallowtail--*Papilio indra calcicola* J. Emmel & Griffin, 1998.

Taxonomic note: This subspecies (J. Emmel & Griffin, 1998) is most similar to *P. indra nevadensis* (Emmel & Emmel, 1971, 1974) of central Nevada, but differs from it by its slightly smaller size, paler yellow markings and much darker fifth instar larvae.

Updated status: Described since 1973.

Habitat: Desert mountain ranges in or near Death Valley National Park where the hostplant *Lomatium scabrum* (taxonomy unsettled) grows.

Flight: Early April to early May.

Distribution: Most of the range of this subspecies is in Nevada but it does occur in the eastern mountains ranges of the Death Valley region (Grapevine and Nopah Ranges) in Inyo County.

Records: Inyo County: Nopah Range May 11, 1991 (seen hilltopping, JGP).

57. Western Giant Swallowtail--*Papilio rumiko* (Shiraiwa, Cong and Grishin, 2014).

Taxonomic Notes: Recently, work by Kojiro Shiraiwa, Quian Cong and Nick V. Grishin (2014) led to the discovery that what was being called the Giant Swallowtail in much of the southwestern United States and Mexico is actually a smaller sized sibling species that overlaps ranges with the more eastern ranging Giant Swallowtail *Papilio cresphontes* (Cramer, 1777) in central Texas and parts of Mexico. Shiraiwa, Cong & Grishin put this species in the genus *Heraclides* Hubner (1819), used as a subgenus by Pelham.

Updated status: This swallowtail has expanded its range into San Diego, Orange, Los Angeles, Santa Barbara and Ventura Counties since 1973. This species has not colonized Kern and Tulare Counties but there are a few reported sight records in Kern County.

Habitat: Citrus groves and city gardens in areas with abundant plantings of citrus.

Flight: March to November.

Distribution: Imperial, Kern (sightings only), Riverside, Los Angeles, Orange, Riverside, San Bernardino, Santa Barbara, San Diego and Ventura Counties.

Records: **Kern County:** Sight records only, east of Edison at Comanche road, Jun 21, 1983 (RPM); west of Bakersfield, Hwy. 65 at James road, May 17, 1984 (RPM) and Interstate 5, 5 mi N Laval road, June 18, 2012 (JFE). **Los Angeles County:** Long Beach, July 8 and Aug 12, 1998 (C. P. Slater); near Beverly Center, central Los Angeles, Aug 25, 2013 (Glenn Gorelick).

Orange County: Garden Grove, July 24 and Aug 29, 1994 and Sep 11 and 13, 1996 (W. P. Sochor); Irvine, Sep 14, 2010 (Suzi Cassidy); San Clemente, Aug 13, 2016 (RG & KD).

Riverside County: Blythe, Oct 28, 1973 (KH). **Santa Barbara County:** Stowe House, Santa Barbara City Park, Aug 18, 2003 (Wanda Dameron & FH); West Goleta, Storke Ranch, Aug 22, 2010 (NL) and Aug. 22, 2015 (NL); Santa Barbara near the Mission, Nov 8, 2014 (Mary Shepherd) and Santa Barbara, Sep 15, 2015 (Rebecca Coulter) and Lompoc, Mission Hills, Oct 3, 2014 (NL). **San Bernardino County:** Needles, June 1, 1974 (Gary File). **San Diego County:** Wild Animal Park SE of Escondido, "mid-September" and Encinitas near coast, Sep 21 and 25, 1991 (S. Forbes); Rancho Santa Fe, Apr 14 and 15, 1994 (RES); Rincon, in citrus groves Oct 2, 2011 (MW). **Ventura County:** Camarillo, May 9, 2007 (JGP); Ventura, Sep 8, 2007 (Tom Dimock) and Oct 1, 2015 (Don DesJardin); Thousand Oaks in Conejo Valley Botanic Gardens, Oct 11, 2015 (Mary Maki).

58. Western Tiger Swallowtail--*Papilio rutulus rutulus* Lucas, 1852.

Updated status: Unchanged.

Habitat: Cities, riparian canyons and watercourses.

Flight: March-September.

Distribution: All counties. The Imperial County record may be doubtful or an accidental import. This is a common species outside the deserts.

59. Pale Swallowtail--*Papilio eurymedon* Lucas, 1852 (1805).

No subspecies have been described yet but there has been geographic variation recognized.

a. Pale Swallowtail--*Papilio eurymedon eurymedon* Lucas, 1852 (1805).

Taxonomic note: Since the type locality is in the northern Sierra Nevada, the Sierran populations would be the nominotypical subspecies.

Updated status: Unchanged.

Habitat: Mountains in riparian canyons or along streams. Males often go to hilltops.

Flight: In the Sierra Nevada: late May to mid-July.

Distribution: Kern and Tulare Counties (Kern Plateau).

Records: **Kern County:** Greenhorn Mountains: Shirley Meadows, July 6, 1975 (KD) Cedar Creek off SR 155, July 6 and 11, 1975; Tiger Flat road, June 25, 1995 (KD). **Tulare County:** Bald Mountain Lookout, July 10, 1982 and June 21, 1985 (KD); Pine Mountain area, July 10, 1983; Sherman Pass area, July 10 and 24, 1982 (KD); Sherman Pass Road, at Alder Creek 6800' June 18, 1983 and July 3, 2005 (KD).

b. Pale Swallowtail--*Papilio eurymedon* Lucas, 1852 (1805), Coast Ranges segregate.

Taxonomic note: The Coast Range populations have been noted to be more yellowish or cream colored than the Sierran ones.

Updated status: The difference in phenotype has only been recognized recently.

Habitat: Wooded areas along the coastal plain and mountain ranges and riparian canyons.

Flight: February-September.

Distribution: Imperial (a single stray), Kern, Los Angeles, Orange, Riverside, San Bernardino, San Luis Obispo, Santa Barbara, San Diego and Ventura Counties.

Records: Imperial County: Brawley, June 26, 1967 (S. S. McKown), a single stray. **Kern County:** Mt. Pinos, July 14, 1970 and July 5, 1973; N side of Mt. Pinos near Pine Mountain Club, June 11, 1987; Frazier Park, June 2, 2012 (KD); Mt. Abel summit, May 12, 2012 (KD).

Riverside County: Chino Canyon near Palm Springs, Oct 17, 1976 (KD), following a major hurricane. **Ventura County:** Frazier Mountain on hilltop near Chuchupate Camp, Oct 4, 1985 (KD). This species tends to be common in montane habitats in the Coast Ranges and in the Los Angeles Basin southward.

60. Two-Tailed Tiger Swallowtail--*Papilio multicaudata pusillus* Austin & J. Emmel, 1998.

Taxonomic note: California populations are smaller than those from Arizona, Colorado, New Mexico and Southern Nevada and were named *pusillus* (Austin & J. Emmel, 1998b). The name refers to this subspecies smaller size. However, Michael Fisher (2012) noted that the spring brood of *multicaudata* W. F. Kirby, 1884 with the nominotypical subspecies tend to be the same size as *pusillus* in their spring brood, something I have also noted at Cottonwood, Yavapai County, Arizona. Second brood *pusillus* are much larger than the first like nominotypical *multicaudata*, but a problem is that the larger second brood of “*pusillus*” are quite scarce and there are few collected individuals to evaluate Fisher’s hypothesis. Fisher proposed that the name *pusillus* is not really a valid name for a subspecies, but rather the smaller spring brood which he and James Scott named: *Papilio multicaudata* form “*minimulticaudata*”. The name *pusillus* remains in use in this publication pending resolution of this matter.

Updated status: This species appears to have become markedly scarcer in the past 30 years. Colony sites seem vulnerable to plant succession.

Habitat: Dry montane canyons with a stream.

Flight: Late March to early September.

Distribution: Imperial, Kern, Los Angeles, San Bernardino, San Diego, Tulare and Ventura Counties.

Records: Kern County: Greenhorn Mountains, Cedar Creek at SR 155, June 28, 2014 (SR & KD); Tehachapi Mountain Park, July 3 and 17, 2014 (KD). This species had not been seen much at these localities in several years. **Tulare County:** Several at Sherman Pass road at Alder Creek 6800’, July 3 and 9, 2005 (KD). This was a transient colony that appeared after a forest fire in 2002 and this butterfly disappeared soon after 2005. Plant succession seems a key factor at this locality for many butterflies.

Sulphurs, Whites, Orange-tips and Marbles--Family Pieridae.

61. Lyside Sulphur--*Kricogonia lyside* (Godart, 1819).

Updated status: California now has three records, one recently.

Habitat: These butterflies are rare strays from Mexico or Arizona.

Flight: Strays are likely during large movements into SE Arizona.

Records: Imperial County: 3 miles east of Calexico, July 15, 1972 (Kilian Roever); Lower Devil’s Canyon, Apr 3, 2013 (MW). **Orange County:** Doheny Palisades, Sep 15, 1935, probably by Charles Rudkin.

62. Dainty Sulphur or Dwarf Yellow--*Nathalis iole* Boisduval, 1836.

Distribution: All counties. This is a very common species in several counties in which records are not shown.

Updated status: This species does establish transient populations, even in the southern Sierra Nevada at Lake Isabella, Kern County in 2017 and in the Coast Ranges in the Sierra Madre Range in Santa Barbara County consistently.

Habitat: Dry wastelands, often in the deserts but even at higher elevations in mountains.

Flight: Late February into November.

Records: **Kern County:** Southern San Joaquin Valley at Edison 2 mi E of Bakersfield, several Sep 22 and 23, 1992 (KD); Lake Isabella at Wofford Heights near Tillie Camp and Hanning Flat near Weldon, transient populations, Sep 28 to Nov 22, 2017 (KD). **Los Angeles County:** Los Angeles, Palos Verdes Peninsula, Nov 8, 2014 (Robert Wuttken); Old Ridge Route road (common), Apr 28, 2015 (KD). **San Luis Obispo County:** Arroyo Grande, May 18, 2009 (WB). **Santa Barbara County:** More Mesa, Aug 6, 2005 (NL); Sierra Madre Range: Santa Barbara Canyon at mouth of Dry Canyon, Apr 20, 2006 and Feb 18, 2015 (several KD & SR). Santa Cruz Island, Scorpion Anchorage, Nov 21, 2015 (NL), new for the Channel Islands. **Tulare County:** Cannell Creek just N of Riverkern, Oct 22, 2005 (KD); one-half mi N of Chimney Peak Ranger Station off Kennedy Meadows road, June 19, 2017 (KD). **Ventura County:** Ventura, Mar 31, 2016 (Tom Dimock); Dome Springs area, Lockwood Valley road, Mar 31, 2015 (KD).

63. Mexican Yellow--*Eurema mexicana mexicana* (Boisduval, 1836).

Updated status: This species appears to be showing up in southern California much less frequently in recent years, probably related to long-term drought.

Habitat: This species tends to turn up in wooded canyons with water.

Flight: April to May and September-October, usually in wet years.

Distribution: Imperial, Kern (rare strays only), Los Angeles, Orange, Riverside, San Bernardino, San Diego and Ventura Counties.

Records: **Kern County:** San Joaquin Valley: Lakeview, Mar 10, 1968 (Ed Sampson). Kern River Valley: Weldon, "late May" 1980 (CS), Piute Mountains 2.5 mi. south of Bodfish, June 2, 1973 and 3.5 mi. south of Bodfish May 18, 1992 (JB). **Los Angeles County:** Mt. Baldy Village, San Antonio Canyon, Nov 30, 2005 (BG). **Riverside County:** Joshua Tree National Park: Cottonwood Springs, Oct 27, 2014 (JZ). **San Bernardino County:** Joshua Tree National Park: Oct 26 and 27, 2014 (JZ & Marilyn Lutz). **San Diego County:** Lake Sutherland Dam, May 11, 2005 (KS).

64. Little Yellow--*Pyrisitia lisa* (Boisduval & Le Conte, 1830).

Updated status: While this species was reported even by Comstock (1927), it continues to be a very rare occasion when this species occurs in California. It is also very rare even in southeast Arizona.

Habitat: Desert scrub, often near water.

Flight: May, could also occur in the fall months following a major tropical storm.

Distribution: Riverside, San Bernardino and San Diego Counties.

Records: **San Bernardino County:** Big Morongo Canyon, June 1, 1977 (collector unknown, voucher likely in CDFA collection in Sacramento per Ray Stanford); Big Morongo Canyon Nature Conservancy Preserve "May 1992" **Riverside and San Bernardino Counties,** (Robert

Allen, five collected). John F. Emmel reported seeing an individual along the Colorado River near Needles, **San Bernardino County** that same month and noted in a personal letter, “they (*lisa*) like to be where there is water.”

65. Mimosa Tellow--*Pyrisitia nise nelphe* (R. Felder, 1869).

Updated status: There are two records known for the state, both in the exceptional water year 1992. This species is irregular and usually rare even in southeast Arizona.

Habitat: Desert scrub, often in canyons where there is water.

Flight: April-May but could occur in the fall months following a major tropical storm.

Distribution: Orange and San Bernardino Counties.

Records: **San Bernardino County:** Chemehueyi Mountains, Apr 18, 1992 (JFE). **Orange County:** Trabuco Canyon, Santa Ana Mountains, May 13, 1992 (JFE).

66. Sleepy Orange--*Abaeis nicippe* (Cramer, 1779).

Taxonomic note: I follow Pelham (2008) in placing this species in the genus *Abaeis*. Formerly it had been placed in the genus *Eurema*.

Updated status: This species is now known to to be a resident species in Kern County, sometimes common by the thousands in the Cantil area where *Cassia armata* grows abundantly. This butterfly also appears to overwinter along the Kern River in the southern Sierra Nevada at times with January and February records noted below. It also occurs with regularity in Inyo County and strays north on the coastal plain and into the coast ranges and strays into the southern San Joaquin Valley as far north as Tulare.

Habitat: Deserts and well watered mountain canyons.

Flight: February to November.

Distribution: All counties.

Records: **Inyo County:** Surprise Canyon, Panamint Mountains, July 28, 1983 (JFE); Lone Pine Creek near Lone Pine, Sep 8, 1984 (KD); Lone Pine Canyon, near Whitney Portal, Apr 30, 2017 (seen MW & KD). **Kern County:** Kern Canyon, Richbar, Jan 25, 1985 (KD); Mojave Desert: Cinco/Cantil area off SR 14 on slopes with *Cassia armata* and in alfalfa fields, June 24 to Sep 23, 1983 (all KD); Southern San Joaquin Valley: in east Bakersfield, Feb 13, 2015 (seen in yard, KD). **Santa Barbara County:** Sierra Madre Range: Dry Canyon, May 1, 2004 (JGP). **Tulare County:** Kennedy Meadows, June 8, 1985 and June 30, 1988 (KD); upper Kern River just north of Salmon Falls turnoff from Sierra Hwy, Oct 2, 2012 (KD); Sherman Pass road E of the Kern River at 5400', Oct 2, 2012 (KD); upper Kern River at Limestone Camp, Feb 4, 2015 (seen, KD), evidence of overwintering in the Sierra. **Ventura County:** Ventura. Nov 8, 2014 (Tom Dimock).

67. Common or Clouded Sulphur--*Colias philodice eriphyle* W. H. Edwards, 1876.

Updated status: This species may have disappeared from southern California, or it may be that many records for this species were actually misidentified yellow forms of *Colias eurytheme*. There are no recent reports of this species in the Imperial Valley.

Habitat: Wet meadows and alfalfa fields in the Owens Valley.

Flight: April-October.

Distribution: Imperial, Inyo, Santa Barbara, San Diego and Tulare Counties.

Records: **Inyo County:** John Emmel stated in a personal letter to me that there are several records of this species for Olancha near Owens Lake. **Tulare County:** Troy Meadows N of

Kennedy Meadows, July 14, 1985 (Tony Leigh det. JFE); 4 mi E of Sherman Pass in meadow, June 9, 2001 (KD).

68. Orange Sulphur--*Colias eurytheme* Boisduval, 1852.

Updated status: This species is much less common in the southern San Joaquin Valley than it was in the 1960's, no doubt because alfalfa is no longer a major crop because it requires too much water to grow.

Habitat: Unrestricted. This species uses many plants as larval hosts and is seen regularly at most localities so it should not be declared an "endangered species" despite the high percentage drop in numbers.

Flight: Spring to fall.

Distribution: All counties.

69. Harford's Sulphur--*Colias harfordii* Hy. Edwards, 1877.

Taxonomic note: The status of *harfordii* as a species or as a subspecies of *Colias alexandra* can be contentious. This sulphur often has three broods which would be unusual for *Colias alexandra*.

Southern California TL: Havilah, Kern County.

Updated status: This species does range north into the southern Sierra Nevada with records from the Piute Mountains, the Kelso Valley area and northward into the Kern Plateau area north to Johnsondale (just north of the southern California boundary) and Sherman Pass road area. Such records may represent transient populations.

Habitat: Foothill woodland and mixed coniferous forest, canyons and road cuts.

Flight: March to October, but there are records for all months.

Distribution: Imperial, Kern, Los Angeles, Orange, Riverside, San Bernardino, San Luis Obispo, Santa Barbara, San Diego and Tulare Counties. This is a California endemic ranging at least as far north in the Coast Ranges as the summit of the Parkfield Grade road in the Diablo Range, June 4, 2000 and May 7, 2011 (KD) in Monterey and Fresno Counties.

Records: Kern County: One female in good condition Piute Mountains near Liebel Peak, July 21, 1978 (KD); E side of Piute Mountains 3-4 miles west of Sageland, Sep 25, 2009 (KD). Junction SR 58 and Cameron road on desert side of Tehachapi Mountains, Sep 22, 1988 (KD). Southern Sierra Nevada in Mojave Desert habitat: several in ravine 1 mi SW of Sageland just N of Kelso Valley, April 11, Sep 14, and 21, 2009 (KD), and SW of Sageland, Apr 11 to Sep 21, 2011 (KD). **Los Angeles County:** Hills west end of Palmdale in Mojave Desert, June 14-25, 1964 (KD); Lake Castaic and vicinity, July 15, 2005 (KD); Old Ridge Route road, July 5, 1978; June 25 and 30, 1993 (KD). **San Luis Obispo County:** Hi Mountain summit ridge, June 22 and 25, 1977 and June 2, 1984 and Apr 1, 1988 (all KD); Cuyama River, easternmost crossing SR 166, June 10, 1983 (KD). **Santa Barbara County:** Santa Cruz Island, Coches Prietos area, late June 1978 (Glenn Gorelich); Sierra Madre Range: Santa Barbara and Dry Canyons, Jan 30, 2009 EARLY and in numbers (KD); Bates Canyon (common), May 17 and June 22, 2009 (KD). **San Diego County:** West of Scissors Crossing, early spring form with narrow borders, Mar 26, 1976 (KD). **Tulare County:** Transient population on Sherman Pass road at Alder Creek 6800', July 3, 2005 and July 15, 2006 (KD); one female seen at south end of Kern Plateau at Chimney Peak Camp, June 19, 2017 (KD). **Ventura County:** Frazier Mountain, Oct 9, 1981, the first of several October records to prove *harfordii* can be triple brooded; Frazier Mountain, on hills near

Chuchupate Camp, June 30, 1977 and June 22, 1979 KD); Mt. Pinos, July 14, 1970 and May 25, 2005 (KD).

70. Southern Dogface--*Zerene cesonia cesonia* (Stoll, 1790).

Taxonomic note: The Emmel's and several other authors put the two dogface species in *Colias* with *Zerene* in parenthesis as a subgenus. Most authors (including Pelham, 2008) use *Zerene* as a genus now rather than a subgenus, as is done here.

Updated status: Populations in the Kern County Mojave Desert appear transient, the *Dalea* hosts and the butterfly seem dependent on years of good rainfall.

Habitat: The *Dalea* host grows in the deserts but the butterfly is sometimes seen in well watered montane localities. This butterfly can be seen in many habitats, even in mixed coniferous forest.

Flight: March to October.

Distribution: All counties except Tulare. There is a report of this species on the Kern Plateau, but there is no specific record and is here viewed as hypothetical.

Records: Inyo County: Virgin Spring Canyon, Black Mountains, Death Valley National Park, Apr 16, 1978 and Last Chance Range north end of Death Valley N. P., May 7, 1982 (JFE). **Kern County:** Mojave Desert: Koehn Dry Lake at Saltdale, Apr 18, 1978 (KD); Piute Mountains (sub-range of Sierra Nevada), mouth of Erskine Creek Canyon E of Lake Isabella (town), June 6, 1983 (KD); Butterbrecht Peak area and Upper Jawbone Canyon, May 6, 1978 (seen CS & KD); El Paso Mountains Apr 20, 1992 (JB). **Los Angeles County:** Castaic Lake, July 15, 2005 (KD).

Riverside County: Thousand Palms Canyon, Jan 3, 2017 (RPM). **Santa Barbara & San Luis Obispo Counties:** Cuyama River across both sides of the County line off SR 166 at bridge crossing, May 28, 1983 (KD), the individual was captured in SLO County and has that on the label. **San Luis Obispo County:** road up to Hi Mountain, May 27, 1989 (3 males, 1 female by Paul & Sandy Russell). **San Bernardino County:** Red Mountain (town), Apr 18, 1978 (KD); San Bernardino Mts. at Seven Oaks, June 15, 1985 (KD), this species apparently occurs with regularity at this locality. **Orange County:** Trabuco Canyon, Santa Ana Canyon, May 16, 1992 (JFE). **Ventura County:** Two females, Hall Canyon near Ventura, no dates (Peter Jump).

71. California Dogface--*Zerene eurydice* (Boisduval, 1855).

Taxonomic note: This species is also now placed in *Zerene* as a genus. The "Dogface" butterflies are distinctive, are they not?

This is the California State butterfly and is endemic to California. Only the males have the "dog-face" on the forewing whereas the previous species has the "dog face" in both sexes. This butterfly is common in many of the southern California mountain ranges near the coast but can be very rare or absent further inland.

Updated status: This species has been found sparingly in the Tehachapi Mountains and in the southern Sierra Nevada.

Habitat: Foothill woodland and mixed coniferous forest.

Flight: Multiple brooded in most of southern California but there is usually only one flight in the Tehachapi Mountains and on Mt. Pinos and in the southern Sierra where this species is very rare.

Distribution: Kern, Los Angeles, Orange, Riverside, San Bernardino, San Luis Obispo, Santa Barbara, San Diego and Tulare Counties.

Records: Kern County: Tehachapi Mountain Park near Oak Flat, July 4, 1969 (KD); Mt. Pinos July 4, 1973 and June 28, 1979 (KD); Mil Potrero highway near Pine Mountain Club, June 11, 1987 and June 22, 1989 (KD). **Los Angeles County:** Bob's Gap in Mojave Desert, Feb. 23, 1986

(JGP). **San Bernardino County:** common near top of Cajon Pass, highway 138, Apr 21, 2012 (KD). **Tulare County:** Greenhorn Mountains, a stray at Baker Ridge, July 8, 2001 (seen, FH); Kern Plateau along Cherry Hill road at Poison Meadow, July 4, 2004 (several seen, FH); west of Sherman Pass above 7000' July 8, 2000 (BG). **Ventura County:** Frazier Mountain below Chuchupate Camp, July 2, 1975 and June 22, 1979 (KD); Mt. Pinos, July 4, 1973 and June 30, 1975 (KD). There are many records for most Southern California counties but no records for Imperial or Inyo Counties.

72. Cloudless Sulphur--*Phoebis sennae marcellina* (Cramer, 1777).

Updated status: This species had been common but had become rare in most of the area between San Diego and Los Angeles County at the time the southern California book was published. It is now common again, perhaps because of the popularity of butterfly gardening.

Habitat: City gardens where *Cassia* is grown or in the deserts where *Cassia* grows. Strays can turn up almost anywhere even northward along the coast as far north as San Jose.

Flight: Year-round near the coast, April to October inland in the deserts in favorable years with ample rainfall.

Distribution: All counties. In 1983, 1984 and 1992, there were outbreak numbers in the Mojave Desert where *Cassia armata* was growing and in nearby alfalfa fields. They are now more regularly seen in city gardens in Los Angeles, Orange and San Diego Counties with *Cassia*.

Records: **Kern County:** San Joaquin Valley, Arvin, Mar 10, 1968 (Ed Sampson); Bakersfield, June 20, 1983 and several E of Bakersfield, May 22, 1992 (KD); Tehachapi Mountains at Twin Oaks, Caliente Creek and Caliente, common May 29 and June 13, 1992 (KD). Mojave Desert: Thousands in alfalfa fields in the Cinco-Cantil area and near *Cassia armata* host, June 24 to Sep 23, 1983 (KD). Such outbreaks in the desert occurred again in 1984 and 1992, most years, none are seen in this area. **San Luis Obispo County:** Los Osos, Aug 4 and Sep 19, 2014 (WB); Arroyo Grande, Sep 27, 2014 (WB).

73. Large Orange Sulphur--*Phoebis agarithe fisheri* (Hy. Edwards, 1883).

Updated Status: Until the past few years, this was one of the rarest strays to California. But recently, residents began growing this species larval host trees as ornamentals in their yards or in butterfly gardens.

Habitat: City gardens with a hostplant (including *Pithecellobium dulce*) nearby. In the Palm Springs area, hosts are grown commonly as ornamentals

Flight: Year-round but most common July to October.

Distribution: Imperial, Los Angeles, Orange, Riverside, San Bernardino and San Diego Counties. The Santa Barbara County record reported by Emmel & Emmel in 1973 has proven invalid (Nick Lethaby, personal comm.).

Records: **Los Angeles County:** Pico Rivera, Apr 18 and May 11, 2015 (BB); La Mirada Creek Park, Sep 17, 2015 (BB). **Orange County:** San Clemente, Sep 15 to Oct 7, 2015 (DBG); Aug 13, 2016 and Sep 19, 2017 (RG & KD); Irvine, Oct 29, 2015 (KS); Fountain Valley, Mile Square Regional Park, Nov 14 and Dec 20, 2016 (BBX). **Riverside County:** Indio, Dec. 9, 2008 (JB) and Oct 27, 2014 (Robb Hannawacker butterfly count group); Rancho Mirage in nursery, Jan 2, 2009 (Chris Durden); Palm Desert, Oct 11, 2009 (Dennis Walker) and Oct 26, 2011 (Greg Dean); Riverside, Nov 29, 2015 (Jennifer Lyer); Chiriaco Summit, Oct 27, 2014 (JZ). **San Bernardino County:** Big Morongo Preserve near Helpkamp Deck, June 21 and 30, 2017 (JZ).

74. Orange-barred Sulphur--*Phoebis philea* (Linnaeus, 1763).

Updated status: This butterfly was not recorded for the state in 1973. It has appeared in small numbers in recent years as rare strays or apparent transient populations. The adults are very hard to capture or photograph. Some have done well by rearing the larvae to adults.

Habitat: City gardens with the right *Cassia* host growing nearby.

Flight: Most records seem to be late July to October.

Distribution: Orange, Riverside, San Bernardino and San Diego Counties.

Records: Orange County: Costa Mesa, reared from larva from garden at home, emerged Dec 6, 2006 (Steve Alexander); Mission Viejo, Sep 17, 2015 (Kathy Balaam); Mile Square Regional Park, Fountain Valley, Aug 7, 2017 (BBX). **Riverside County:** Bundy Canyon 7 air mi SSW of Sun City, Sep 23, 1983 (Robert J. Ford). **San Diego County:** Encinatas, July 24, 2004 (David Marriott); San Diego, Aug 6, 2006 (KS); Encinatas, Nov 16, 2006 (BB); Sorrento Mesa, Aug 21 and 27, 2006 (KS).

75. Desert Orange-Tip--*Anthocharis cethura* (C. Felder & R. Felder, 1865).

Several new subspecies have been named (Emmel, Emmel & Mattoon, 1998c) or recognized since 1973 and has affected our views of distributions for subspecies, some of which remain unresolved and controversial.

a. Felder's Desert Orange-tip--*Anthocharis cethura cethura* (C. Felder & R. Felder, 1865).

Southern California TL: "Sonora" defined as vicinity of Los Angeles, Los Angeles County.

Updated status: Unchanged.

Habitat: Southern California desert scrub and hills and foothill woodland at the base of the east slopes of southern California mountain ranges. Males "hilltop" while females favor hillsides and canyon bottoms.

Flight: Late February-April.

Distribution: Imperial, Kern, Los Angeles, Riverside, Santa Barbara, San Bernardino, San Diego and Ventura Counties.

Records: Kern County: Above Cuddy Creek E of Frazier Park on bordering hillside, Apr 23 and 25, 1995 and Mar 28, 2004 (KD); Populations on the eastern desert slopes of the Tehachapi Mountains, 4.7 miles south of Oak Creek Pass off the Willow Springs road, Apr 28, 1998 (KD) and near Soledad Mountain south of Mojave, Mar 13, 1995 (KD), are apparently closer to this subspecies than *hadromarmorata*. **Santa Barbara County:** Sierra Madre Range: Santa Barbara and Dry Canyons Mar 10 & 29, 2005 (KD), these were called *morrisoni* but some are restricting that name to populations in the San Joaquin Valley; Ballinger Canyon on hill above recreation area, Feb 18, 2015 (KD). **Tulare County:** Common, upper Kern River on hilltop above entrance to Sequoia NF, Feb 1, 2003 (KD). John F. Emmel assigned this population to *morrisoni*, others (Andrew Warren and Jim Brock) believe these are closer to nominotypical *cethura*. **Ventura County:** Ridge E of Gypsum Mine, Quatal Canyon 5 mi E of SR 33, Mar 27, 1986 (WLS).

b. Catalina Orange-tip--*Anthocharis cethura catalina* Meadows, 1937.

Updated status: This butterfly was feared extinct in 1973, but there have been several recent records of this butterfly occurring in numbers at several localities on Santa Catalina Island.

Habitat: This species occurs on drier hills on Santa Catalina Island. Males go to hilltops.

Flight: Late February-April.

Southern California TL: Grand Canyon...White's Landing...Renton Mine...Salte Verde, Catalina Island defined as ridge between Renton Mine and Jewfish Point at head of Pebbly Beach Canyon, Los Angeles County. Holotype is from Grand Canyon.

Distribution: Known only from Santa Catalina Island, Los Angeles County.

c. Morrison's Orange-tip--*Anthocharis cethura morrisoni* W. H. Edwards, 1881.

Taxonomic note and updated status: The name *morrisoni* refers to a white colored subspecies that was viewed by Emmel & Emmel in 1973 as a form with higher amounts of green marbling below on the hind wings. Changes of type localities and the discovery that this species was still present in the southern San Joaquin Valley by Jim Brock contributed to an adjustment of how the name applied. In addition, populations in the San Joaquin Valley are usually large sized and females of this subspecies almost always lack orange tips, especially in the San Joaquin Valley (some have a light yellow- cream colored tips) leading to misdeterminations of *morrisoni* females as *Euchloe hyantis* or even *Euchloe ausonides*.

Emmel, Emmel & Mattoon (1998c) included *cethura* along the Kern River drainage in the Sierra Nevada and in the Piute Mountains as *morrisoni* (orange-tipped females are rare there) but this has proven controversial. Andrew Warren believes (pers. comm.) the Sierra Nevada populations are closer to the nominotypical *cethura* based on collected material at the McGuire Center collection and that the name *morrisoni* should only apply to San Joaquin Valley populations. At present we know that *morrisoni* as viewed by the Emmel's and S. O. Mattoon has blend zones with nominate *cethura* and *hadromarmorata* making published records as to subspecies arbitrary to ones view point of such issues.

Southern California TL: "Southern California" corrected to "the barren mesa lands, particularly the summits of small hills near the Kern River, Kern County. Others have stated the TL as the "bottomlands of the Kern River" and in my personal experience, *morrisoni* does occur there as well near Enos Lane southwest of Bakersfield. Strangely, this butterfly (even males) seems to often seek out ravines and depressions and not seek out hilltops as much as other subspecies.

Distribution: Kern, San Luis Obispo, Santa Barbara?, Tulare and Ventura Counties. If Kern River drainage populations in the southern Sierra Nevada are also assigned to *morrisoni*, then this subspecies is common in Tulare County.

Records: Kern County Kern River bottomlands of the Kern River near or at type locality (Enos Lane, this locality is now a wildlife sanctuary for endangered species, so the locality is safe from human development), common Mar 13, 1992 (KD); hilltops and roadsides (SR 58) near McKittrick Mar 3, 7 and 22, 1980 (KD); Tule Elk Reserve and State Park Feb 27, 1980 (KD, under permit); southwest Bakersfield near Old River road and Campus Park Drive Mar 5 and 15, 1993, the colony site is now a housing tract. **San Luis Obispo County:** Temblor Range just across county line Apr 25, 1992 (KD). Carrizo NM on Caliente Range Apr 19, 2009 (JFE, TCE, KD, WLS, Sterling Mattoon, Paul Johnson II and others under permit). **Tulare County:** There is a record in the San Joaquin Valley, 4 mi SW of Alpaugh, Mar 23, 1980 (WLS) very close to the Kern/Tulare County line; upper Kern River in hills above Goldledge Camp, Apr 25, 1976 (JB & Mike Smith) and stray to north of Roads End near Dam Mar 31, 2000 (KD). Assignment to subspecies of these Sierra Nevada populations is controversial! but females rarely have orange tips here which is a *morrisoni* feature used in its description as unique. **Ventura County:** Quatal Canyon 4000', 5 miles E of SR 33, Apr 14, 1983 (WLS).

d. Marbled Desert Orange-tip--*Anthocharis cethura hadromarmorata* J. Emmel, T. Emmel & Mattoon, 1998.

Taxonomic note: This is a white colored subspecies with heavy green marbling on the hindwings below (Emmel, Emmel & Mattoon, 1998c). It blends with the yellow-colored *mojavensis* to the southeast and nominotypical white *cethura* to the southwest. It primarily occurs in extreme northeastern Kern County and in Inyo County. The exact limits of where *hadromarmorata* ends and nominate *cethura* begins has proven controversial, partially because nominate *cethura* can also be heavily marbled.

Updated status: Described in 1998. Some may question whether this subspecies is valid.

Habitat: Mojave Desert hills or areas where the desert meets the east slope of the Sierra Nevada.

Flight: Late February to April.

Distribution: Inyo and Kern Counties.

Records: Inyo County: East side of the Sierra Nevada in lower Nine Mile Canyon, Mar 1, 2005 and at higher elevations there till mid-April that year (KD). Argus Mountains: Homewood Canyon, Apr 9, 2010 (KD) and Feb, 26, 2015 (KD); Lone Pine Creek (seen), near Whitney Portal, Apr 30, 2017 (KD). **Kern County:** Hills N of Red Rock Canyon, before state park boundaries were extended Apr 4 to 23, 1976. Sierra Nevada: East of Walker Pass Apr 23, 1976 (KD); South end of Kern Plateau on Chimney Peak road below road summit Mar 19, 2008 and 3.8 mi NE of SR 178, Mar 27, 2018 (KD). Tulare County: Sierra Nevada: Ridge to west of Lamont Peak area, 6900', Apr 29, 2001 (KD)

e. Mojave Desert Orange-tip--*Anthocharis cethura mojavensis* J. Emmel, T. Emmel & Mattoon, 1998.

Taxonomic note: This yellow colored subspecies was split from *pima* and described by Emmel, Emmel & Mattoon, 1998c. It occurs in most of the eastern Mojave Desert. It differs by being smaller in size and tends to be more extensively marbled on the underside of the hindwings. The apical dark area on the upperside tends to be much wider in subspecies *pima* and narrower in *mojavensis*.

Southern California TL: San Bernardino County: Providence Mountains, mouth of Bonanza King Mine Canyon 4200'.

Updated status: This was described in 1998. The status of this yellow subspecies has been questioned by those who believe in naming only from ends of a cline. Some view this as an intermediate between white *cethura* and yellow *pima*. Another matter of contention is defining where *mojavensis* becomes *pima*.

Habitat: Desert hills in the eastern Mojave Desert. Males go to hilltops, females are found in canyons and on slopes of desert hills.

Flight: March-April.

Distribution: Eastern Inyo, eastern Riverside and eastern San Bernardino Counties in the eastern Mojave Desert.

Records: San Bernardino County: Granite Pass on hills off Kelbaker road, Mar 25, 1978 and Apr 5, 1992 (KD); Providence Mountains near Foshay Pass, Apr 5, 1992 (KD); Dead Mountains and Mt. Manchester, Feb 20, 2005 (Michael Leski); Kingston Range, Mar 17, 2017 (BB).

f. Pima Orange-tip--*Anthocharis cethura pima* W. H. Edwards, 1888.

Taxonomic note: The Emmels recognized that *pima* was a *cethura* subspecies before many others did. Most yellow populations formerly called *pima* in the eastern Mojave Desert are now renamed *mojavensis*.

Habitat: Sonoran Desert Mountains and hills. Males go to hilltops while females favor slopes or canyons with the larval hosts.

Flight: March -April.

Distribution: Eastern Imperial, eastern Riverside Counties and eastern San Bernardino Counties. Most *pima* populations are in Arizona.

Records: San Bernardino County: Hill 1650', 2 mi. SE of R.J. Lake Havasu & SR 95, Mar 2, 2005 and Mopah Range, 7.1 mi. N of Vidal Jct., Hwy. 62, Mar 12, 2005 (all WLS).

76. Sara or Pacific Orange-tip--*Anthocharis sara* Lucas, 1852.

Taxonomic note: This appears to be a species complex with yellow "sara" at high elevations in the Sierra Nevada now elevated to species status (*Anthocharis julia stella*) and many populations in the eastern Mojave Desert are now *Anthocharis thoosa* (Stout, 2018).

a. Sara or Pacific Orange-tip *Anthocharis sara sara* Lucas, 1852.

Updated status: Unchanged.

Habitat: Foothill woodland and riparian canyons.

Flight: February to early June.

Distribution: All counties, rare in Imperial and southern Inyo Counties. There have been records of apparent strays to the Avawitz and Argus Mountains (Gordon Pratt) and the Dead Mountains (Mark Walker and Brian Banker).

Records: Inyo County: Nine Mile Canyon Mar 21, 2003 (KD) and Apr 12, 2005 (two, KD). There are no records of *sara* on the east slope of the Sierra Nevada north of Nine Mile Canyon until Lower Rock Creek Gorge in Mono County (which is likely *pseudothoosa*). Aside from being rare in Imperial County, this subspecies is common in most mountain ranges in non-desert areas and is occasionally even found in desert mountain ranges as isolated populations. San Bernardino County: Avawitz Mountains Apr 16, 2004 (GP); Dead Mountains E of Mt. Manchester: One tattered female May 1, 2004 (Mark Walker & Brian Banker), illustrated in Stout, 2018).

b. Gunder's Orange-tip--*Anthocharis sara gunderi* Ingham, 1933.

Southern California TL: Middle Ranch, Santa Catalina Island, Los Angeles County.

Updated status: It was formerly believed that the *sara* on Santa Cruz Island were *gunderi*, however John F. Emmel and others now believe these are more like mainland *sara* (Langston, 1979(81)).

Habitat: Foothill woodland.

Flight: February-April.

Distribution: Los Angeles County, Santa Catalina Island.

c. False Thoosa Orangetip--*Anthocharis sara pseudothoosa* Austin, 1998.

Taxonomic note: Todd Stout has had the *sara* complex under study and has found that *pseudothoosa* larvae are more like *sara* than *thoosa*. Subspecies *pseudothoosa* (Austin 1998b) differs from *thoosa* by having a paler orange apical patch on the forewing, the cell-end bar is considerably narrower and extends more narrowly to the outer margin on males. Some females have a yellowish flush on the hindwings.

Updated status: Recognized as different from *thoosa* since 1998.

Habitat: Mixed juniper woodland with Mojave Desert influences.

Flight: March-April.

Distribution: The inclusion of *pseudothoosa* here is based on records of “*sara*” or “*thoosa*” in Death Valley National Park (Grapevine Mountains) and the knowledge that *pseudothoosa* occurs in the Inyo and White Mountains (Inyo County) just north of our arbitrary southern California boundary.

Records: Inyo County: Death Valley area: Leadfield, Grapevine Mountains 4000-5000’, Apr 24, 1979 (JFE).

77. Southwestern or Thoosa Orange-tip--*Anthocharis thoosa near thoosa* (Scudder, 1878).

Taxonomic note: It was believed *pseudothoosa* Austin, 1998 was a *thoosa* subspecies but rearing studies by Todd Stout show the larvae are more like *sara*. Emmel & Emmel (1973) reported “The name *inghami* Gunder, which has been applied to these eastern Mojave populations...has a different phenotype, including uniformly dense, dark olive-green undersides.” Todd Stout and Richard P. Meyer have noted some populations in NW Arizona and in the eastern Mojave Desert of California can tend towards *inghami*. Todd Stout’s just published paper elevating *thoosa* to species status has a distribution map that shows both nominotypical *thoosa* and *inghami* occurring in California (Stout, 2018). The *thoosa* in California are near *thoosa* (the subspecies) but show blending with *inghami* (Stout, personal email April 2, 2018).

Updated status: Unchanged other than the taxonomy.

Habitat: Juniper woodland and hills, and riparian canyons in the eastern Mojave Desert.

Flight: February to early May.

Distribution: Eastern Riverside and San Bernardino Counties. Emmel & Emmel (1973) and Stout (2018) reported *thoosa* occurs in the Old Woman, Providence, Clark and Kingston Mountains in the extreme eastern Mojave Desert. It has also since also been found in the Mescal Range (Including Mountain Pass Summit off Interstate 15). This species may occur in Inyo County but at present it is unknown how far north true *thoosa* goes. There is a Season Summary record for “*thoosa*” at Leadfield and vicinity 4000-5000’ in the Grapevine Mountains, April 24, 1979 by John F. Emmel, now believed to represent *Anthocharis sara pseudothoosa*.

Records: Bernardino County: Kingston Range, Mar 17, 2017 (BB); Mescal Range near Mountain Pass Summit on Interstate 15, Mar 29, 2017 (MW); Providence Mountains near Mitchell Caverns State Park, Mar 29, 1980 and Bonanza King Mine Canyon Apr 4, 1988 (KD).

78. Gray Marble--*Anthocharis lanceolata* Lucas, 1852.

Status change: In 1973, it was thought all southern California *lanceolata* were subspecies *australis*. Now we know that while the Miracle Hot Springs population in Kern River Canyon is similar to *australis*, other populations in the Sierra Nevada are closer to the nominotypical subspecies or blending to it. There are now at least three subspecies in southern California. A population in Nine Mile Canyon in Inyo County is smaller than nominate *lanceolata* and could be either a *lanceolata* X *australis* blend or something similar to *desertolimbus*. There are too few collected specimens to draw conclusions.

a. Gray Marble--*Anthocharis lanceolata lanceolata* Lucas, 1852.

Updated status: We now know this subspecies is in southern California.

Habitat: Foothill woodland and mixed coniferous forest in riparian canyons with rocky slopes or canyon walls.

Flight: Second week of March at lower elevations to mid-July at higher elevations.

Distribution: Inyo, Kern, and Tulare Counties.

Records: Inyo County: Olancho Creek 5200', May 7, 1990 (JFE); Nine Mile Canyon, side canyon at middle elevations, May 2, 1994; Mar 21 and 28 and Apr 19, 2003; Apr 12, 2005 (all KD). **Kern County:** Piute Mountains: 2-3 mi south of Bodfish, Apr 3 to May 21, 1976 (KD); Piute Mountain road, road fork at road summit, Bodfish-Havilah road, May 30, 1979 and June 4, 2004 (JFE & KD). Greenhorn Mountains, east slope of range at Kernville, Apr 24, 1981 (KD); Sierra Nevada, south end of Kern Plateau, Pine Flat and Cannell VABM, June 6, 1986 and June 9, 1994 (KD). **Tulare County:** East of Kern River along Sherman Pass road from 4300' to 7600', June 25, 1985 (KD); Alder Creek crossing at 6800', May 22, 2012 (KD); Bald Mountain Lookout 9300' June 23, 1994 (KD); upper Kern River E of Ant Canyon, Apr 6 and 19, 2006 (KD).

b. Southern Gray Marble--*Anthocharis lanceolata australis* (F. Grinnell, 1908).

Southern California TL: "Arroyo Seco Canyon and Millard Canyon, Pacific slope of the San Gabriel Mountains, Los Angeles County."

Updated status: The populations at Frazier Park and at Owls Barn have not been seen in several years, likely because of long-term drought at those localities.

Habitat: Juniper/Oak woodland with rocky canyon walls and sagebush.

Flight: April-May.

Distribution: Southwestern Kern, Los Angeles, Orange, Riverside, San Bernardino and San Diego Counties. A population found in Nine Mile Canyon on the east side of the Sierra Nevada in Inyo County is similar to *australis* and *desertolimbus*.

Records: Kern County: Two miles east of Frazier Park on cliff face overlooking Cuddy Creek, Apr 11, 1986; scarce Apr 23, 1995 and several Apr 25, 1995 (KD). **Ventura County:** Quatal Canyon, 13 miles east SR 33, May 2, 1981 (WLS); ridge, hilltops and ravines near Owls Barn (common), May 7, 1983, and just emerging, Apr 11, 1986 (KD).

c. Desert Gray Marble--*Anthocharis lanceolata desertolimbus* J. Emmel, T. Emmel & Mattoon, 1998.

Taxonomic note: This newly described subspecies (Emmel, Emmel & Mattoon, 1998c) occurs along the western edge of the Colorado Desert and is closest in appearance to *australis*. It differs from *australis* by its smaller size and somewhat lighter markings. There are also some differences in the pattern of dark scaling on the hindwings below.

Southern California TL: San Diego County: one mile west of Scissors Crossing”

Distribution: Imperial, Riverside and San Diego Counties.

Flight: Mid- February-mid April.

Records: **Imperial County:** In-Ko-Pah Gorge, Mar 26, 1960 (KH). **Riverside County:** Cactus Trail, Santa Rosa Wilderness, Apr 3, 2010 (MW). **San Diego County:** One mile west of Scissors Crossing, Feb 1, 1958 and Mar 8, 1959 (OS); Culp Valley, Apr 1, 1996 and Mar 22, 2002 (Lynn & Gene Monroe).

79. Large Marble--*Euchloe ausonides* (Lucas, 1852).

Emmel & Emmel (1973) listed this species as possible for southern California in the Greenhorn Mountains but this species has not turned up there. It did turn up as a very rare butterfly in the Coast Ranges of San Luis Obispo County, and it is common on the Sierra Nevada Kern Plateau which was added to what is defined here as southern California. Two subspecies occur in the region.

a. Large Marble--*Euchloe ausonides ausonides* (Lucas, 1852).

Updated status: This species was unknown in southern California in 1973.

Habitat: Mixed coniferous forest with open grasslands and small streams.

Flight: Late March to early June.

Distribution: San Luis Obispo and Tulare Counties (Kern Plateau at lower elevations, blends with *transmontana* on Sherman Pass road at 6000-7500' elevation.

Records: **San Luis Obispo County:** Davis Road near Cholame on hill south of junction of Highways 41 and 46, Mar 29, 1996 (KD). Summit Santa Rita road, May 31, 2016 and Apr 22, 2017 (JG). **Tulare County:** Sherman Pass road at Dry Creek Canyon 4300', May 22, 2002 (PAO) and from near North Meadow Creek to near Alder Creek 6800', May 9-15, 2007 (common, KD), blending to subspecies *transmontana* at higher elevations.

b. Mountain Large Marble--*Euchloe ausonides transmontana* Austin & J. Emmel, 1998.

Taxonomic note: This subspecies occurs at higher elevations than nominotypical *ausonides* and both range south to the Kern Plateau with *transmontana* occurring as far south as Big Meadow about 10 air miles south of the Sherman Pass road. Subspecies *transmontana* differs by being smaller, has a narrower black apex on the forewings and lacks the yellow scaling often present in females and the creamy coloration on lowland *ausonides* (Austin & J. Emmel, 1998a).

Updated status: The high elevation subspecies reaches southern California on the added territory on the Kern Plateau.

Flight: May to early July.

Distribution: Tulare County (Kern Plateau).

Records: **Tulare County:** Big Meadow (Kern Plateau), June 25, 1972 (JB); June 15, 1976 and July 12, 1978 (KD); Sherman Pass road at Alder Creek 6800', June 25, 1981 and July 3, 2005 (KD); west of Sherman Pass along Sherman Pass road 7600-9000', May 31, 1986 and July 3, 2005 (KD).

80. Pearly Marble--*Euchloe hyantis* (W. H. Edwards, 1871).

Taxonomic note and status update. The “Mt. Pinos block segregate” and the “Peninsular Ranges segregate” never received taxonomic recognition and the “Mt. Pinos block segregate” has become very rare or absent in the past twenty years. Those segregates were no longer listed in the 1998 state checklist by Emmel, Emmel and Mattoon (1998h).

The status of the **Desert Marble** (*Euchloe lotta*) remains controversial. Jim Brock and I have both noted that *hyantis* and *lotta* both occur together along the Chimney Peak Road and in the Kennedy Meadows area on the Kern Plateau and that the broad forewing bar is frequent even on what should be *hyantis* at Bald Mountain summit 9400'. Scott & Opler (2017) noted that a series of *Euchloe hyantis* and "*Euchloe lotta*" that I had collected, now at the C.P Gillette Museum at Colorado State University were difficult to identify because the size of the cell bars at the end of the cell on the dorsal forewings and the amount of green marbling on the hindwings on the ventral surface were variable in both "species." However, questions remain regarding the interpretation of mitochondrial DNA results and the actual relationship between the two taxa in terms of whether it means the two are conspecific, or hybridizing.

a. Pearly or California Marble--*Euchloe hyantis hyantis* (W. H. Edwards, 1871).

Distribution: Inyo, Kern, Los Angeles, Orange, San Bernardino, San Luis Obispo, Santa Barbara, San Diego, Tulare and Ventura Counties.

Habitat: This butterfly tends to occur in steep rocky slopes along roads or in canyons.

Flight: March to mid- July

Records: **Inyo County:** Nine Mile Canyon, 1.5 miles below Tulare County line, Mar 28 and Apr 27, 2003 (KD). **Kern County:** Frazier Park, May 5, 1962 (JFE) and May 28, 1974 (KD); 2 miles east of Frazier Park on road cut at base of steep slope, Apr 11, 1986; Apr 15, 1993 and Apr 23-25, 1995 (all KD). **San Bernardino County:** San Bernardino Mountains: Hilltop at 9100' NW of Onyx Peak and Hwy 38, June 15, 1985 and June 13, 1994 (KD); singletons at Onyx Peak, June 13, 1994 and June 11, 2005 (KD). **San Luis Obispo County:** Caliente Range, Carrizo Plains NM, Apr 13 and 17, 1981 (WLS) and Apr 19, 2009 (JFE). **Tulare County:** Sierra Nevada: Lamont Meadows on hills flying in sagebrush hills with *Euchloe lotta*, Apr 19 and Apr 27, 2003 (KD) and upper Kern River N of Roads End to Limestone Camp along rocky canyon walls, Apr 7 and 21, 2001 (KD). The 2002 McNally Fire apparently destroyed this colony and no more would be found there until May 14, 2010 (KD); Bald Mountain Lookout 9400', July 10, 1982 and May 26, 2001 (KD). Greenhorn Mountains, Baker Ridge Lookout 7753', July 7, 1977 (JB). **Ventura County:** Hilltop on Frazier Mountain near Chuchupate Camp, May 20, 1980 and May 29, 1981 (KD); Owls Barn on hilltops and ridges, May 20, 1980 and May 7, 1983 (KD).

b. Martin's Marble--*Euchloe hyantis andrewsi* Martin, 1958.

Southern California TL: Crestline Highway near Lake Arrowhead, San Bernardino Mountains and County.

Status change: Back et al. (2011) considered that *Euchloe andrewsi* was an endemic local species and that there was a strong need for conservation and action. Frequent wildfires and prolonged drought have taken a toll on this butterfly and it now requires a permit from the State of California to study or collect *andrewsi*. There are other *hyantis* populations in the San Bernardino Mountains that are not *andrewsi* to confuse matters.

Habitat: Moister areas below the dam at Big Bear Lake and at Arrowhead Lake. Recent major fires have reportedly taken a serious toll on the populations there.

Flight: May-June.

Distribution: San Bernardino County: San Bernardino Mountains near Lake Arrowhead and below the Dam at Big Bear Lake.

81. Desert Marble--*Euchloe lotta* near *belioides* Scott & Opler, 2017.

Taxonomic note: See comments under *Euchloe hyantis* above. This may be a subspecies of *Euchloe hyantis*. Authorities differ on this issue. James Scott and Paul Opler noted that there could be two or more subspecies within what was called *lotta* which is more centered in the Rocky Mountains states. The lectotype for *Euchloe lotta* is Kanab, Utah (Opler, 2008). Treating *lotta* as a species here is based on the Pelham Catalogue and on the lectotype designation and synonymy given by Paul Opler (2008). Scientists working on this difficult group are hoping to use nuclear DNA to examine multiple genes to resolve relationships in the near future.

Updated status: Based on Scott & Opler (2017), the name *lotta* will not apply to California populations should *lotta* be used as a *hyantis* subspecies. The names combination would be *Euchloe hyantis* near *belioides*.

Habitat: Deserts, often in hills and canyons.

Flight: March-mid June.

Distribution: Imperial, Inyo, Kern, Los Angeles, Riverside, San Bernardino and Tulare Counties.

Records: Imperial County: In-Ko-Pah Gorge, Mar 26, 1960 (KH). **Tulare County:** Kern Plateau: Lamont Meadows on hilltop, Apr 19 and 27, 2003 (KD); Kennedy Meadows area, May 22 and June 25, 1982 (KD); hilltop 10 mi south of Kennedy Meadows, June 8 and 26, 1975 (JB). This marble tends to be commonly found in desert or arid mountains ranges bordering the deserts.

82. Pine White--*Neophasia menapia* (C. Felder & R. Felder, 1859).

Taxonomic note: Paul Opler reports that two individuals collected at Whitney Portal now at the Colorado State Museum have forewing lengths as long as *magnamenapia* from further east in the intermountain West. Therefore, the population of *menapia* at Whitney Portal in Inyo County may represent *magnamenapia* Austin (Austin1998b), although some individuals from there are smaller.

a. Pine White--*Neophasia menapia menapia* (C. Felder & R. Felder, 1859).

Updated status: The nominate subspecies was already in southern California in 1973, before *tehachapina* was described in 1998. But these butterflies are not seen every year and it may be questionable if this species is still in the Greenhorns or in the Sherman Pass area. Did the fires kill off the populations? Most of the Ponderosa Pine forests were destroyed by major fires. *Neophasia menapia* was common at Whitney Portal in 2014!

Habitat: Ponderosa Pine forests. Adults often stay high in the pines but can sometimes be easily observed on flowers.

Flight: Late June-August.

Distribution: Inyo, Kern and Tulare Counties in the Greenhorn Mountains and on the Kern Plateau. Nominate *menapia* does not occur south of these mountains, unless it turns up in the Piute Mountains.

Records: Inyo County: Whitney Portal, Aug 25, 1998 and six individuals, July 29, 2014 (KD). **Kern County:** Greenhorn Mountains south of Tiger Flat, July 11, 1981 (KD), common on butterfly count at Greenhorn Mountain Park and Alta Sierra on the same day (Rick Hewitt & Phil Nordin). **Tulare County:** Greenhorn Mountains: Balance Rock in July and August 1960 and 1961 (Weldon Kirk & John Luttrell). Sierra Nevada: Alder Creek 6800' on the Sherman Pass road, Aug 5, 1982 (KD); 3 mi west of Sherman Pass, July 13, 1981 and Aug 5, 1982 (KD); Troy

Meadows, July 11, 1985 (JGP). This species is very rare in the Greenhorns and in the southern Sierra Nevada.

b. Tehachapi Pine White--*Neophasia menapia tehachapina* J. Emmel, T. Emmel & Mattoon, 1998.

Taxonomic note: This subspecies is the palest and least marked member of the *menapia* complex with females tending to be more yellowish in ground color with a reduction of brown and pink markings and a duller shade of those markings (Emmel, Emmel & Mattoon, 1998c).

Southern California TL: “Kern County: Tehachapi Mts., canyon on the north slope of Double Mountain”

Updated status: The Tehachapi Pine White has become very scarce or absent in the past several years, likely because of prolonged drought.

Habitat: Ponderosa Pine forest, often with sagebrush and thistles.

Flight: Late June to August. I have found this butterfly as late in the season as August 27th (see two August records below). Emmel, Emmel & Mattoon (1998c) stated there were no records for August. Adults flying in August changed nectar sources and used milkweeds.

Distribution: Kern County. It occurs in the Tehachapi Mountain Park area only.

Records: Kern County: Tehachapi Mountain Park, July 7, 2014 (Dale Hallbritter); Aug 20, 1962; July 24, 1979 and Aug 27, 1983 (all KD).

83. Large Veined White--*Pieris marginalis venosa* Scudder, 1861.

Updated status: This butterfly was not treated as a regular butterfly of southern California in the Emmels’ book in 1973. The news that there was a series of specimens from Lopez Canyon at the Santa Barbara Museum of Natural History must have been received after the book was essentially written as mention of *Pieris “napi” venosa* was made in the back section of rarely recorded or questionable records. Now we know that species is widespread in that county and is often quite common.

Habitat: Shaded coastal woodlands and forests, often with a small stream.

Flight: Second week of February to early June (with occasional later dates).

Distribution: San Luis Obispo and Santa Barbara Counties.

Records: San Luis Obispo County: Little Falls Trail and Lopez Canyon, Feb. 24, 1978; May 13, 1978 and July 11, 1990 (KD); Cerro Alto Camp west of Atascadero, Apr 6, 1993 (KD); See and Prefumo Canyons, Mar 21 and Apr 4, 1994 (KD); Montana de Oro State Park, Mar 6, 2004 (WB); Santa Rita road SW of Templeton to road summit, Feb 11 to May 12, 2016 (JG); Cypress Mountain Drive in deep wooded canyon, May 28, 2016 (JG); Los Berros Canyon Road, Feb 17, 2018 (JG). **Santa Barbara County:** Coast Ranges: Quiota Creek, Feb 15, 2017 (William Van Dam, phoro); Mar 2, 2017 (NL) and Mar 3, 2017 (voucher, JGP).

84. Cabbage White--*Pieris rapae* (Linnaeus, 1758).

Updated status: Unchanged.

Habitat: City gardens and open moist areas and creeksides.

Flight: Year-round along the coast. March to November inland.

Distribution: All counties.

Habitat: City gardens and riparian areas.

Flight: Spring to fall.

Note: The following “whites” have been taken out of the genus *Pieris* and are now placed in the genus *Pontia*. Pelham shares the reason: I.C.Z.N. Opinion 278 placed this name on the Official List of Generic Names in Zoology as name no. 704.

85. Becker’s White--*Pontia beckerii* (W. H. Edwards, 1871).

Updated status: Unchanged.

Habitat: Deserts and arid montane habitats with the Bladderpod plant host. This species became transiently established in the southern San Joaquin Valley for several years. It regularly strays into the southern Sierra Nevada.

Flight: March to October but *beckerii* will even fly in January under the proper conditions.

Distribution: All counties.

Records: **Inyo County:** Two miles west of Lone Pine, May 7, 1992 (KD); Lone Pine Creek near Whitney Portal, Apr 30, 2017 (KD). **Kern County:** Tehachapi, Aug 20, 1962 (KD & Weldon Kirk); Walker Pass, May 10 & 12, 1976 (KD); south end of Sierra Nevada in Cantil area N side of SR 14, common Jan 30, 2009 (KD). **Los Angeles County:** Palmdale, June 14-25, 1964 (KD).

Orange County: Cuyamaca Peak Trail, July 29, 2012 (RG); James Dilley Preserve at Laguna Canyon, Apr 18, 2017 (BBX). **Tulare County:** near summit of Nine Mile Canyon, May 26, 2001 (KD); top of Bald Mountain Lookout 9400’, May 26, 2001 (KD); Sherman Pass road near Alder Creek 6800’, Aug 26 and Sep 9, 2014 (KD), this was a transient population, it usually does not occur there.

86. Checkered or Common White--*Pontia protodice* (Boisduval & Le Conte, (1830).

Note: Heavily marked spring form “vernalis” or heavily marked individuals at high elevation are often misidentified as the Western (*occidentalis*). So far as we know, that species does not occur in southern California. For a while it was believed Western Whites lived high in the San Bernardino Mountains. Reports of “Western Whites” near Sherman Pass have all been found to be heavily marked *Pontia protodice* thus far.

Distribution: All counties.

Updated status: Unchanged.

Habitat: Vacant fields, weedy areas, deserts and dry montane foothill woodland. This species can hilltop at high elevations, leading to confusion with *Pontia occidentalis*.

Flight: February to November.

87. Spring White--*Pontia sisymbrii* (Boisduval, 1852).

Two subspecies are found in southern California.

a. Spring White--*Pontia sisymbrii sisymbrii* (Boisduval, 1852).

Updated status: Unchanged except we have more records for Santa Barbara County and another subspecies has been described from the eastern Mojave Desert.

Habitat: This species inhabits areas with rocky canyons, steep slopes and road cuts in foothill woodland and in open mixed coniferous forests.

Flight: Late February to mid-July.

Distribution: All counties, very rare near the coast.

Records: **Imperial County:** In-Ko-Pah Gorge, Mar 12, 1960 (E. W. Brown). **Inyo County:** Whitney Portal area, May 7, 1992 and Apr 25, 2005 (KD); upper Nine Mile Canyon, May 2, 1994, lower canyon Mar 21 and 28, 2003 (KD). **Los Angeles County:** Little Rock Dam and vicinity, Mar 6 and 10, 2015 (KD). **San Luis Obispo County:** Paso Robles, Mar 16, 1894 (W.

Wright); Carrizo Plains NM, Mar 10, 2010 (Dave Wikle). **San Bernardino County:** Granite Mountains near Lucerne, Apr 12, 1982 (KD); Rock Corral, Apr 8, 1979 (KD). **Santa Barbara County:** Sierra Madre Range, Santa Barbara Canyon, Mar 24, 1986 (WLS) and Feb.12 and Apr 20, 2006 (KD); Dry Canyon, Mar 29, 2005 (KD) and Apr 20, 2006 (KD); Cachuma Mountain, San Rafael Mts., Apr 22, 2017 (NL). **Ventura County:** Hills near Owls Barn, May 20, 1980 and May 7, 1983 (KD).

b. Dark Veined White--*Pontia sisymbrii nigravenosa* Austin & J. Emmel, 1998.

Taxonomic note: This subspecies differs from nominotypical *sisymbrii* by its very dark black and crisply marked veins on the hindwing below and heavier markings on the upper wing surfaces (Austin & J. Emmel, 1998a.).

Updated status: This was described as a new subspecies in 1998, and it can be a common butterfly.

Habitat: Canyons and ridges in desert mountain ranges.

Flight: Early March to early May, depending on the season.

Distribution: Inyo and eastern San Bernardino Counties.

Records: **San Bernardino County:** Providence Mountains near Bonanza King Mine Canyon, Mar 25, 1990 (KD); Granite Pass, Kelbaker road, Mar 25, 1978 (KD).

Coppers, Hairstreaks and Blues--Family Lycaenidae (Leach).

88. Lustrous Copper--*Lycaena cupreus lapidicola* J. Emmel & Pratt, 1998.

Taxonomic note: This subspecies (J. Emmel & Pratt, 1998) has a lighter ground color and a reduction in the brown-black markings dorsally in both sexes and the creamy cast to the ground color ventrally in contrast to the more grayish or whitish cast of the ventral ground color of what is now defined as nominotypical *cupreus*.

Updated status: This species was added to the southern California fauna by adding the Kern Plateau. However, the colony at Big Meadow may have been extirpated by falling water levels at Big Meadow and cattle grazing.

Habitat: Mounds of dirt in a boggy area. The last time I checked maybe ten years ago, the bog was dry.

Flight: June-early July.

Distribution: Tulare County at Big Meadow.

Records: **Tulare County:** Big Meadow (Kern Plateau), June 13, 1972 (JB & CS); June 25, 1972; June 23, 1973 and June 16, 1974 (all JB); June 6, 1986 (KD).

89. Tailed Copper--*Lycaena arota* (Boisduval, 1852).

Three subspecies are recorded for southern California. Pelham (2008) keeps the name *Tharsalea* Scudder, as a subgenus.

a. Tailed Copper--*Lycaena arota arota* (Boisduval, 1852).

Updated status: Unchanged.

Habitat: Foothill woodland, slopes and canyons where the *Ribes* (gooseberries) host grows.

Flight: April to early September.

Distribution: All counties except Imperial.

Records: **Inyo County:** Whitney Portal, Aug 25, 1998 and July 9, 2008 (KD). **Kern County:** South end of Kern Plateau at Pine Flat, June 6, 1986 (KD); Kern Canyon at Democrat Hot

Springs, June 9, 1971 (KD); Breckenridge Mountain, May 29 and June 6, 1979 (KD). **Los Angeles County:** Old Ridge Route road, July 7, 1978 (KD). **Tulare County:** Sherman Pass road at Alder Creek 6800', July 24, 1982 and July 3, 2005 (both KD); N of Kennedy Meadows, July 9, 1988 (KD); Greenhorn Mountains: Baker Ridge, June 26, 1981 (KD).

b. Cloudy Tailed Copper--*Lycaena arota nubila* (J. A. Comstock, 1926).

Southern California TL: Griffith Park, Los Angeles County.

Updated status: It is unknown how recent catastrophic wildfires have affected this subspecies. The population at Griffith Park was extirpated many years ago.

Habitat: Foothill woodland on slopes with the *Ribes* (gooseberry) larval host.

Flight: Late May to July.

Distribution: Los Angeles and Ventura Counties.

c. Nevada Tailed Copper--*Lycaena arota virginiensis* (Boisduval, 1852).

Updated status: Unknown, the Coso Range is on a military base generally off limits to civilians.

Habitat: Unknown

Flight: The only record for this subspecies in southern California is below.

Distribution: Inyo County.

Records: Inyo County: Coso Mountains, Aug 1, 1983 (JFE).

90. Hermes Copper--*Lycaena hermes* (W. H. Edwards, 1870).

Taxonomic note: Pelham (2008) keeps the name *Hermelycaena* L. Miller & F. Brown as a subgenus.

Updated status: This butterfly has been proposed for federal endangered species status. It is also an insect of concern for California Fish & Wildlife. Collecting these requires permits for scientific research. Continued human development of the butterfly's habitat and major wildfires have contributed to this species' sharp decline.

Southern California TL: "Vicinity of San Diego".

Habitat: Foothill woodland chaparral near stands of redberry, the larval host.

Flight: Mid-May to mid- July.

Distribution: San Diego County. There are many published records in the literature.

91. Edith's Copper--*Lycaena editha editha* (Mead, 1878).

Taxonomic note: Some have used the names *Gaeides* Scudder and *Chalceria* Scudder for the genus name. Pelham (2008) leaves *Chalceria* as a subgenus. Like today, the Emmels used the genus name *Lycaena* in 1973.

Updated status: This subspecies may have been extirpated from Tulare County on the Kern Plateau. It is common at Monache Meadows and at Mineral King in Tulare County north of the area covered here. This species was not listed from southern California in 1973. As mentioned above it may no longer occur.

Habitat: High elevation rocky meadows. There are no recent records from Big Meadow.

Flight: June to August in the Sierra Nevada to the north.

Distribution: Tulare County only.

Records: Tulare County: Kern Plateau: Big Meadow, June 25, 1972 (JB). Attempts to duplicate this record have been unsuccessful.

92. Great Copper--*Lycaena xanthoides* (Boisduval, 1852).

Two subspecies occur in southern California.

Taxonomic note: The name *Chalceria* may be preferred for those that wish to recognize the distinctness of that group in a genus.

a. Great Copper--*Lycaena xanthoides xanthoides* (Boisduval, 1852).

Updated status: Unchanged.

Habitat: Wet grassy areas or pastures with *Rumex* (Dock), often in canyons and foothill woodland. The species also favors small stream benches in chaparral.

Flight: Late April to mid-July.

Distribution: All counties except Imperial.

Records: **Inyo County:** Olancho Pass Trail above Sage Flat on Sierran E slope, May 21, 2003 (JFE); up grade to Whitney Portal, NE of Lone Pine, July 5, 2004; June 18, 2006 and July 9, 2009 (KD), phenotypes here can resemble either *xanthoides* or *obsolescens*. **Kern County:** Oak Creek Pass, Willow Springs road, July 5, 1978 and Apr 27, 1989 (KD); Lake of the Woods, July 18, 1998 and 2005 (KD). **San Luis Obispo County:** Cuyama Valley in flats along the Cuyama River off SR 166, May 28 and June 10, 1983. Apr 8, 2015 early date (KD); SR 58, 5 mi east of Santa Margarita, May 29, 1999 (KD); Syncline Hill in ravines, May 22 and 29, 1999 (KD). **Santa Barbara County:** Cuyama River crossing at Foothill road, May 28 and June 10, 1983 (both KD); Cottonwood Creek, SR 166, June 4, 1994 (KD); Cuyama River off Foothill road and road to Santa Barbara Canyon, Apr 24 and May 1, 2004 (KD). **Tulare County:** Sherman Pass road in Dry Creek Canyon 4300', June 18, 1983 (KD); Chimney Peak road near Lamont Meadows, July 4 and 6, 1983 (KD); North of Chimney Peak Ranger Station, July 22 and Aug 5, 2008 and July 2, 2010 (KD). **Ventura County:** Frazier Mountain in meadow at Chuchupate Camp, July 2, 1986 and creek on Lockwood Valley road at Kern/Ventura County line marker, June 2, 2016 (KD).

b. Great Copper--*Lycaena xanthoides* near *obsolescens* J. Emmel & Pratt, 1998.

Taxonomic note: The name of this subspecies refers to the tendency of the black spots on the ventral hindwing to become very small or obsolete (in males) in contrast to the usually more prominent spotting on nominotypical *xanthoides* (J. Emmel and Pratt, 1998).

Southern California TL: Inyo County: Hunter Mountain east of Nelson Range, small stream and meadow 0.4 air miles southeast of peak 7107 on 1951 USGS Marble Canyon topographic quadrangle, 6800' elevation, Death Valley National Monument (now a National Park).

Updated status: This subspecies appears to have a wider range than anticipated when described. It ranges north to at least the lower Rock Creek Gorge in Mono County. It also appears to occur in the Kern River Valley in Kern County.

Habitat: Wet grassland in chaparral in the Kern River Valley near Lake Isabella and Weldon. A population on the up grade to Whitney Portal in Inyo County occurs in a deep depression off the road.

Flight: May to July.

Distribution: Inyo and Kern Counties. Tulare County records from Freeman Creek Grove for this subspecies are north of our arbitrary southern California boundary.

Records: **Inyo County:** Nine Mile Canyon, July 6, 1983 (KD). Records from Whitney Portal may or may not fit here. **Kern County:** Weldon, June 13, 1999 (KD); below Lake Isabella Dam, June 2 and 7, 2003 (KD); Greenhorn Mountains on Sawmill road at Isabella Highlands, June 27, 2015 (KD).

93. Gorgon Copper--*Lycaena gorgon* (Boisduval, 1852).

There are two subspecies for southern California. This species too has sometimes been placed in the genus *Chalceria*, which is used as a subgenus by Pelham, 2008.

a. Gorgon Copper--*Lycaena gorgon gorgon* (Boisduval, 1852).

Updated status: In the Kern River Valley there are populations with individuals that may appear like either subspecies *gorgon* or *micropunctata*.

Habitat: This species often occurs in sandy canyons, mouths of canyons, on flats, and on abandoned dirt roads and road embankments with *Eriogonum nudum*, the primary larval host.

Flight: Late April to early July.

Distribution: All counties except Imperial.

Records: **Kern County:** Greenhorn Mountains, Democrat Hot Springs, June 9, 1971 (KD); Old State road 4-5 miles west of SR 155, June 20, 2002 and July 2, 2005 (KD); Piute Mountains, 2-4 mi south of Bodfish May 14 and 21, 1976 (KD); Tehachapi Mountains near the Tehachapi Loop June 17, 1989 (KD). **Los Angeles County:** Old Ridge Route, July 2 and 7, 1975 (KD). **San Luis Obispo County:** Syncline Hill in deep ravine, May 22 and 29, 1998 (KD); Hi Mountain, June 22 and 25, 1977 and June 2, 1984 (KD). **Santa Barbara County:** Sierra Madre Range: Batnes Canyon, June 4, 1994 and June 22, 2009 (KD); Santa Barbara and Dry Canyons, May 1 and 31, 2004 and May 20, 2006 (KD). **Tulare County:** Dry Creek Canyon 4300', 1 mile E of Kern River off Sherman Pass road, June 18, 1983 (KD); E of Ant Canyon and Kern River May 9 and 15, 2007 (KD); 4 miles west of Sherman Pass in deep ravine, 7800' June 21, 1982 (KD).

b. Small-spotted Gorgon Copper--*Lycaena gorgon micropunctata* J. Emmel & Pratt, 1998.

Taxonomic note: This subspecies (J. Emmel & Pratt, 1998) differs from nominotypical *gorgon* by its smaller size, marked reduction of black markings ventrally and in the dorsal submarginal area of the hindwings and the expansion of the pale orange areas of the dorsal hindwings in both sexes.

Updated status: This subspecies was described from Lower Rock Creek Gorge in Mono County. This new subspecies can be quite common on the Chimney Peak Road in Kern County.

Habitat: This subspecies favors sandy soils on road banks with yellow flowered *Eriogonum nudum*.

Distribution: Inyo and Kern Counties.

Flight: May-June.

Records: **Inyo County:** Upper Nine Mile Canyon, May 25 and June 8, 1985 (KD). **Kern County:** Canyon 1.5 miles of Butterbrecht Peak, May 9, 1986 (KD); 1 mile south of Lamont Peak on Chimney Peak road, June 6 and 13, 1999 (KD); E slope of the Piute Mountains 3-4 mi west of Sageland, May 24, 2005 (KD). There seems to be a mixing of phenotypes around the Kern River Valley with individuals resembling either *micropunctata* or subspecies *gorgon*.

94. Blue Copper--*Lycaena heteronea clara* Hy. Edwards, 1877.

Taxonomic note: This species has also been placed in *Chalceria* as a genus by some. Pelham uses that name as a subgenus.

Southern California TL: Tehachapi Pass, S.P.R.R. (=Southern Pacific Railroad), Kern County, Tehachapi Mountains.

Updated status: The populations of this butterfly at Frazier Park and Lake of the Woods have become very scarce, probably because of both human development and past catastrophic flooding of Cuddy Creek which destroyed considerable prime habitat.

Habitat: Flats and hillsides with *Eriogonum nudum* (a possible hostplant) and *Artemisia tridentata* on which adults perch. At Pine Flat at the south end of the Kern Plateau and above MP 6 on the Piute Mountain road overlooking Lake Isabella, the larval host appears to be *Eriogonum umbellatum*.

Flight: Late June to mid-August.

Distribution: Kern, Los Angeles, San Bernardino, Tulare and Ventura Counties.

Records: **Kern County:** Frazier Park, July 5, 1971 (KD); Lake of the Woods, July 18 and Aug 3, 1998 (KD). Piute Mountains: Piute Mountain Vista, July 4, 2000 (KD); Piute Mountain Road MP 4 to 7 overlooking Lake Isabella, July 4 and 17, 2000 (KD). **Tulare County:** Pine Flat south end of Kern Plateau, July 5, 2003 and July 12, 2017 (KD). **Ventura County:** Seymour Canyon road, June 5, 2004 (JB); Frazier Mountain, Aug 25, 2005 (Chris Hanzlik); Lockwood Valley road 2 mi west of Boy Scout Camp, Jun 22, 2016 (JGP).

95. Purplish Copper--*Lycaena helleoides* (Boisduval, 1852).

Taxonomic note: This butterfly has been placed in the genus *Epidemia* Scudder by several workers, Pelham (2008) keeps that name as a subgenus.

Updated status: Known localities are becoming fewer with continued human development and draining of the habitats for other uses. Populations remain stable in places in the Kern River Valley.

Habitat: Lakes, ponds, wet meadows and streamsides in pastures and meadowlands.

Flight: Spring to fall but most common late September to mid-November.

Distribution: All counties but Imperial. This species tends to be scarce but can be common by the hundreds at Weldon and Onyx in late September and October (many dates) in the Kern River Valley, Kern County.

Records: **Inyo County:** Common at times in the Owens Valley. **Kern County:** Buttonwillow, Sep 12, 1980; Adobe road near junction with Bear Mountain road, Sep 15, 1989 (KD); Frazier Park in Cuddy Creek, July 5, 1971 (KD) Weldon, Aug 14 and 21, 1981 (KD) and Apr 25, 2004 (KD). **San Luis Obispo County:** Cuyama Valley; road from Lopez Lake to Lopez Canyon and Navajo Flats in the inner Coast Range.

Santa Barbara County: Santa Cruz Island, Aug 1, 1969 (David Weissman). This species is sometimes common in the Cuyama Valley. **Tulare County:** Kern Plateau. Big Meadow, June 16, 1974 (JB); Kennedy Meadows, May 26, 2001 (KD); upper Kern River at confluence of Brush Creek and Kern River, Oct 22, 1997; Sep 28, 2011 and Oct 22, 2005 (KD).

96. Golden Hairstreak--*Habrodais grunus* (Boisduval, 1852).

There are at least two subspecies in southern California. Those from upper Nine Mile Canyon in Inyo and SE Tulare Counties resemble *herri* W. D. Field, 1938 from the Pacific Northwest, but there is too little material to draw conclusions. These butterflies in Nine Mile Canyon favor treetopping on oaks overhanging a very steep canyon drop.

a. Golden or Boisduval's Hairstreak--*Habrodais grunus grunus* (Boisduval, 1852)

Distribution: Inyo, Kern, Los Angeles, Orange, Riverside, San Bernardino, Santa Barbara, San Diego, Tulare and Ventura Counties.

Updated status: Unchanged.

Habitat: This hairstreak tends to perch high up on oaks (*Quercus chrysolepis*), a frequent host. The butterfly occasionally drops down to streams to visit mud or perch on vegetation.

Flight: June to early September.

Records: **Inyo County:** Upper Nine Mile Canyon, Aug 26, 1983; Aug 16, 1985; Sep 22, 1997 (KD); E of Whitney Portal, July 7, 2006 (JGP); Sage Flat SW of Olancho, May 10, 2000 (JFE & GP). **Kern County:** Tehachapi Mountain Park near Oak Flat, July 13, 1977 and July 24, 1979 (KD); Greenhorn Mountains, Cedar Creek, July 15, 1992 (KD). **Los Angeles County:** Old Ridge Route road, July 7 and 11, 1975 (KD). **Orange County:** Santiago Peak, July 15, 2017 (RG). **Santa Barbara County:** Sierra Madre Range: Bates Canyon, Sep 8, 1992 (KD). **Tulare County:** Chimney Peak road in canyon near Lamont Meadows, July 4 and 6, 1983 (these tend towards *herri*, KD). Greenhorn Mountains: Baker Ridge, July 24, 1995 and June 25, 1997 (KD).

b. Lorquin's Golden Hairstreak--*Habrodais grunus lorquini* W. D. Field, 1938.

Updated status: This subspecies has been found in southern California since 1973, but it is uncommon and rarely seen.

Habitat: Well-watered riparian canyons.

Flight: Late May to August.

Distribution: San Luis Obispo County. Some Santa Barbara County populations may be this subspecies.

Records: **San Luis Obispo County:** Little Falls Creek, Lopez Canyon, July 11, 1990 (KD); Cerro Alto Trail, June 12, 2014 (JG).

97. Great Purple Hairstreak--*Atlides halesus corcorani* Clench, 1942.

California TL: Riverside County, Riverside.

Updated status: Unchanged.

Habitat: Occurs in older residential areas, foothill woodland, open coniferous forest and on desert hills with chaparral or on junipers. Localities are often riversides with the mistletoe host on older trees. Males go to hilltops, late in the season, adults often visit blooming rabbitbush in the southern Sierra Nevada.

Flight: Late February to November.

Distribution: All counties.

98. Behr's Hairstreak--*Satyrium behrii behrii* (W. H. Edwards, 1870).

Updated status: Unchanged. This species is common east of the Sierran Divide on the Kern Plateau.

Habitat: Mojave Desert Mountains or east slope of mountain ranges where *Purshia glandulosa* Curran grows. There are some colonies in drier mountains with *Purshia* near Frazier Park (Kern Co.) and Owls Barn (Ventura Co.) in more coastal mountains.

Flight: Usually May to early August

Distribution: Inyo, Kern, Los Angeles, San Bernardino, Santa Barbara, Tulare and Ventura Counties.

Records: **Inyo County:** Below Whitney Portal, July 9, 2009 (KD). **Kern County:** Walker Pass, June 4, 2004 (KD); Tehachapi Mountains on hilltop 4.8 mi east of Oak Creek Pass off Willow Springs road, Apr 28, 2015 (KD) and in nearby ravine June 6, 1995 and May 13, 2001 (KD); Frazier Park area (2 miles east), June 11, 1987 and June 29, 1990 (KD). **San Bernardino County:** San Bernardino Mountains near Onyx Summit, June 14, 1985 (KD); Burns Canyon

road, June 7, 2017 (JZ). **Tulare County:** North side of Lamont Peak on Chimney Peak road, June 14, 1980; July 4 and 6, 1983 (KD); Bald Mountain Lookout 9400', July 10, 1982 (KD); Sherman Pass road near Bald Mountain, July 6, 1992 (KD). **Ventura County:** Dome Springs area, June 20, 1976 (S. E. Miller); west of Owls Barn on hill off Lockwood Valley road, June 20, 1992 and June 12, 2002 (both KD).

99. California Hairstreak--*Satyrrium californica* (W. H. Edwards, 1862).

There are two subspecies in the region.

a. California Hairstreak--*Satyrrium californica californica* (W. H. Edwards, 1862)

Updated status: Unchanged.

Habitat: Foothill woodland and mixed coniferous forest. The hosts are oaks.

Flight: May to early August.

Distribution: Kern, Los Angeles, Orange, Riverside, San Bernardino, San Luis Obispo, Santa Barbara, San Diego, Tulare and Ventura Counties: This hairstreak is in every county but Imperial and subspecies *californica* may be replaced in Inyo County by *cygnus*.

b. Great Basin California Hairstreak--*Satyrrium californica cygnus* (W. H. Edwards, 1871).

Taxonomic note: This subspecies has a greater development of red-orange spots on the hindwings.

Updated status: This subspecies has gained greater acceptance in recent years for being a valid subspecies. It may not have occurred within southern California as earlier defined by the Emmels.

Habitat: This hairstreak tends to occur near streams with adults perching on willows along a small stream south of Kennedy Meadows.

Flight: June to early August.

Distribution: Tulare and Inyo Counties.

Records: Inyo County: Whitney Portal, July 29, 2014 (KD). **Tulare County:** Spring about 6 miles south of Kennedy Meadows perching on willows, July 10, 1982, less common June 30, 1988 (KD). Note: *Satyrrium sylvinus sylvinus* also occurs at this site, later in the season. Usually, *Satyrrium californica* does not perch on willows.

100. Sylvan Hairstreak--*Satyrrium sylvinus* (Boisduval, 1852).

There are three subspecies in southern California.

a. Sylvan Hairstreak--*Satyrrium sylvinus sylvinus* (Boisduval, 1852).

Taxonomic note: Formerly (Emmel & Emmel, 1973), the subspecies name *sylvinus* was applied to many southern California populations, but most of those populations are actually better placed with *desertorum* (John Emmel, pers. comm.).

Updated status: This subspecies now barely reaches southern California boundaries.

Habitat: Willows along streams in part of the Greenhorn Mountains and some of the Kern Plateau.

Flight: June to early August.

Distribution: Northern Kern and Tulare counties only.

Records: Kern County: Greenhorn Mountains N end of Linn's Valley in Poso Creek drainage, June 26, 1996 and July 10, 1998 (KD); Glennville, June 24 and 26, 1996 (KD).

Tulare County: Kennedy Meadows, June 25, July 10 and 29, 1982 (KD). The subspecies that occurred along the higher elevations of the Sherman Pass road, July 24, and Aug 5, 1982 (KD)

was *sylvinus*, but after the 2002 McNally Fire, *sylvinus* had been extirpated and was recolonized by the lighter subspecies *desertorum* that occurs along the Kern River. The fire missed Calkin's Flat, along the Kern River where a colony of *desertorum* survived the fire.

b. Desert Hairstreak--*Satyrium sylvinus desertorum* (F. Grinnell, 1917).

Southern California TL: Kern County: Oak Creek (Tehachapi Mountains).

Updated status: Much of southern California has the lighter subspecies *desertorum*, not *sylvinus*.

Habitat: Streambeds in mountains and even in some desert areas and in the Owens Valley.

Flight: May to mid-August.

Distribution: Inyo, much of Kern, Los Angeles, Orange, Riverside, San Bernardino, San Diego and Tulare Counties. Populations along the Southern California Coast in several counties may show *sylvinus/dryope* blending.

Records: **Inyo County:** Upper Nine Mile Canyon, Aug 5, 2008 (KD); Lubken Canyon 2 miles south of Lone Pine, Aug 13, 2001 (KD). **Kern County:** Oak Creek Pass, July 5, 1978 (KD); Tehachapi Mountain Park (intermediate *desertorum* X *dryope*), Aug 14, 1985 (KD); Tehachapi Creek near Keene, June 5, 1986 (KD). **Tulare County:** Kern River N of Roads End at Dam, May 14, 1972 and June 21, 1982 (KD).

c. Dryope Hairstreak--*Satyrium sylvinus dryope* (W. H. Edwards, 1870).

Updated status: Unchanged, few still believe *dryope* is a separate species and not a *sylvinus* subspecies.

Habitat: This subspecies tends to perch on willows in deep canyons or ravines with standing water.

Flight: May to September.

Distribution: Kern, Los Angeles, San Luis Obispo, Santa Barbara, and Ventura Counties.

Records: **Kern County:** near Mill Potrero road in creekbed near Pine Mountain Club N of Mt. Pinos, June 22, 1989 and June 29, 1990 (KD); Frazier Park in Cuddy Creek, June 22, 1989 (KD); Lake of the Woods, July 4, 1977 (Bruce O'Hara) and July 18 to Aug 28, 1998 (KD). **San Luis Obispo County:** Lopez Canyon, June 15, 1984 (KD). **Santa Barbara County:** Sierra Madre Range: Upper Santa Barbara Canyon along stream, May 31, 2014 (KD); Tinto Creek off Dry Canyon road to Cuyama Peak, June 24, 2004 (KD).

101. Gold-Hunter's Hairstreak--*Satyrium auretorum* (Boisduval, 1852).

There are three subspecies in southern California:

a. Gold-Hunter's Hairstreak--*Satyrium auretorum auretorum* (Boisduval, 1852).

Taxonomic note and updated status: Placement here with nominotypical *auretorum* is tentative. These individuals are less well marked than some northern California material.

Populations of *spadix* occur nearby in the Sherman Pass area and along the Kern River.

Populations in the Temblor Range (Kern and San Luis Obispo Counties) along SR 58 may be intermediates. These two subspecies seem weakly distinguished.

Habitat: Foothill woodland and mixed coniferous forest. Adults visit *Yerba santa* and Narrow-leaf milkweed flowers.

Flight: May to mid-July.

Distribution: Kern (Temblor Range), San Luis Obispo, Tulare (Alder Creek, 6800', a very small colony apparently destroyed by the 2002 McNally Fire which resulted in the loss of the

host plant oaks. **Records:** **Inyo County:** Sage Flat road southwest of Olancho, May 10, 2000 (JFE & GP). **Kern County:** Thousands along road SR 58 on horehound; Temblor Range near summit, May 13 and June 4, 1987 (KD); Cottonwood Pass in Diablo Range, May 12, 1994 (KD). **San Luis Obispo County:** Hi Mountain lower levels, June 22, 1977 (KD); west side of Temblor Range summit, May 13 and June 4, 1987 (KD); Coast Ranges: Santa Rita road, May 31, 2016 (JG). **Tulare County:** Sherman Pass road at Alder Creek 6800', Aug 5, 1982; Sherman Pass Road, singletons 4300'-4500' July 8, 1998; July 6, 2003 and Sep 6, 1999 (KD); south of Limestone Camp on milkweed flowers, June 12, 2012 and June 30, 2013 (KD).

b. Nut-brown Hairstreak--*Satyrium auretorum spadix* (Hy. Edwards, 1881).

Southern California TL: Tehachapi Pass, Kern County.

Updated status: Unchanged except that we now recognize three subspecies in southern California. This subspecies and nominate *auretorum* are weakly distinguished. This sub-species is even less marked than nominate *auretorum*. In 1973, all *auretorum* in southern California were believed to be *spadix*, though it was known in 1973 that the population in the Santa Monica Mountains had darker individuals.

Habitat: Foothill woodland with the right oaks.

Flight: May to mid- July.

Distribution: Kern, Los Angeles, Orange, Riverside, San Bernardino, Santa Barbara, San Diego, Tulare, and Ventura Counties.

Records: **Kern County:** Tehachapi Mountain Park, July 11, 1975 (very rare there); Keene/Tehachapi Loop area, June 11, 1982 and May 27, 1988 (both KD); 2 miles east of Frazier Park, June 1 and 11, 1987 and June 9, 2006 (KD); Lake of the Woods, June 20, 2012 (KD). **Los Angeles County:** Old Ridge Route road, June 26, 1978; June 25 and 30, 1993 (KD). **San Bernardino County:** Joshua Tree National Park: Barker Dam Trail, May 3 and June 11, 2017 (JZ). **Santa Barbara County:** Sierra Madre Range: McPherson Peak 3000', July 7, 1984 (WLS) and Bates Canyon, June 22, 2009 (KD); Cachuma Mountain, San Rafael Mountains, May 21 and June 3, 2017 (NL). **Tulare County:** Kern River just south of Ant Canyon, May 9, 2007 (KD); N slope Lamont Peak, July 4, 1983 (KD); summit of Nine Mile Canyon, July 12, 1999 (JB); south of Limestone Camp on milkweed flowers, June 12, 2012 (KD). **Ventura County:** Frazier Mountain, July 2, 1975 and July 2, 1986 (KD).

c. Smoky Hairstreak--*Satyrium auretorum fumosum* J. Emmel & Mattoni, 1990.

Taxonomic note: This subspecies has a darker smokier appearance than subspecies *auretorum* or *spadix*.

Southern California TL: Los Angeles County: Malibu Lake.

Distribution: Los Angeles and Ventura Counties.

Records: **Los Angeles County:** Malibu Lake, June 6 and 13, 1948 (Wm. T. Meyer); Malibu, May 31, 1950 (E. R. Hulbirt); N of Hwy. 101, 1-1.5 mi. from Brent's Jct., Apr 27, 1989 (Robert Allen); Santa Monica Mountains, south of Westlake Village, on *Quercus agrifolia*, May 29, 1993 (JGP).

102. Mountain-Mahogany Hairstreak--*Satyrium tetra* (W. H. Edwards, 1870).

Southern California TL: Kern County: Tehachapi Pass, Southern California.

Updated status: Unchanged.

Habitat: Foothill woodland with the Mountain Mahogany host.

Flight: May-July.

Distribution: Kern, Los Angeles, Orange, Riverside, San Bernardino, San Luis Obispo, Santa Barbara, San Diego, Tulare and Ventura Counties:

Records: **Kern County:** Kernville, July 2, 2005 (KD); Piute Mountain road 2-4 miles above Bodfish-Havilah summit, June 19, 1981 (KD). Greenhorn Mountains: Old State road 3500-5000', June 20, 1987 and July 2, 2005 (KD). **Los Angeles County:** Old Ridge Route road: June 26, 1978 and June 25, 1993 (KD); Los Angeles, Griffith Park, June 11, 1988 (KD). **Santa Barbara County:** Sierra Madre Range: Bates Canyon, June 4, 1994 and June 22, 2009 (KD); Dry Canyon, June 24, 2004 (KD). **Tulare County:** Sherman Pass road 4600-6000', June 25, 1985 (KD); upper Kern River at Calkin's Flat, July 3, 2005 (KD). Greenhorn Mountains, Baker Ridge Lookout, July 24, 1995 and July 3, 2004 (KD); **Ventura County:** Frazier Mountain, Chuchupate road, July 2, 1975 (KD).

103. Hedge-row Hairstreak--*Satyrium saepium* (Boisduval, 1852).

This species is represented by five subspecies in Southern California.

a. Hedge-row Hairstreak--*Satyrium saepium saepium* (Boisduval, 1852).

Updated status: This nominotypical name *saepium* was generally applied to most southern California populations in 1973, but Emmel & Emmel stated that nominotypical *saepium* was really Sierran. Actually, the little used or recognized name *chalcis* of the Coast Ranges was found to better apply to most southern California populations (John F. Emmel, pers. comm.) and *chalcis* is also what is in the southern Sierra Nevada with true *saepium* barely reaching southern California at higher elevations on the Sherman Pass road, a road that has three *saepium* subspecies: *chalcis* near the Kern River, *saepium* above 6000' on the west side of Sherman Pass and *subaridum* is on top of Bald Mountain on *Ceanothus greggi* and in the Kennedy Meadows area.

Habitat: Foothill woodland and chaparral and the lower part of mixed coniferous forest.

This species perches on the host buckthorns and visits several kinds of flowering plants.

Flight: June-mid August.

Distribution: Tulare County (upper Sherman Pass Road).

Records: **Tulare County:** West side of Sherman Pass 4500-9000', June 20 and Aug 8, 1980 (KD). This butterfly is very common on this road and to the north of our southern California boundary.

b. Bronzed Hairstreak--*Satyrium saepium chalcis* (W. H. Edwards, 1869).

Taxonomic Note: *Satyrium saepium fulvescens* (Hy. Edwards, 1877) TL: Lake Tahoe, Tehachapi Pass...Havilah defined as Havilah, Kern County by Austin (1998e). A long series of *saepium* from Havilah collected June 8, 2009 and in the Tehachapi Mountains at the Tehachapi Loop near Keene by the author from these locations over the years in Kern County show that *saepium* from those localities appear identical to *chalcis*, described before *fulvescens*. So, *fulvescens* appears to be a synonym of *chalcis*, a pallid indistinctly marked subspecies ventrally.

Updated status: Explained under nominate *saepium* and above.

Habitat: Foothill woodland and chaparral with the buckthorn host.

Flight: Late May-early August.

Distribution: Kern, Los Angeles, Orange, Riverside, San Bernardino, San Luis Obispo, Santa Barbara, San Diego, Tulare and Ventura Counties.

Records: **Kern County:** Sierra Nevada: south of Lamont Peak, Chimney Peak road, July 8 and 9, 1983; Greenhorn Mountains: Old State road, hundreds July 8, 2001; 2 miles south of Tiger Flat, June 17, 2001 (all KD). **Los Angeles County:** Old Ridge Route road, July 4 and 5, 1975 and June 25, 1990 (KD); Pine Mountain road June 30, 1993 (KD). **San Bernardino County:** San Bernardino Mountains, Seven Oaks, June 15, 1985 (KD). **Santa Barbara County:** Sierra Madre Range: Bates Canyon, June 4, 1994 (KD); Santa Barbara Canyon, May 31, 2004 (KD). **San Luis Obispo County:** Lopez Canyon, June 15, 1984 (KD); Pozo road west of SR 58, June 22 and 25, 1977 (KD). **Tulare County:** upper Kern River north of Roads End, June 21, 1982 (KD); Calkin's Flat along Kern River, June 12, 1999 (KD). **Ventura County:** Frazier Mountain, Chuchupate Camp, June 22, 1979 and July 16 and 17, 1993 (KD).

c. Dark Hedge-row Hairstreak--*Satyrium saepium caliginosum* J. Emmel, T. Emmel & Mattoon, 1998.

Taxonomic note: This subspecies was described (Emmel, Emmel & Mattoon, 1998e) as a dark heavily marked coastal butterfly from the Los Osos area where Baywood Park is located. It is distinguished by being very dark in the inner part of the hind wing and lighter on the outer 2/5 of the hind wing.

Updated status: Most of the coastal lands on the central coast where this subspecies occurs are probably now in protected preserves.

Habitat: Beach dunes with the *Ceanothus cuneatus* (Hook) host.

Flight: Mid-June to late July.

Southern California TL: San Luis Obispo County, Baywood Park.

Distribution: Coastal San Luis Obispo and Santa Barbara Counties: It also occurs on Santa Cruz Island in Santa Barbara County. The lighter less contrasting subspecies *chalcis* occurs just a few miles to the east in the Coast Ranges where coastal fogs are not as prevalent.

Records: **San Luis Obispo County:** Baywood Park, July 4, 1975 and June 29, 1976 (JB); Los Osos near the beach in a residential area, July 3, 1998 (KD). **Santa Barbara County:** Santa Cruz Island: Albert's Ridge, Apr 27, 1966 (RLL), "and by June distributed along ridges and lowland areas "very common along Ridge road, late June, 1978" (G. Gorelick), (Langston, 1979(81). In Langston's article on Santa Cruz Island, *saepium* was treated as the nominate subspecies. He did not mention the darkness of the *saepium* on the Island. Their true nature was discussed in the original description cited above.

d. Coastal Hedge-row Hairstreak--*Satyrium saepium chlorophora* (F. Watson & W. Comstock, 1920.

Taxonomic note: In this subspecies, the basodiscal area of the wings tends to be dark, contrasting sharply with the much lighter limbo-marginal areas. The postmedian line below also tends to be indistinct (Emmel, Emmel & Mattoon, 1998a).

Updated status: Emmel & Emmel (1973) treated this butterfly as a dark form and not as a subspecies. They did recognize it in their work on this species in the Systematics publication (J. Emmel, Emmel & Mattoon, 1998e). Shiraiwa (2009) illustrated this subspecies called the "Purplish Hairstreak" in his San Diego County Butterflies publication.

Habitat: Coastal San Diego County with *Ceanothus*.

Flight: May to June.

Southern California TL: San Diego County: San Diego.

Distribution: Coastal San Diego County.

e. Desert Mountains Hairstreak--*Satyrrium saepium subaridum* J. Emmel, T. Emmel & Mattoon, 1998.

Taxonomic note: This subspecies is named after the arid habitats in which it lives. It has a bold postmedian line on the ventral forewing and hindwing. It uses *Ceanothus greggi* as the larval host (J. Emmel, Emmel & Mattoon, 1998e).

Southern California TL:

Inyo County: Hunter Mountain east of Nelson Range, small stream and meadow 0.4 air miles southeast of Peak 7107 on 1951 U.S. G. S. Marble Canyon Quadrangle, 6800' elevation.

Updated status: This subspecies ranges out of Death Valley National Park at least as far north as Swall Meadow in Mono County (Davenport, 2007) and occurs in very easily accessible locations as the Whitney Portal/Lone Pine Canyon area right along the roads and trails as far south as Walker Pass in Kern County.

Habitat: Often in Juniper/Oak woodland with the tall *Ceanothus* host plant.

Flight: June to August.

Distribution: Inyo, Kern and Tulare Counties.

Records: **Inyo County:** Whitney Portal area, Aug 25, 1998 and June 18, 2006 (KD). **Kern County:** Walker Pass, Aug 8, 1977 (KD). **Tulare County:** Kennedy Meadows road, 2-4 miles N of junction with Chimney Peak road, July 22, 2008 (KD); near top of Bald Mountain, 9300', July 24, 1982; June 21, 1985 and Aug 14, 2010 (all KD).

104. Silver-Banded Hairstreak--*Chlorostrymon simaethis sarita* (Skinner, 1995)

Updated status: We have many more records of this species in southern California now than we did in 1973. John Emmel has this species visit his yard in Hemet with the balloon vine host plant on nearly a yearly basis. The very wet year in Baja California in March, 1992 was the year for this species when migrants ranged as far north as Kern County.

Habitat: This species is most expected in the deserts but see the below records for exceptions.

Flight: There are now spring, late summer and fall records.

Distribution: Imperial, Kern, Los Angeles, Orange, Riverside, San Bernardino and San Diego Counties.

Records: **Kern County:** Several (about sixteen) on alfalfa at Cantil at the south end of Koehn Dry Lake in Cantil, May 11 and 16, 1992 (KD with AR & Tom Rubbert on latter date); Sageland, N of Kelso Valley, May 24, 1992 (Larry Muller & JGP). **Los Angeles County:** North Hollywood, Apr 26, 1992 (CS). **Orange County:** Whiting Ranch Regional Park, Mustard Trail, Mar 29, 2016 (BBX). **Riverside County:** Red Cloud road 2-3 miles south of I-10, Apr 25, 1992 (Julian Donahue); Hemet in yard with balloon vine (larval host), July 29 to Oct 5, 2001 (JFE); Chuckwalla Bench, Augustine Pass road 2300', (Julian Donahue). **Riverside County:** Palm Springs, Sep 9, 1927 (SDNHM) Joshua Tree National Park: Lower Covington Trail, Apr 30, 2017 (JZ). **San Bernardino County:** Joshua Tree NM area, Utah Trail 2800', 4 mi. south of Rt. 62, Apr 16, 1992 (Kelly Richers). Providence Mountains: Cornfield Springs Canyon, May 3, 1992 (JFE). **San Diego County:** Mason Valley, Oct 8, 1967 (G. Forbes, SDNHM); Anza Desert, Vallecitos, Nov 11, 1967 (R. Breedlove); Descanso, May 21, 1966 (R. Breedlove).

105. Bramble Hairstreak--*Callophrys dumetorum perplexa* (Boisduval, 1852).

Taxonomic note and updated status: Emmel, Emmel & Mattoon (1998e) believed the type specimen/s actually belonged to what was being called *Callophrys viridis*, the Coastal Green Hairstreak. So, for several years after 1998, what had been called *Callophrys perplexa* became

the scientific name for the Bramble Hairstreak and the Coastal Green Hairstreak became *Callophrys dumetorum*. Recently the ICZN reversed that action (Opinion 2291, Scott, Guppy, Pelham, Calhoun, Davenport, Fisher and Toliver, 2012) and the names are back to what they were before. DNA work has not yet resolved all relationships and names issues.

a. Bramble Hairstreak--*Callophrys dumetorum perplexa* (Boisduval, 1852).

Taxonomic note: Northern California populations and those from the Sierra Nevada further north differ from southern California populations so I use the name *perplexa* in this publication for most southern California populations

Southern California TL: San Diego County, San Diego.

Habitat: Canyons, bases of cliffs and riparian areas.

Flight: February to early May.

Distribution: All counties.

Records: Imperial County: In-Ko-Pah Gorge, Mar 26, 1960 (KH). Most green *Callophrys* in southern California are likely to be this species but that may not be true in Kern, San Luis Obispo and Tulare Counties.

b. Superperplexing Bramble Hairstreak--*Callophrys dumetorum superperplexa* J. Emmel, T. Emmel & Mattoon, 1998.

Taxonomic note: The taxonomic status of this recently described subspecies (Emmel, Emmel & Mattoon, 1998e) was perplexing to start with as it combines features of *perplexa*, *lemberti* and *comstocki*. The describers believed *superperplexa* was most likely a *perplexa* (now a *dumetorum* again) because it appears to blend or overlap ranges to the south and both use *Eriogonum fasciculatum*. It remains controversial as to whether this very green butterfly which often has multiple white spots on the hind wing belongs with *dumetorum* or the *sheridanii* group which includes *lemberti* and *comstocki*. It is even possible some are *dumetorum* and some are allied with *sheridanii*. The very large and distinctive green hairstreaks along the upper Kern River were unknown in 1998, and those appear to be sympatric with smaller green hairstreaks. Yes, it is superperplexing!

Distribution: Inyo, Kern, and Tulare Counties. The known northern limit of range is lower Rock Creek in Mono County

Habitat: Riparian canyons, bases of cliffs and flats with the hosts.

Flight: Late February to early June.

Records: Inyo County: Lone Pine Creek, by trail from foot of grade to Whitney Portal Apr 25, 2005 and Apr 28, 2006 (KD.) **Kern County:** Many individuals taken in Sand Canyon on the east side of the Sierra Nevada, Apr 14, 1979 (Glenn Gorelick) appear to be close to *superperplexa* based on his description in the Season Summary. Such phenotypes turn up along the Chimney Peak road on the south slope in canyons, Apr 7, 1997 and Mar 28 and 31, 1989, or in the Kelso Valley area. **Tulare County:** Chimney Peak road near Lamont Meadows, May 22, 1982 and Apr 10, 1985 (KD); upper Kern River at Ant Canyon, Feb 20 and Mar 4, 2007 (KD, common). Some of these individuals are extremely greenish and may be conspecific with *Callophrys viridis* or *sheridanii*.

106. Coastal Green Hairstreak--*Callophrys viridis* (W. H. Edwards, 1862).

Taxonomic notes and updated status: This is another perplexing issue. Some accept that there are two species along the California coast and others believe both are just ecotypes of one species. The Emmels and Sterling Mattoon (1998e) believed two species were involved and so

did Glenn A. Gorelick (1971) who wrote a major paper supporting the two-species concept with *Callophrys dumetorum* and *C. viridis*. DNA work to date has not resolved issues in the green *Callophrys* complex and it appears that while *pseudodumetorum* was originally described as a *perplexa* subspecies, it is now believed to be a *sheridanii* subspecies, which contradicts the meaning of the trinomial name.

Andrew Warren in his Oregon publication (Warren, A. D., 2005) provided reasons why *pseudodumetorum* (similar in appearance to some individuals in San Luis Obispo County) actually belongs with *viridis* which in turn is probably conspecific with *Callophrys sheridanii*. John Emmel also supported (pers. comm.) a changed status of *pseudodumetorum* back to *viridis* some years ago (pers. comm.).

The status of *viridis* being in San Luis Obispo County is unresolved. It appears that both a darker green *viridus* and a *dumetorum* with more brown on the forewing occur in the Navajo Camp area but the “*viridis*” are scarce and the “*dumetorum*” are more common and wide ranging. Less than 20 possible *viridis* have been obtained and new California laws make DNA sampling work more expensive and difficult. None of those collected specimens have been DNA tested.

Habitat: Steep canyons with water downstream from Navajo Camp in the Coast Ranges

Distribution: San Luis Obispo County.

Records: About 1 mile east of Navajo Camp in canyon along stream Apr 1, 1988 (KD det. JFE as *pseudodumetorum*); McGinnis Creek below Navajo Camp and upstream from Navajo Flat, Apr 7, 2012 (KD, none there marked as *pseudodumetorum*, now viewed as a *sheridanii* in the Pelham Catalogue, 1998; and Pohl, Patterson and Pelham, 2016).

107. Sheridan’s Hairstreak--*Callophrys sheridanii* (W. H. Edwards, 1877).

Taxonomic note and updated status: Back when the Emmel’s published their book, it was believed *comstocki* and *lemberti* were species-level butterflies. Both have become much better well known with far more known localities than were known in 1973. Most now accept that *comstocki* and *lemberti* are *sheridanii* subspecies. It is also suspected that *Callophrys viridis* is a *sheridanii* subspecies.

a. Comstock’s Hairstreak--*Callophrys sheridanii comstocki* Henne, 1940.

Updated status: Permits from California Fish & Wildlife are now required to collect this butterfly. Based on their comments in their memorandum and notice, the state appeared unfamiliar with recent discoveries of new localities and the numbers in which this butterfly flies following wet winters.

Southern California TL: San Bernardino County: “Providence Mountains.”

Habitat: Eastern Mojave Desert Mountains and canyons.

Flight: March-April with later summer or fall flights dependent on summer rains.

Distribution: Inyo and San Bernardino Counties.

Records: **Inyo County:** Bruce Canyon, Argus Mountains 3400’, Mar 30, 1980 (JFE, S. Hageman & S. Mattoon). **San Bernardino County:** Mescal Range off interstate 15 and Bailey road, very common April 4, 1992 (KD). Additional locality records were reported for the Death Valley region outside the Park, the White Mountains (just north of southern California), the Coso Range and elsewhere in the annual Season Summaries.

b. Lember's Hairstreak--*Callophrys sheridanii lemberti* Tilden, 1963.

Updated status: This species barely reaches southern California at the localities shared under records.

Distribution: Inyo and Tulare Counties.

Records: Inyo County: Lone Pine Creek near Whitney Portal, Apr 25, 2006, Mar 30, 2018 (KD).

Tulare County: Bald Mountain above 9200', June 12 and 20, 1999 (KD) and June 5, 2002 (JB) A report of "*lemberti*" from Kennedy Meadows, May 23, 1970 from John Lane may be *lemberti*, or *C. dumetorum superperplexa* which is very similar.

Note: Butterflies in the genus *Mitoura* and *Incisalia* have recently been grouped with *Callophrys* because of their similar structure. Emmel and Emmel used *Mitoura* and *Incisalia* as generic names in their 1973 book and in their 1998 state checklist.

108. Juniper Hairstreak--*Callophrys gryneus/siva* complex.

I recognize five subspecies within what lepidopterists' regard as either *Callophrys gryneus* (Hubner, 1819) or *Callophrys siva* (W. H. Edwards, 1874) in southern California. This complex has a contentious taxonomy and the reader can have their own preference. I follow the Emmel's treatment of the *Mitoura* group.

Taxonomic note: Pelham (2008) and Pohl, Patterson and Pelham (2016) held to the concept that *Callophrys gryneus* and *C. siva* are conspecific. An allozyme study by Pratt, Ballmer & Wright (2011), supports that there are different species in this complex. My arbitrary view here is to recognize many of these as species.

a.

Juniper Hairstreak--*Callophrys siva siva* (W. H. Edwards, 1874).

Updated status: Unchanged.

Habitat: Juniper woodland in the eastern Mojave Desert Mountain ranges. Adults perch on junipers or visit nearby flowers.

Flight: April and May, later flights depend on summer rainfall.

Distribution: Inyo and San Bernardino Counties.

Records: San Bernardino County: Near Enterprise Mine 3600', Old Woman Mountains south in eastern Mojave Desert, June 18, 1988 (JFE & GP); Mescal Range, Mountain Pass Summit area off Interstate 15, Mar 29, 2017 (MW).

b. Juniper Hairstreak--*Callophrys siva juniperaria* (J. A. Comstock, 1925).

Southern California TL: Los Angeles County: Mint Canyon, "Sierra Madre Mts." (now known as near the Old Ridge Route road), California. The name Sierra Madre Mountains now applies to a different mountain range in Santa Barbara County. The *siva* population there may be a *juniperaria X mansfieldi* blend but appears closer to the latter. What is in Mint Canyon in Los Angeles National Forest is *juniperaria*.

Updated status: Unchanged unless *siva* is conspecific with *C. gryneus*.

Habitat: Juniper woodland. Adults frequent flowers near Junipers.

Flight: March to third week of June.

Distribution: Kern, Los Angeles, San Bernardino and Tulare Counties.

Records: Kern County: Piute Mountains: Bodfish, May 8, 1976 (KD) and south of Bodfish, May 14-30 1976 (KD); Piute Mountain road above Bodfish-Havilah road summit, May 21, 1979

(KD). Greenhorn Mountains: Old State road 3500-4500', May 9, 1981 and May 5, 1984 (KD); 2 mi east of Frazier Park on trail overlooking Cuddy Creek, June 11, 1987 (KD). **Tulare County:** Upper Kern River south of Corral Creek on junipers, Apr 14 and 20, 2002 (KD). **Ventura County:** Frazier Mountain, hilltop near Chuchupate Camp, July 2, 1986 (KD).

c. Mansfield's Hairstreak--*Callophrys siva mansfieldi* (Tilden, 1951).

Updated status: This green juniper hairstreak can be quite common at times. It does range into Santa Barbara County where it can be abundant.

Southern California TL: "About 7 miles west of Simmler, San Luis Obispo County."

Distribution: Kern, San Luis Obispo and Santa Barbara Counties. Adults perch on junipers or visit horehound and *Baccharis* flowers.

Records: Kern County: Temblor Range SR 58, Mar 30 and Apr 17, 1980 (KD); on both sides of summit on horehound by the thousands May 13 and June 4, 1987 (KD). **San Luis Obispo County:** Temblor Range along SR 58, May 13 and June 4, 1987 (KD); Syncline Hill off SR 58, May 11, 1999 (KD). **Santa Barbara County:** Sierra Madre Range: Santa Barbara Canyon, Apr 24 and May 1, 2004 (KD); Dry Canyon, May 1, 2004 and May 9, 2009 (KD). **Ventura County:** Apache Canyon, 1 mi. E of SR 33, May 4 and 18, 1999 (KD).

d. Great Basin Juniper Hairstreak--*Callophrys siva* near *chalcosiva* Clench, 1981.

Taxonomic note and updated status: Those populations from the Kennedy Meadows area in Tulare County and the eastern San Bernardino Mountains using *Juniperus occidentalis* Hooker were formerly treated as *Callophrys barryi* (K. Johnson). Andrew Warren (2005) presented reasons why the type locality for that taxon is invalid and that the best available name for brown colored members of what were called *barryi* is with *chalcosiva* pending further study.

Habitat: Wetter meadows within dry areas, streamsides or roadsides with *Juniperus occidentalis* (the host plant).

Flight: May-July.

Distribution: Inyo, San Bernardino (east side of San Bernardino Mountains at high elevation) and Tulare Counties (Kennedy Meadows area).

Records: **Inyo County:** The Coso Mountains population has both green and brown colored individuals (GP). **San Bernardino County:** San Bernardino Mountains at Onyx Summit at about 8500', June 13, 1994 and June 5, 2017 (KD); seen in forest opening near Holcomb Meadow, June 5, 2017 (KD). **Tulare County:** Pine Mountain, July 3, 1978 (KD); Fish Creek, abundant June 18, 2007 and above Kennedy Meadows July 8, 1988; Bald Mountain 9400' July 10, 1982 (all KD). The population on Bald Mountain was extirpated by the 2002 forest fire.

e. Inner Coast Ranges Juniper Hairstreak--*Callophrys siva* (Hy. Edwards, 1881).

Taxonomic note: In previous publications (Davenport, 2003 and 2014), I have treated this as an unnamed Inner Coast Ranges segregate of *Callophrys muiri* (Hy. Edwards). Emmel, Emmel & Mattoon (1998h) listed this entity as an inner Coast Ranges segregate of *Callophrys (Mitoura) muiri*. But here I'm going to follow Paul Opler's approach given in his Western Butterflies Field Guide (Opler, 1999). He stated that populations in the inner Coast Ranges on junipers in the Coast Ranges of "central California" should be considered to be a Juniper Hairstreak since they use junipers. These unnamed inner Coast Range populations are brown below but lack the green sheen of Muir's Hairstreak. *Callophrys muiri* I have taken on Cuesta Ridge on Sargent Cypress

also lack a green sheen. Opler noted that *muiri* and *nelsoni* occur close together in Lake County but maintain their distinguishing characters.

Habitat: Juniper woodland in the Diablo Range. Adults often can be found on the crowns of junipers or on nearby flowers.

Flight: Late March to early May.

Distribution: Kern and San Luis Obispo Counties.

Records: **Kern County:** Diablo Range: E of Cottonwood Pass, Apr 10, 1987 (James R. Mori & Ralph Wells); Apr 20, 1987; Mar 19, 1988; Apr 20, 1998 and Apr 21, 1999 (all KD). **San Luis Obispo County:** Diablo Range: Cottonwood Pass on junipers, Apr 10, 1987 (James R. Mori & Ralph Wells). Some of the specimens Ken Davenport found on the Kern County dates above were also found in this county.

109. Skinner's or Loki Hairstreak--*Callophrys loki* (Skinner, 1907).

Taxonomic note: The updated checklist by Pohl, Patterson and Pelham (2016) follows the same arrangement I use here, both for *loki* and *thornei*.

a. Skinner's or Loki Hairstreak--*Callophrys loki loki* (Skinner, 1907).

Southern California TL: "Mt. Springs, San Diego County"

Updated status: Many have combined *loki* with the *Callophrys gryneus* species complex but I place *loki* as a separate species here following the Emmel, Emmel and Mattoon 1998 state checklist and Shiraiwa's San Diego County publication.

Habitat: Juniper woodland in both desert and foothill woodland habitats.

Flight: March-April; late June and July and occasionally again in October-November, depending on rainfall patterns.

Distribution: Imperial, Riverside, San Bernardino and San Diego Counties.

Records: **Imperial County:** In-Ko-Pah Gorge, Mar 26, 1960 (KH).

b. Thorne's Hairstreak--*Callophrys loki thornei* (J. Brown, 1983).

Taxonomic note: Brown (1982(83) described this cypress feeding hairstreak as a species. As with other members of the *Callophrys gryneus* complex, the actual status of *thornei* has proven controversial. Allozyme chemical studies by Pratt, Balmer and Wright (2011) suggest that *loki* and *thornei* are conspecific. It also included observations that *Callophrys loki loki* has used Tecate Cypress as a larval host.

Southern California TL: San Diego County: Little Cedar Canyon, north slope of the San Ysidro Mountains (Otay Mountain), east end of Lower Otay Lake..." This is the only locality for this butterfly in the state.

Updated status: This butterfly had not yet been found in 1973. It is now considered a subspecies of *C. loki* and not a species-level taxon. I noted that when several adults emerged from pupae in my home several years ago (given to me by John Emmel who home reared the larvae), they were quite similar appearing and green colored ventrally like *loki* before turning brown. This butterfly may gain protected status and has survived several recent forest fires.

Habitat: Tecate Cypress (*Cupressus forbesii* Jepson) woodlands on Otay Mountain.

Flight: February to mid-July, depending on rainfall.

Records: **San Diego County:** Otay Mountain, Mar 8, 2004 (MW); Cedar Canyon, E Lower Otay Lake, June 13, 1994 (RLL).

110. Nelson's Hairstreak--*Callophrys nelsoni nelsoni* (Boisduval, 1852).

Taxonomic note: The status of *nelsoni* has been contentious. The Pelham names Catalogue (2008) and Pohl, Patterson and Pelham (2016) list *nelsoni* as a *gryneus* subspecies. *Callophrys nelsoni* had long been considered a species. Pratt, Balmer & Wright's allozyme study (2011) supported species status for *nelsoni*. *Callophrys siva* and *nelsoni* both occur in several southern California mountain ranges without interbreeding.

Updated status: Many populations on the Kern Plateau have been hit hard by forest fires as the host Incense Cedar burns extremely hot and *nelsoni* appears to be killed by hot fires in any life stage. The Sherman Pass population was decimated in 2002 and is now (as of 2017) rarely seen in that region. A few records below show some do show up as strays or maybe transients near recovering trees.

Habitat: Middle elevations in mountains where Incense Cedar grows.

Flight: Late May to early August.

Distribution: Kern, Los Angeles, Riverside, San Bernardino, Santa Barbara, San Diego and Tulare Counties.

Records: Tulare County: The 2002 McNally fire decimated both the Incense Cedar host and butterflies. The first record of a *nelsoni* after the fire was 4 miles west of Sherman Pass, July 11, 2011, singletons North Meadow Creek 5800' and Alder Creek Crossing on Cherry Hill road 5680', May 22, 2012 (all KD). **Santa Barbara County:** Big Pine Mountain, June 19, 2005 (NL). This record verified *nelsoni* occurs in this county and in a difficult to access mountain range.

111. Muir's Hairstreak--*Callophrys muiri* (Hy. Edwards, 1881).

Taxonomic note: This butterfly historically has been considered a subspecies of *gryneus*, *nelsoni*, *siva* and as a species. Studies done in the *gryneus* complex over the years have come up with contradictory results. Forister (2004) corroborated the species level status of this taxon (Pelham, 2008).

Updated status: Emmel & Emmel (1973) noted this butterfly occurred just north of their 1973 southern California line but I am including all of San Luis Obispo County in this publication. They included this under their coverage of Nelson's Hairstreak because historically many have treated *muiri* as a *nelsoni* subspecies and some unpublished DNA work would place the juniper feeding "*muiri*" in the inner Coast Ranges as a *nelsoni*.

Habitat: Cuesta Ridge where Sargent Cypress grows. A major fire occurred there a few years ago and I do not know if this butterfly has survived or recovered there.

Flight: Late March to mid-June.

Distribution: San Luis Obispo County.

Records: San Luis Obispo County: Cuesta Ridge, May 6, 1996 (KD).

112. Thicket Hairstreak--*Callophrys spinetorum spinetorum* (Hewitson, 1867).

Taxonomic note: Some now place this species in the genus *Loranthomitoura* Ballmer & Pratt, 1992, or in the subgenus *Cisincisalia* K. Johnson, 1992. The latter name is accepted as the subgenus name. Emmel & Emmel (1973) placed this species as a *Mitoura*.

Updated status: Unchanged.

Habitat: Foothill and Juniper woodland and mixed coniferous forest, with trees on which dwarf mistletoes (the larval host) are found. Adults can be found on hilltops and ridges and are attracted to mud.

Flight: March to September.

Distribution: Kern, Los Angeles, Riverside, San Bernardino, San Luis Obispo, Santa Barbara, San Diego, Tulare and Ventura Counties.

Records: **Kern County:** Tehachapi Mountain Park, Sep 7, 1970 and July 30, 1981 (KD) Bodfish-Havilah road, 2 mi. N of Havilah, Aug 18, 2016 (KD). Greenhorn Mountains: Old State road, Aug 22, 2003 (KD). **Santa Barbara County:** Big Pine Mountain, June 19, 2005 (NL); Figueroa Mountain, June 8, 2008 (Lynn Watson/NL). **San Diego County:** Laguna Meadows, May 9, 2012 (Frank Model); Wooded Hills Camp area June 19, 2015 (Ken Wilson); Kitchen Creek road near S1 and Hwy S1 near south gate, July 7, 2015 (Alex Grkovich). **San Luis Obispo County:** Atascadero, Mar 5, 1941 (V. Clemence); Shell Creek, Mar 12, 2011 (Paul Johnson II); McGinnis Creek at Navajo Flat, Aug 27, 2013 (SR); junction of Red Hill & Pozo roads, Sep 17, 2013 (KD). **Tulare County:** 3 mi N of Riverkern Sep 8, 1974 (JB); Spring, 7 miles south of Kennedy Meadows, June 25, 1982 (KD); 3 miles west of Sherman Pass, July 5, 1986 and July 3, 2005 (KD); E of upper Kern River, on tall hilltop above Goldledge Camp, Mar 19, 1996 (KD).

113. Brown Elfin--*Callophrys augustinus* (Westwood, 1852).

There are two subspecies in southern California. The presence of subspecies *annetteae* (dos Passos) in the eastern Mojave Desert needs confirmation. Many have used *Incisalia* as the generic name, considered a subgenus name by Pelham (2008).

a. Western Brown Elfin--*Callophrys augustinus iroides* (Boisduval, 1852).

Updated status: Unchanged.

Habitat: Foothill woodland and mixed coniferous forests. Often found in canyons and along streams.

Flight: February-July.

Distribution: All counties. This is a very common butterfly in most of the region outside the deserts.

Records: **Inyo County:** upper Nine Mile Canyon, May 25, 1985 (RPM).

b. Great Basin Brown Elfin--*Callophrys augustinus* near *concava* Austin, 1998.

Taxonomic note: This Great Basin subspecies (Austin, 1998c) seems to occur commonly on the Sierra Nevada east slope in lower Rock Creek Gorge in Mono County in early spring at least as far south as Whitney Portal. Many individuals will look like *iroides* in a series but most look like *concava*. These appear smaller and darker than *iroides*, some even resemble *mossii*.

Individuals often lack the marginal reddish-brown in males, females are slightly paler and have a less sharply defined marginal pattern on the hindwing.

Updated status: Described from Nevada. This butterfly appears to be uncommon in most of its range in Inyo and Mono Counties but that may be because watchers and collectors don't arrive until late in this hairstreak's flight period.

Habitat: Often found in canyons with a small stream.

Flight: April to early June.

Distribution: Inyo County.

Records: **Inyo County:** Lone Pine Creek, accessible by dirt road and trail from below the grade up to Whitney Portal, Apr 25, 2005 and Apr 28, 2006 (KD).

114. Desert Elfin--*Callophrys fotis mojavensis* Austin, 1998.

Taxonomic note: This subspecies (Austin, 1998c) is named after the Mojave Desert where it most frequently occurs. It differs from the nominotypical subspecies by being darker gray-brown dorsally with little red-brown in direct light. Females are often slightly ruddier than males but never as on nominotypical *fotis*. The dark brown ventral ground color is more evenly overscaled with white and thus the basal area is less contrasting. This hairstreak has also gone under the subgeneric name *Incisalia*.

Updated status: This species occurs in areas where it was unknown in 1973 and is not as rare as formerly believed, but it does tend to have a very brief flight period.

Habitat: Juniper-Pine woodland or desert scrub with junipers where the Cliff Rose host grows.

Flight: Late March to mid-May depending on locality.

Distribution: Inyo and San Bernardino Counties.

Records: **Inyo County:** Argus Mountains, Bendire Canyon 3800', Mar 30, 1980 (JFE); Death Valley National Park and vicinity: West of White Top Mountain 6400', June 3, 1980 (JFE & OS); Nopah Range, Nopah Peak 6200', May 16, 1997 (JFE & GP). **San Bernardino County:** Kingston Range Mar 17, 2017 (BB); Providence Mountains: Bonanza King Mine Canyon Apr 4, 1988 (KD); Mescal Range, Bailey road turnoff on Interstate 15, common on hillside and ridge, Apr 4, 1992 (KD & RPM).

115. Moss Elfin--*Callophrys mossii* (Hy. Edwards, 1881).

Two subspecies occur in southern California. This species was not known to occur in southern California in 1973. This species has also been placed under the genus *Incisalia*.

a. Doudoroff's Elfin--*Callophrys mossii doudoroffi* (dos Passos, 1940).

Updated status: The Devil's Gap locality may have been found shortly after 1973 and that locality was not likely within the southern California boundary as chosen by the Emmels.

Habitat: Steep and dangerous rocky walls with the *Sedum* host above rushing streams and waterfalls where footing is precarious. Falling in such habitats is definitely dangerous and some have received serious injuries trying to catch adults or collect larvae at this locality.

Flight: Late March-April.

Distribution: San Luis Obispo County.

Records: **San Luis Obispo County:** Jim Brock found host plants and larvae at Devil's Gap on Hwy 41 west of Atascadero and raised many larvae to adults. There are records for adults there on a steep rocky slope there, Apr 7, 1994; Apr 9, 1987 and Apr 6, 1993 (KD); Cerro Alto Camp, trail to Cerro Alto Peak, Apr 3, 2004 (WB); Apr 18, 2012 (WB, Mike Stangeland & Kim Davis); Cypress Mountain Drive in deep wooded canyon, Apr 5, 2017 and Santa Rita road, Apr 22, 2017 (JG).

b. San Gabriel Mountains Elfin-- *Callophrys mossii hidakupa* (J. Emmel, T. Emmel & Mattoon, 1998).

Taxonomic note: This subspecies is similar in appearance to Sierran *windi* (Clench, 1943) but differs by its "smaller size, duller aspect both dorsally and ventrally, and the bold, irregular median dark brown to blackish line on the ventral hindwing" (Emmel, Emmel & Mattoon, 1998e).

Southern California TL: San Bernardino County: San Gabriel Mountains, small side canyon of Stoddard Canyon 0.4 air miles east of Stoddard Peak, 4300 to 4500', 3 air miles south of Mt. Baldy Village.

Updated status: No one had seen or collected adults until recent years, and like *doudoroffi*, seeking this butterfly is dangerous.

Habitat: This lives in areas with rocky cliffs with the *Sedum* host.

Flight: April-May.

Distribution: Los Angeles and San Bernardino Counties.

Records: **Los Angeles County:** Glendora Ridge road west of Mt. Baldy, Apr 30, 2006 (FH); Glendora Ridge, Apr 26 and May 3, 2009 (BG).

116. Western Pine Elfin--*Callophrys eryphon eryphon* (Boisduval, 1852).

Updated status: Unchanged. Material from the Panamint Mountains, Nine Mile Canyon and Pine Flat at the south end of the Kern Plateau may tend towards *pallescens* (Austin, 1998).

Habitat: Stands of pines, often small ones, often in canyons with streams or along roadsides with pines and ravines along the road. This species also favors small forest openings or the edges of forest.

Flight: Late May to July.

Distribution: Inyo, Kern, Los Angeles, Riverside, San Bernardino, San Diego and Tulare Counties.

Records: **Inyo County:** Panamint Mountains: Water Canyon, June 15, 1974 (JFE and CS); near top of Nine Mile Canyon, May 25, 1985 and June 8, 1985 (KD). **Kern County:** south end of Kern Plateau at Cannell VABM near Pine Flat, June 9, 1994 (KD); Pine Flat along stream, June 10, 2006 (KD); Breckenridge Mountain at edge of Squirrel Meadow, June 10, 1985 (KD).

Riverside County: San Jacinto Mountains, Marion Mountain Trail, May 25, 1997 (JFE). **Tulare County:** top of Nine Mile Canyon, May 25, 1985 and June 8, 1985 (KD); Sherman Pass area, July 4, 2004 and May 22, 2012 (KD); Greenhorn Mountains: Poison Meadow near Tobias Peak, July 2, 2005 (KD).

117. Gray Hairstreak--*Strymon melinus pudica* (Hy. Edwards, 1877).

Updated status: Unchanged.

Habitat: Unrestricted but most common in city gardens, weedy areas and edges of agricultural areas.

Flight: Spring to fall.

Distribution: All counties.

118. Avalon Hairstreak--*Strymon avalona* (W. G. Wright, 1905).

Southern California TL: "Catalina Island", implied to be Avalon, Los Angeles County.

Updated status: The Gray Hairstreak (*Strymon melinus*) has reached Catalina Island and the late Charles Remington feared that competition between the two or inbreeding could doom this endemic species.

Habitat: Apparently unrestricted on the one island where it occurs.

Flight: Records are from mid-March to late September but that may reflect when visitors go there.

Records: **Los Angeles County:** Hills above Avalon, Apr 9 and May 29, 2010 (JB).

119. Mallow-Scrub Hairstreak--*Strymon istapa clenchi* (Austin & J. Emmel, 1998).

Taxonomic note: This new subspecies was originally described as a **Columella Hairstreak** (*Strymon columella*) subspecies. Subspecies *clenchi* is much darker than *columella* (Robbins)

& Nicolay, 1998) on the ventral surface as the marginal and submarginal spot series are of a darker color and more contrasting with other differences as well (Austin & J. Emmel, 1998a.).

Updated status: Unchanged with the exception that there are now three records from the Weldon area in the Kern River Valley in the southern Sierra Nevada.

Habitat: Edges of agricultural fields or disturbed land where the alkali mallow host grows. It also lives in the Anza Borrego State Park area and in the Providence Mountains. Adults will hilltop.

Flight: Late March to November.

Distribution: Imperial, Kern, Orange, Riverside, San Bernardino and San Diego Counties. Many records continue to be reported for the southernmost counties in the Colorado Desert and some in coastal San Diego County. This species tends to occur transiently and not in permanent colonies.

Records: Imperial County: 1 mi south of Brawley on canal bank at Dogwood & Mead, Oct. 5, 1986 (14 individuals, KD). **Kern County:** Sierra Nevada: near Lake Isabella at Hanning Flat, Sep 10, 2001 (Sterling Mattoon); Weldon near Paul's Place, Oct 23, 2013 (SR) and Weldon nr. junction of SR 178 and Kelso Creek roads, Nov 4, 2014 (KD). **Orange County:** San Joaquin Wildlife Sanctuary, Aug 15, 2017 (BBX). **Riverside County:** Chuckwalla Mountains, Apr 22, 2013 (MW); 4 miles N of Blythe in alfalfa field off Hwy. 95, May 17, 2015 (KD). **San Diego County:** Coastal record: Guajome Regional Park, Aug 10, 2017 (BBX).

120. Leda Hairstreak--*Ministrymon leda* (W. H. Edwards, 1882).

Taxonomic note: The hairstreak *Ministrymon ines* that was treated as a provisional species in Emmel & Emmel's 1973 book is now known to be the winter form of this species, as suspected.

Updated status: Unchanged.

Habitat: This butterfly's range is unchanged. It continues to be found mostly in the Colorado Desert as far north as Tecopa in the Mojave Desert in Inyo County. It favors mesquite desert scrub in well watered areas. Strays sometimes turn up in montane areas far from the host mesquite trees.

Flight: All months.

Distribution: Inyo, Imperial, Riverside, San Bernardino and San Diego Counties.

Records: San Bernardino County: Avawatz Mountains, 3 air miles WSW of Old Mormon Spring, June 18, 1989 (JFE & GP).

121. Marine Blue--*Leptotes marina* (Reakirt, 1868).

Updated status: Unchanged.

Habitat: Unrestricted in southern California.

Flight: All months in coastal areas, late March to early October inland.

Distribution: All counties.

122. Western Pygmy Blue--*Brephidium exilis* (Boisduval, 1852).

Updated status: Unchanged.

Habitat: Deserts, drier mountain areas, valleys and wastelands, vacant lots with weedy growth and disturbed areas near agricultural areas.

Flight: All months near the coast, late February to November inland.

Distribution: All counties.

123. Eastern Tailed Blue--*Cupido comyntas sissona* (W. G. Wright, 1905).

This species was first found in southern California along the Kern River near Bakersfield in 1970 (Davenport, 1986) but the Emmel's could not know that at the time even as they suggested that this species might occur in southern California. I did not yet know them or Jim Brock until 1975.

Taxonomic note: Populations in the San Joaquin Valley now go under the name *sissona* (Austin, 2002). Reportedly, *comyntas* occurs in the Owens Valley in Inyo County but I have not seen actual specimens or photographs from there. I suspect such records may actually represent recently named populations of *Cupido amyntula*. The previously used genus name *Everes* is now considered a subgenus.

Updated status: No *comyntas* have been seen along the Kern River since 1986, probably because of drought and destruction of the riparian woodland habitat by conservationists trying to save the beauty of Hart Park. This blue is a resident species northward of southern California along the Tule River drainage in Porterville and along the Kaweah River drainage.

Habitat: Riparian areas along streams or sandy soils with the host in flood plains.

Flight: March to early October.

Distribution: Kern County, questionable status in Inyo County.

Records: Kern County: San Joaquin Valley: Kern River at Hart Park near Bakersfield, Aug 4, 1970 (a few individuals, KD); Aug 8 to Oct. 13, 1985 (common, KD); Mar 20 to May 24, 1986 (several, KD). This is a transient butterfly in the area.

124. Western Tailed Blue--*Cupido amyntula* (Boisduval, 1852).

There are two subspecies in southern California.

a. Western Tailed Blue--*Cupido amyntula amyntula* (Boisduval, 1852).

Updated status: Populations in the southern Sierra Nevada in Nine Mile Canyon, at Walker Pass and in the Frazier Park area appear to have disappeared or colony sizes are reduced there due to long-term drought. The former generic name *Everes* is now a subgenus.

Habitat: Dry abandoned roads or chaparral grasslands and sagebrush where the *Astragalus* host grows.

Flight: Late February to early July, sometimes to early September in wet years.

Distribution: Inyo, Kern, Los Angeles, Orange, Riverside, San Bernardino, San Luis Obispo, Santa Barbara, San Diego and Ventura Counties.

Records: Inyo County: Nine Mile Canyon, once common here in the spring and early summer, there are now no recent records. **Kern County:** Two individuals were found at the west end of Koehn Dry Lake, Cantil in the Mojave Desert! May 26, 1992 (KD); Tehachapi Mountains: Cummings Creek, 7 mi south of Tehachapi, June 9, 1982 and May 19, 1999 (both KD); Cuddy Canyon 2 mi E of Frazier Park, June 11, 1987 and Apr 15, 1993 (KD); Cottonwood Pass, in Coast Ranges, Apr 20, 1987 and Apr 21, 1999 (KD); Walker Pass, Apr 29, 1993 (KD). **San Luis Obispo County:** Cottonwood Pass in Diablo Range, Apr 20, 1987 and Mar 19, 1988 (KD); Temblor Range and SR 58 near turnoff to Pozo, June 22, 1977 (KD), near Cholame, Apr 7, 2000 (KD).

b. Western Tailed Blue--*Cupido amyntula nesiotetes* (J. Emmel & T. Emmel, 1998).

Taxonomic note: This subspecies is much more lightly marked on the underside than mainland subspecies *amyntula*. The dorsal coloration and pattern of the females resembles *G. lygdamus sabulosa* and *P. icariodes parapheres*.

Updated status: Emmel & Emmel (1973 and 1998d) mentioned this population but it was undescribed until 1998. There are no recent changes in status reported.

Habitat: Fairly common on Santa Rosa Island.

Flight: March to July.

Southern California TL: Santa Barbara County: Santa Rosa Island, China Camp.

Distribution: Santa Barbara County,

Records: Santa Barbara County: Santa Rosa Island, China Camp, May 12, 1989 (JFE & TCE); Santa Rosa Island, July 4, 2011 (NL); Acapulco Canyon 100-450', Mar 17 and 18, 1990 (TCE & JFE). Most material taken were larvae reared to adults. The Channel Islands National Park provided the Emmels research permits and logistical assistance to study this and other butterflies.

125. Western or Echo Azure--*Celastrina echo* (W. H. Edwards, 1864).

There are two subspecies in southern California. Several authors have recognized *echo* as a species, I follow Pelham (2008) in this publication. Pelham mentions that pending further study, the arrangement is tentative.

a. Western or Echo Azure--*Celastrina echo echo* (W. H. Edwards, 1864).

Updated status: This blue was known as *Celastrina argiolus echo* in 1973. Since then several species have been recognized within what had been known as *argiolus* (Linnaeus) in North America.

Habitat: Foothill woodland, riparian canyons, mixed coniferous forest.

Flight: February to early August, occasional fall and winter emergences.

Distribution: All counties except Imperial.

b. Arizona Azure--*Celastrina echo cinerea* (W.H. Edwards, 1883).

Taxonomic note and updated status: To my knowledge, no one has really studied the azures that occur in desert mountain ranges in California or on the east slope of the Sierra Nevada. The attachment of the name *cinerea* to these California azures may be just an assumption. Are they biologically the same azure that lives in the Arizona mountain ranges? Is the Arizona Azure the same species as *echo*? Good questions, but there are no answers yet.

Habitat: These desert populations tend to occur in canyons with intermittent streams or water. The population at Lone Pine Creek Canyon and on the grade up to Whitney Portal was near streams and water.

Flight: March to mid-July.

Distribution: Inyo, Kern and San Bernardino Counties.

Records: Inyo County: Lone Pine Creek, Apr 9, 2007 (common, KD) and up grade to Whitney Portal, May 7, 1992 and June 18, 2006 (KD). **Kern County:** Cantil at west end of Koehn Dry Lake, May 16, 1992 (KD). Another probable *cinerea* was seen at Sageland at the Kelso Creek crossing, July 6, 2017 (KD). **San Bernardino County:** Providence Mountains, Bonanza King Mine Canyon, Apr 4, 1988 (KD); the Mescal Range off Interstate 15, Apr 4, 1992 (KD).

126. Ceraunus Blue--*Hemiargus ceraunus gyas* (W. H. Edwards, 1871).

Updated status: This species appears to become at least transiently established in the southern San Joaquin Valley and in the southern Sierra Nevada. In the year 2001, *ceraunus* established a large breeding population at Hanning Flat near Weldon and Lake Isabella that flooded that location earlier in the year.

Habitat: Alfalfa fields, wet areas with legumes, road cuts, mesquite forest and deserts.

Flight: All months but mostly March to early November.

Distribution: All counties except Santa Barbara County.

Records: **Inyo County:** Lubken Canyon, Sep 10, 2005 (several, KD). **Kern County:** San Joaquin Valley: Hart Park along Kern River, Sep 23, 1982 (KD); Kern River Basin 8 mi. WSW of Bakersfield, Aug 23 to mid-Sep 1984 (RPM); several in alfalfa field 1 mi E of Bakersfield July 21, 1988 and Sep 22, 1992 (KD); Kern River Valley: breeding at Hanning Flat in numbers (transient colony), Sep 16 and 22, 2001 (KD). **San Luis Obispo County:** 6 miles E of Paso Robles, Oct 10, 2012 (JG). **Tulare County:** Sierra Nevada: Chimney Peak road near Lamont Meadows on road cuts, July 6, 1983 and June 20, 1992 (both KD); ridge 7 mi south of Kennedy Meadows, June 18, 2007 (KD); Sherman Pass road at Alder Creek 6800', July 2, 2006 (KD).

127. Sonoran Blue--*Philotes sonorensis* (C. Felder & R. Felder, 1865).

There are five subspecies or segregates in southern California. While the three segregates have not been discussed well in the literature, the deserts edge and coastal segregates are well represented in the collection at the Natural History Museum in Los Angeles and San Diego Counties. Sierra Nevada segregate material is also at the LACM and at the Colorado State Museum.

a. Sonoran Blue--*Philotes sonorensis sonorensis* (C. Felder & R. Felder, 1865).

Southern California TL: San Diego County: "Sonora"; defined as San Diego by Oakley Shields. It is interesting to note that this species actually does occur near Sonora, Tuolumne County in northern California (Davenport, 2007). It does not occur in the Sonoran Desert in Arizona as some have stated.

Updated status: We have better documentation of nominate *sonorensis* in the Coast Ranges in Santa Barbara and San Luis Obispo Counties.

Habitat: Steep rocky slopes where the stonecrop hosts grow (but are not always visible to human observers).

Flight: February-early May.

Distribution: Kern, Los Angeles, Orange, Riverside, San Bernardino, San Luis Obispo, Santa Barbara and San Diego Counties

Records: **Kern County:** Pleito Creek south end of San Joaquin Valley near Mt. Pinos, Apr 16, 1981 (William D. Patterson II). **San Luis Obispo County:** Cerro Alto Trail, June 12, 2014 (JG) and Hi Mountain Apr 8, 2014 (SR). **Santa Barbara County:** Sierra Madre Range: Bates Canyon, Mar 28, 1995; Santa Barbara Canyon, Feb 5, 2005 and Dry Canyon, extremely abundant, March 10, 2005 (all KD) with adults even hilltopping!

b. Sonoran Blue--*Philotes sonorensis extinctus* Mattoni, 1991.

Taxonomic note: This subspecies was darker due to a higher percentage of melanic scales. Females have wider marginal bands and macules are 10 to 30% larger on average.

The cyanic overlay is the same as nominotypical *sonorensis*.

Southern California TL: Los Angeles County: "upper San Gabriel River wash."

Updated status: Emmel and Emmel (1973) mentioned this population locality at Azuza and the San Gabriel River wash as a "classic lower cismontane" locality.

Habitat: The canyon below the Dam at the mouth of the San Gabriel River Canyon

Flight: Late February to the third week of April.

Distribution: This subspecies was limited to the upper San Gabriel Canyon wash with collections made from February to April from 1922 to 1967. The colony was destroyed for a short engineering fix to provide a spreading basin for water recharge without regard to how this would affect long term environmental damage, thus the common name “Human Folly Blue” recommended by Rudolf Mattoni (1989, 1991). A long series of this blue is at the Natural History Museum of the Los Angeles County Museum.

c. Sonoran Blue--*Philotes sonorensis* (C. Felder & R. Felder, 1865) Sierra Nevada segregate.

Taxonomic note: How this segregate differs from nominotypical *sonorensis* was not stated by Emmel, Emmel and Mattoon in their 1998 state checklist.

Updated Status: This species was unknown in the southern Sierra Nevada until 1985 and has since been discovered in the Piute Mountains, the Chimney Peak road at the end of the Kern Plateau, the area west of Walker Pass and along the Upper Kern River from Fairview to the Kern River and the lower Sherman Pass road from Dry Canyon 4300' to a side canyon at 4900'.

Habitat: Riparian canyons or rocky canyon walls with ample drainage.

Flight: Late January to the third week of April.

Distribution: Kern and Tulare Counties. *Philotes sonorensis* uses the host plant *Dudleya calycicola* Bartel & Shevock in the southern Sierra Nevada (Davenport, 1988).

Records: Kern County: Piute Mountains, Erkin Creek Canyon on south slope of Laura Peak 3600-4600', Mar 28 and 29 and Apr 14, 1987 (KD); E side of Piute Mountains, rocky slope off Piute Mountain road, 4+ mi. E of Sageland, May 12, 2005 (WB, Mike Stangeland & Kim Davis); Chimney Peak road 3.7 miles NE of SR 178, Mar 21-28, 2003 (KD); east side of Sierra Nevada, Indian Wells Canyon 6968', common Feb 23, 2002 (Bob & Susan Steele). **Tulare County:** Chimney Peak road, near Lamont Meadows at south end of Kern Plateau, Apr 10, 1985 (KD); upper Kern River in side canyon at Dam and Sherman Pass road in side canyon at 4900', 3.5 mi. E of Kern River, Apr 2 and 14, 1987; and six individuals Jan 27, 2014!; Feb 4, 2015 (all KD) at a locality site where this butterfly was believed extirpated even before the 2002 fire! Butterfly ranges and colony sites expand and contract!

d. Sonoran Blue--*Philotes sonorensis* (C. & R. Felder, 1865). Desert-Edge segregate.

Taxonomic note: Nothing was published on how this segregate differs. This segregate is still being reported by watchers and photographers in the Anza-Borrego State Park area. Emmel, Emmel & Mattoon included this segregate in their 1998 state checklist.

Habitat: Riparian canyons at the deserts edge in the Peninsular Ranges.

Flight: Late January to mid-April.

e. Sonoran Blue--*Philotes sonorensis* (C. & R. Felder, 1865), San Diego County coastal segregate.

Taxonomic note: Nothing has really been published as to how this population is different. Emmel, Emmel & Mattoon included this segregate in their 1998 state checklist.

Habitat: Presumably cliffs and canyon walls near the Pacific Ocean.

Flight: Presumably February-April.

128. Small Blue--*Philotiella speciosa* (Hy. Edwards, 1877).

There are two subspecies in southern California.

a. Small Blue--*Philotiella speciosa speciosa* (Hy. Edwards, 1877).

Southern California TL: Havilah, Kern County.

Updated status: This species was formerly placed in the genus *Philotes* in 1973. This species only flies at specific localities in years with good and well distributed rainfall. Many desert butterflies can delay emergences for several years awaiting sufficient rains and host plant growth.

Habitat: Desert ravines and washes in desert scrub with the hosts.

Flight: Mid-March to May.

Distribution: Imperial, Inyo, Kern, Los Angeles, San Bernardino, Santa Barbara, San Diego and Ventura Counties.

Records: Inyo County: Death Valley area: Last Chance Range near Crater (ghost town) May 27, 1974 (JFE); 1 mi. west of White Top Mountain 6400', June 3, 1980 (JFE & OS); Emigrant Canyon, Death Valley, May 5, 1976 (Ralph Wells); Lubken Canyon 2 mi south of Lone Pine, ¼ to 1 mile west of US 395, May 7, 1992; Apr 25, 2005 (both KD) and Apr 30, 2017 (KD & MW).

Imperial County: 2 mi NW of Ocotillo, Mar 14, 1995 (John B. Vernon). **Kern County:** Randsburg, May 13, 1980 (KD); E end Piute Mountains near Sageland, N of Kelso Valley, Apr 22, 1984 (JGP). **San Bernardino County:** Red Mountain, Apr 27, 1978 (KD) and Apr 20, 1992 (JB). **San Diego County:** Badlands, Anza Borrego State Park, Mar 16, 2009 (KS). **Tulare County:** Sherman Pass road at 4700', June 14, 1977 (JB). This record may represent subspecies *bohartorum* (Tilden, 1969). **Ventura County:** Quatal Canyon, in April (California Insect Survey).

b. Small Blue--*Philotiella speciosa purissima* Priestaf & J. Emmel, 1998.

Taxonomic note: This subspecies is distinguished by its larger size, darker ground color dorsally in both sexes and broad brown-black outer margins in the males and bolder black spotting ventrally (Priestaf & J. Emmel, 1998).

Southern California TL: Santa Barbara County: Harris Grade at Burton Mesa Blvd., north of Lompoc. **Distribution:** Santa Barbara County.

Updated status: This distinctive subspecies was discovered after 1973. It is scarce and reportedly the prime locality for this butterfly now has restricted entry.

Habitat: This subspecies lives in a starkly different habitat than *speciosa* in the Mojave Desert. It occurs in chaparral and oak woodland habitat in a coastal area.

Flight: Early April to early July.

Distribution: Santa Barbara County.

Records: Harris Grade at Burton Mesa Blvd., May 22, 1992; Apr 23, 24, and 30, 1993 (all R. Priestaf); Pine Canyon, July 3, 2008 July 3, 2008 (Liz Bell).

Note: At the time the Emmel & Emmel Southern California publication appeared, the *Euphilotes* blues were then known as in the genus *Philotes*.

129. Square-Spotted Blue--*Euphilotes battoides* (Behr, 1867).

Taxonomic note: The *battoides* complex was formerly placed in the genus *Philotes*. This is a very difficult group in which mtDNA work and male genitalia have been unsuccessful in resolving all identification issues. Specialists are hoping that nuclear DNA work using several genes will better resolve such issues with several difficult to identify closely related butterfly groups. Field data, host plants and sympatric or allochronic occurrence can be other indicators.

Records for many of these blues are limited to what is written in the research done by Gordon Pratt, Oakley Shields, John Emmel and Derham Giuliani and published in the Systematic publication in 1998.

The Death Valley National Park Report for *Euphilotes* is lumped based on the NABA list which covers few subspecies and does not recognize many entities considered species in the Pelham Catalogue. Since so many *Euphilotes* occur in the Death Valley area, it is unclear what actual entities belong to localities listed for “*battoides*.” The assignment of these butterflies is tentative pending further studies.

There are two subspecies in southern California. Others previously treated as *battoides* subspecies are treated separately in this publication.

a. Death Valley Square-Spotted Blue--*Euphilotes battoides argocyanea* Pratt & J. Emmel, 1998.

Taxonomic note: This is the bluest of all *Euphilotes*. The host plant is *Eriogonum umbellatum* var. *nevadense* Gandg. (Pratt & J. Emmel, 1998a).

Southern California TL: Inyo County: E end of Nelson Range, slope 0.3 km W of Junction of Saline Valley road and Hunter Mountain road 1800-1900 m.

Updated status: Unknown since no one is currently studying these butterflies in Death Valley NP.

Habitat: This blue lives in very dry and warm desert mountains.

Flight: May-early June.

Distribution: Inyo County.

Records: Inyo County: E end of Hunter Range, west of junction of Saline Valley and Hunter Mountain road, June 2, 1980 (JFE & OS); Argus Mountains, May 1986 (GP?). Coso Range 0.5 km E of Centennial Spring 2,000 m, May 20, 1984 (GP).

b. Panamint Mountains Square-Spotted Blue--*Euphilotes battoides panamintensis* Pratt & J. Emmel, 1998.

Taxonomic note: This subspecies occurs in the Panamint Range in Death Valley National Park and like many *Euphilotes* species in this region, has intense cyanic blue scaling above (Pratt & J. Emmel, 1998a). The host is *Eriogonum umbellatum subaridum* S. Stoles.

Southern California TL: Inyo County: Panamint Range, Wildrose Canyon 2100 m

Updated status: Unknown, no one is currently doing research in Death Valley National Park.

Habitat: This area is better vegetated and at higher elevation.

Flight: July.

Distribution: Inyo County.

Records: Inyo County: Panamint Range, Wildrose Canyon 2100 m, July 17, 1982 (JFE); Telescope Peak Trail between Mahogany Flat and Arcane Meadows, 2600 to 2900 m July 10, 1978; Charcoal Kilns, Wildrose Canyon 2100-2200 m, July 10, 1978 (JFE & OS).

130. El Segundo Blue--*Euphilotes allyni* (Shields, 1975). **New combination.**

Taxonomic note: This boldly spotted blue on the ventral surface is elevated to species status here based on recommendations from John Emmel, Paul Opler and Gordon Pratt. The relationship of this blue has long been unclear. It can't be a *bernardino* since it is distinct from sympatric populations of that species that use the coastal buckwheat *Eriogonum cinereum* as their host plant. The El Segundo Blue uses *Eriogonum parvifolium* as its larval host which *bernardino* larvae refuse and which *E. battoides* does not use. This coastal *Euphilotes* blue is

also well isolated from *Euphilotes battoides* that occur far inland. It is also interesting that *allyni* has recently been found in Santa Barbara County in a disjunct range extension.

Southern California TL: Los Angeles County: El Segundo and a few other locations.

Updated status: This butterfly was unnamed in 1973 at the time of the Emmel's publication and has since been named and declared a federally endangered species, protected by Chevron at El Segundo near the Los Angeles Airport. Changing the names status of this butterfly should not change its protected status.

Habitat: Beach sand dunes with the *Eriogonum parvifolium* host.

Flight: Late June to September.

Distribution: Los Angeles (El Segundo and Palos Verdes Peninsula) and Santa Barbara Counties (near Lompoc). This blue is named after El Segundo, the city where this blue occurs and from which it draws its common name (Pratt & J. Emmel, 1998a).

131. Glaucou Blue--*Euphilotes glaucon* (W. H. Edwards, 1871).

Taxonomic note: The use of the name *glaucon* can be controversial because many have known *glaucon* as a subspecies of *battoides*, but when two "*battoides*" share a habitat without intergrading, one must be another species. The idea of 'host plant races' was once popular but now the view is to treat butterflies formerly viewed as host plant races as separate species.

a. Southern Glaucou Blue--*Euphilotes glaucon australoglaucou* Pratt & Emmel, 1998.

Taxonomic note: This subspecies barely reaches our arbitrary southern California boundary at Lone Pine Canyon. It differs from nominotypical *glaucon* in the males being more lightly marked dorsally, and the cyanic blue overscaling in females.

Updated status: This *Euphilotes* has been treated as *a battoides* subspecies in the past.

Habitat: Dry slopes but with considerable vegetation, oak-pine and juniper woodland.

Flight: Mid-May to late June.

Distribution: Lone Pine Canyon, Inyo County. This record is based on a single specimen taken in July (no specific date or collector given in Shields, (1977) at the LACM. It is possible more have been collected in the Lone Pine area since then. This butterfly may be found commonly there as this group normally has very brief flight periods.

b. Comstock's Blue--*Euphilotes glaucon comstocki* (Shields, 1975).

Taxonomic note: This butterfly was described from a series collected in the Tehachapi Mountains just before it was rediscovered but published (Shields, 1975) after its rediscovery. The butterfly appears similar to *Euphilotes enoptes enoptes* but differs strikingly in the shape of the male genitalia. It appears that another species or two resemble *comstocki* as some male genitalia checked by specialists were *enoptes* or *dammersi*-like genitalia. Since *comstocki* uses *Eriogonum umbellatum* as its larval host, *Euphilotes ancilla* might also be expected.

Southern California TL: Kern County: Tehachapi.

Updated status: When the Emmels published their southern California book, they noted that "a unique *battoides* subspecies was known only from a series of specimens in the Natural History Museum of Los Angeles County collected in the Tehachapi Mountains (July 22, 1918) by Comstock" The butterfly remained missing from 1918 until July 6, 1974 when Jim Brock discovered a population on Piute Mountain Vista and James Scott discovered it the same day in the Kennedy Meadows area on the Kern Plateau. Now we know that this butterfly is actually very common and widespread in the Piutes, Greenhorns and on the Kern Plateau in the Sierra Nevada, but it is scarce in the Tehachapi Mountains. How could such a common butterfly have

been missed by so many collectors for 56 years? How many people can recognize and identify *Euphilotes* based on field marks in this group or be able to identify male genitalia?

Distribution: Inyo, Kern and Tulare Counties. It is unknown exactly where *comstocki* and *australoglaucon* meet on the Sierran east slope. Perhaps the Lone Pine Canyon record for “*glaucon*” is *comstocki*? There was only one specimen to support that record.

Records: **Inyo County:** Below top of Nine Mile Canyon, Aug 5, 2008 (KD). **Kern County:** Indian Wells Canyon 5500’, July 28, 1997 (JFE & GP). Piute Mountains: Piute Mountain Road MP 6.1 to 7 overlooking Lake Isabella, July 5 & 17, 2000 (KD) on *Eriogonum umbellatum*, ...*Euphilotes bernardino* was below MP 6.1 on *Eriogonum fasciculatum*. Greenhorn Mountains 1 mi south of Tiger Flat 6300’, associated with *Eriogonum umbellatum*, July 22 and Aug 4, 2000 (KD); Old State Road near junction with Waggy Flat road 4500-5000’, July 8, 2001 (KD). There is a possible record for this species on Seymour road near the McGill Camp on Mt. Pinos, two females taken on *E. umbellatum* July 11, 2002 (KD), very near the Ventura County line. **Tulare County:** Sherman Pass Road near Bald Mountain at rocky outcrop of metasedimentary rock, July 6, 1992 (KD); colonizing Alder Creek 6800’, July 5, 2009 (KD), after the disastrous 2002 fire since the *E. umbellatum* host began growing here; Cherry Hill road, lower Alder Creek crossing at 5680’ to Poison Meadow on road banks on host, July 12, 2017 (KD).

132. Bernardino Blue--*Euphilotes bernardino* (W. Barnes & McDunnough), 1916.

There are five subspecies or segregates that occur in southern California.

Taxonomic note: Rudolf Mattoni (1988 (1989) elevated *bernardino* to species status. This was true even though *battoides* and *bernardino* had similar MtDNA and up until then, these were considered host plant races or subspecies. **Bernardino Blues** and other members of the *Euphilotes battoides* complex occasionally do occur sympatrically on different host plants. Since Mattoni wrote this paper, there is even more evidence that this is true. Both Gordon Pratt and John Emmel have found this to be true in the Death Valley region and in the Coso Mountains. It is also true in the southern Sierra Nevada.

Both *bernardino* and *Euphilotes glaucon comstocki* can be encountered on the same roads on the same day in the Piute, Greenhorn and Sierra Nevada Mountains with *bernardino* at lower elevations on *Eriogonum fasciculatum* and *comstocki* at higher elevations on *Eriogonum umbellatum*. The replacement of these butterflies and their hostplants can be abrupt. This observer parked his car at milepost 6 on the Piute Mountain road overlooking Lake Isabella July 5 & 17, 2000 (KD). On one side along the roadside below my car the *Euphilotes* were all *bernardino*; above the car was predominately *comstocki* (with the exception of a stray *bernardino* or two). There are five subspecies or *bernardino* segregates in southern California.

a. Bernardino Blue--*Euphilotes bernardino bernardino* (W. Barnes & McDunnough, 1916).

Southern California TL: Camp Baldy, San Gabriel Mountains.

Distribution: All counties.

Updated status: This *Euphilotes* was elevated to species status in the year 1990 (the year the paper actually arrived in mailboxes). Many factors other than just DNA or genitalia can suggest speciation. Sympatry of *bernardino* with “*battoides*” or “*glaucon*” has been widely observed in southern California and in Inyo County west of Independence a few miles north of Lone Pine.

Habitat: Hills, mountains or coastal plains where the *Eriogonum fasciculatum* host (sometimes other buckwheat species are used) host grows.

Flight: March to September near the coast, May-July inland.

Records: Imperial County: Mountain Springs 2,292', June 24, 1961 (Richard Breedlove). **Kern County:** Tehachapi Mountains at top of Water Canyon, June 9, 1996 (KD); Piute Mountains on Piute Mountain road from Bodfish-Havilah summit to MP 6, on *Eriogonum fasciculatum* occurring next to *E. glaucon comstocki* with little overlap July 17, 2000 (KD); Mt. Pinos, July 14, 1970 (KD). **San Luis Obispo County:** Coast Ranges: Syncline Hill, May 22 and 29, 1999 (KD); Hwy. 166, 1 mi west of Kern County line, May 28, 1983 (KD). **Santa Barbara County:** Sierra Madre Range: Aliso Canyon and Cuyama Valley hills, June 10, 1983 (KD). **Tulare County:** Upper Kern River, Calkin's Flat to Limestone Camp, June 21, 1982; south of Corral Creek, June 4, 2003; Sherman Pass road at 5400', June 18, 1983 (KD). **Ventura County:** Frazier Mountain at Chuchupate Camp, June 22, 1979 (KD).

b. Inyo Mountains Blue--*Euphilotes bernardino inyomontana* Pratt & J. Emmel, 1998.

Taxonomic note: This subspecies (Pratt & J. Emmel, 1998a) seems intermediate between subspecies *bernardino* and *martini* in terms of size of the orange aurora of the hindwings. These populations were formerly included under the name *martini*.

Southern California TL: Inyo County: Panamint Range, south end; ridge just above Wood Canyon, 1,500-1,700 m elev. 1.3 km NNW of Manly Peak.

Updated status: This described subspecies is intermediate in a cline between *bernardino* (as a subspecies) and *martini*.

Habitat: Mojave Desert ranges west of the eastern Mojave Desert where *martini* occurs. This blue occurs close to the buckwheat host.

Flight: Late April to early July.

Distribution: Inyo, Kern, San Bernardino and Tulare Counties.

Records: Inyo County: Nine Mile Canyon, July 6, 1983 (KD). Base of up grade to Whitney Portal and Lone Pine Canyon, June 18, 2006 (KD). Argus Mountains: Homewood Canyon, May 28, 2010 (KD). **Kern County:** South end of Kern Plateau, south side Lamont Peak on Chimney Peak road, May 31, 1977 (Mike Smith) and June 25, 1982 (KD); near Sageland N of Kelso Valley, June 17, 1997 (KD); Walker Pass, May 31, 1997 (Mike Smith). **Tulare County:** Chimney Peak road N side of Lamont Peak, June 25, 1982; July 4 and 6, 1983 (KD).

c. Martin's Blue--*Euphilotes bernardino martini* (Mattoni, 1954).

Taxonomic note: This subspecies has slightly smaller spots, a much broader aurora and narrower black margins on the males. Some females have blue dorsally (Pratt & J. Emmel, 1998a).

Updated status: The range of this subspecies has been greatly reduced in California since the description of *inyomontana*. This subspecies has a wider range in Arizona where I found a good colony just as one enters the Hualapai Mountains from Kingman.

Habitat: Eastern Mojave Desert ranges where *Eriogonum fasciculatum* grows.

Flight: Late March to early June.

Distribution: Inyo and San Bernardino Counties. Most reported records were from the Providence Mountains before it became a Preserve. I have seen this blue commonly in early June at Mountain summit in the Mescal Range near the off ramp going east from Interstate 15, not in the Mojave Preserve. Most known populations inside California are inside the Mojave Preserve

d. Garth's Blue--*Euphilotes bernardino* near *garthi* Mattoni, 1988(89).

Taxonomic note: This subspecies was described by Mattoni in the Journal of Research on the Lepidoptera 1988(89). It is distinguishable by the upper forewing band width, upper hindwing marginal band not disassociated; underside macules particularly the postmedian set are extremely large, postmedian set arranged without dissociation between interspaces. This was originally believed to be an endemic blue to Cedros Island in Mexico, but apparently this phenotype occurs disjunctly at Point Loma, San Diego County.

Distribution: San Diego County.

Habitat: Presumably coastal hills with the host.

Flight: March to April. There are no dates (or collector) given for the Point Loma locality in literature I examined.

Records: Point Loma, San Diego County, specifics not in the literature.

e. Santa Monica Mountains Bernardino Blue--*Euphilotes bernardino* (Barnes & McDunnough), Santa Monica Mountains segregate.

This undescribed and unnamed segregate uses Ashyleaf buckwheat *Eriogonum cinereum* as a host. This segregate is listed in Emmel, Emmel & Mattoon's 1998 California state checklist. Other information was unavailable.

133. Ellis' Blue--*Euphilotes ellisi* (Shields, 1975).

There are two subspecies in southern California.

a. Ellis's Blue--*Euphilotes ellisi euromojavensis* Pratt & J. Emmel, 1998.

Taxonomic note: This was the unnamed mystery fall flying "**Philotes**" blue in the Providence, New York and Clark Mountains that puzzled the Emmels in their 1973 book. It uses *Eriogonum heermanii* as the larval host. This subspecies differs from nominotypical *ellisi* in that this subspecies is smaller and tends to have broader black borders in the males and a narrower aurora on the hindwings in both sexes.

Southern California TL: San Bernardino County: Mid-Hills; north facing slope of Macedonia Canyon, 1,400-1,500 m, 1.0 km SE of Columbia Mountain....

Updated status: Unknown since most localities are off limits to collectors in the Mojave Preserve and most watchers believe this is just another common "*battoides*."

Habitat: The eastern Mojave Desert, mostly in the eastern Mojave Preserve.

Flight: September-early October.

Distribution: San Bernardino County.

Records: San Bernardino County: Macedonia Canyon, Mid-Hills, Aug 13, 1977 (JFE); Providence Mountains near Foshay Pass, Sep 20, 1993 (KD). Several records are in the original description (Pratt & J. Emmel, 1998a).

b. Ellis's Blue--*Euphilotes ellisi avawatz* Pratt & J. Emmel, 1998.

Taxonomic note: This subspecies uses the same host as *euromojavensis*. It differs from it by having a narrower black border on the upperside hindwings with the interneural spot is generally more visible. The orange aurora on the dorsal hindwings are also generally broader and the upper surface of females have a light gray-brown color often with extensive blue, which is lacking in *euromojavensis* (Pratt & J. Emmel, 1998a).

Southern California TL: San Bernardino County: Northeastern Mojave Desert: Avawatz Mountains, 5 km west of Old Mormon Spring 1,100m.

Updated status: Unknown as no one to my knowledge is doing current butterfly research in the Avawatz Mountains or in Death Valley National Park.

Habitat: Arid eastern Mojave Desert in the Avawatz Mountains

Flight: Late July to September.

Distribution: Inyo and San Bernardino Counties. This blue apparently also occurs in the Death Valley area but the harsh temperatures and remoteness of the areas eastern Mojave Desert mountain ranges have made this a hard place to investigate.

134. Bauer's Blue--*Euphilotes baueri* (Shields, 1975).

There are two subspecies found in southern California. This butterfly was essentially unknown in 1973.

a. Bauer's Blue--*Euphilotes baueri baueri* (Shields, 1975).

This subspecies is included because it is mentioned as occurring inside Death Valley National Park in a report "Butterflies of Death Valley National Park" compiled by David A. Ek of the National Park Service, updated 06/21/2007. The host plant for this species is *Eriogonum ovalifolium*. The National Park Service Report chose to use NABA names and while it mentions many new *Euphilotes* like *baueri*, localities and other information are all lumped under "battoides" for names stability. But, the confusion of not knowing what what species in the Death Valley area is where *Euphilotes* entities abound and flaunt conventional wisdom in a *Euphilotes* group in which specialists differ in opinions as to what is what.

b. Vernalis Blue--*Euphilotes baueri vernalis* Pratt & J. Emmel, 1998, new combination.

Taxonomic note: Gordon Pratt (email, February 24, 2018)) recommended this blue be treated as a subspecies of *Euphilotes baueri* because of similarities of field marks, the host plant *Eriogonum kennedyi* is closely related to *baueri*'s host *Eriogonum ovalifolium* and occurs together with *Euphilotes battoides argocyanea* in the Coso Mountains of Inyo County, so is best treated as a different species. Another consideration is that early flight periods fit better with *baueri* which also flies relatively earlier than with *battoides* which have later flights. This blue has narrow black borders and the presence of blue on the females will distinguish this blue from *E. bernardino* (Pratt & J. Emmel, 1998a). Pratt stated (pers. comm.) that *vernalis* is more like *battoides* in terms of allozyme studies but the quandary is that the larval host plant is more similar to *Eriogonum ovalifolium* which is the host of *baueri*. Paul Opler (pers. comm.) believes it may be better to treat *vernalis* as a separate species.

Southern California TL: San Bernardino Mts., Coxey Meadow, 1,600 m.

Updated status: This blue is now considered to be a subspecies of *Euphilotes baueri* and not a *battoides*. The species was reported to be common near Coxey Meadow in 2017 by Dennis Holmes.

Habitat: Northwestern slopes of the San Bernardino Mountains where the host *Eriogonum kennedyi* var. *kennedyi* Porter Ex Wats. occurs.

Flight: Mid- April to early May.

Distribution: Inyo and San Bernardino Counties.

Records: San Bernardino County: near Coxey Meadows, Ord Mountains, Apr 11, 2017 (Dennis Holmes).

135. Mojave Blue--*Euphilotes mojave mojave* (F. Watson & W. Comstock).

Taxonomic note: This species was formerly placed in the genus *Philotes* in 1973. The status of Mojave Blues as a species or as a subspecies of *Euphilotes enoptes* is controversial. However, I have observed both *E. mojave* and *E. enoptes tildeni* flying together in lower Nine Mile Canyon in Inyo County. *E. mojave* was in the canyon bottom below the bridge, *tildeni* was on buckwheat hosts on the canyon walls. That looks like two species to me.

Updated status: Long-term drought has had an effect on this species. Like many desert species, when it doesn't rain in the deserts, many butterflies do not emerge, waiting for wetter years.

California Fish & Wildlife apparently believes that Mojave Blues are in a threatened status, so in 2017 it now requires a permit to study or collect this species. There were reports that the species had a good flight in 2017 by Brian Banker in the Bob's Gap area of the Mojave Desert in Los Angeles County following good winter rains. That is not surprising.

Habitat: Desert canyons and ravines with the host. The two most commonly used hosts are *Eriogonum pusillum* Torrey & Gray and *E. reniforme* Torr. & Frem. (Polygonaceae), these unusual host plants that *E. enoptes* don't use is one argument for *mojave* being a species level taxon.

Flight: Mid- March to early May.

California TL: Mojave Desert probably around Randsburg, Kern County.

Distribution: Inyo, Kern, Los Angeles, Riverside and San Bernardino Counties.

Records: **Inyo County:** Bridge crossing lower Nine Mile Canyon, May 26, 2001; April 4-27, 2003 (KD). **Kern County:** Kelso Valley area 13 miles south of Weldon at SR 178 to 1-mile SW of Sageland, May 4, 1976 (JB), Apr 26, 1979 and Apr 30, 1991 (KD); Butterbredt Peak area on lower slopes and canyons, May 26, 1978 and May 23, 2005 (KD). Tehachapi Mountains: 4.7 miles SE of Oak Creek Pass off Willow Springs road, May 13, 2001; Apr 25 and May 7, 2006 (all KD); Mojave Desert: Randsburg, Apr 21, 1974 (JB).

136. Pacific Dotted Blue--*Euphilotes enoptes* (Boisduval, 1852).

There are three subspecies given here but this arrangement is tentative as seen below under taxonomic notes.

Taxonomic note: This species was formerly placed in the genus *Philotes* in 1973. Knowing how to place components of this group is problematic. *E. ancilla* has been split off as another species which is genitally distinct in recent years. Subspecies *langstoni* occurs with *tildeni* in the Kelso Valley-Sageland area and with other *enoptes* subspecies in Mono County. Many view *dammersi* along with *opacapulla* as a separate species and is so treated in this publication.

a. Tilden's Blue--*Euphilotes enoptes tildeni* (Langston, 1964).

Taxonomic note and updated status: The species and subspecies names are unchanged but unnamed segregates have now been grouped under this name because of this subspecies predominately fall flying biology, though there are also be spring flights at some localities (Nine Mile Canyon, Inyo County; E slope of the Piute Mountains, Kern County; Sherman Pass Road, Tulare County). Populations found in the San Gabriel Mountains, Tehachapi Mountains and in the Mt. Pinos-Frazier Mountain area are now grouped with *tildeni* (Pratt & J. Emmel, 1998a). Some populations in the Sierra Nevada and in Mojave Desert Mountain Ranges also seem to be this blue biologically and phenotypically.

Flight: Late March-May and late August to early October. Main flight is in late summer and fall. Some populations are rare or absent in the spring.

Distribution: Inyo, Kern, Los Angeles, San Luis Obispo, Santa Barbara, Tulare and Ventura Counties. This subspecies is now known to occur widely in the Tehachapi Mountains, the southern Sierra Nevada, the Mojave Desert even into the Coso and Panamint Mountains.

Records: **Kern County:** Inner Coast Ranges: Davis road at Ortega Grade and east end of Annette road, Sep 7, 1992 (KD & Kevin Davenport) and Sep 18, 2009 (Jack Levy & KD). **San Luis Obispo County:** Cottonwood Pass, 6 mi NE of Cholame, Aug 23, 1963 (Jerry Powell) and Aug 26, 1963 (J. Powell & O. Sette); Sep 11, 1964 (RLL & Powell); Syncline Hill off SR 58, Sep 22, 1988 and May 11, 1999 (KD). **Santa Barbara County:** Sierra Madre Range, only one individual in Dry Canyon, Aug 21, 2004 (KD).

b. Dark Aurora Blue--*Euphilotes enoptes cryptorufes* Pratt & J. Emmel, 1998.

Taxonomic note: This scarce blue is similar in appearance to *Euphilotes mojave* but has an extremely dark aurora with black scales often covering the orange and uses a different host plant *Eriogonum davidsonii* (Pratt & J. Emmel, 1998a).

Updated status: This butterfly was unknown in 1973 and is not much better known now.

Habitat: Not well known, it occurs on south facing slopes...see below. The host is probably *Eriogonum davidsoni*.

Flight: May to early July.

Southern California TL: Riverside County: south facing slopes of Pyramid Mountain in the San Jacinto Mountains, 1,500 to 2,100 m.

Distribution: Riverside County. Found only in the San Jacinto and Santa Rosa Mountains on south facing slopes. This blue also occurs in the Sierra Juarez in Mexico. It may be found in the Laguna Mountains or Santa Ana Mountains where the hostplant is present. There have been very few adults collected or reared in California.

c. Langston's Blue--*Euphilotes enoptes langstoni* (Shields, 1975).

Taxonomic notes: This spotted blue is most similar to *Euphilotes mojave mojave* from which it differs in its larger size, different hostplant and females with a prominent aurora. Females of both can have extensive blue on the upperside (Shields, 1975).

Habitat: Mojave Desert plant association in the arid Sierra Nevada on an unidentified yellow flowered buckwheat.

Flight: Late April-early June.

Distribution: Inyo, Kern, Tulare (Chimney Peak Ranger Station area) Counties. This subspecies ranges at least as far south as the Butterbrecht Peak area in Kern County. There may be a record from a side canyon near the onramp at SR 58 to Cameron road on the desert side of the Tehachapi Mountains, with one individual collected on an unidentified yellow flowered buckwheat.

Records: **Inyo County:** Upper Nine Mile Canyon, June 5, 1999 (KD); Olancho Creek 5200', May 7, 1990 (JFE). **Kern County:** Sierra Nevada: Butterbrecht Peak, May 22, 1981 and May 23, 2005 (KD); Chimney Peak road south of Lamont Peak, June 25, 1982 and July 4, 1983 (KD); Canyon 11.5 mi south of Weldon Apr 30, 1991 (KD); Canyon 1.5 mi south of Butterbrecht Peak, May 26, 1978 and May 21, 1988 (KD); Tehachapi Mountains, canyon N side of Cameron road onramp, Apr 27, 1989 (KD). **Tulare County:** Chimney Peak road, N side of Lamont Peak, July 4 and 6, 1983 and 10 mi south of Kennedy Meadows in ravine, June 7, 2008 (KD).

137. Dammer's Blue--*Euphilotes dammersi* J. A. Comstock & Henne, 1933), new combination.

Taxonomic notes: This butterfly was formerly placed in the genus *Philotes* and has long been treated as a subspecies of *E. enoptes*. There is strong evidence that *dammersi* is a different species than *E. enoptes* based on its' distinct wing morphology for a *Euphilotes*, a fall flight period and unusual host plants *Eriogonum elongatum* Benth, and *E. wrightii* Torr. Ex. Beth., ssp. *trachygonum* (Torr) S. Stokes (Polygonaceae). It does not use *Eriogonum nudum* as a host plant. It is the most divergent member of the *enoptes* group in allozyme studies (Pratt, 1994) and larvae have the least number of prominent setae. Adult females lack blue. Dammer's Blue overlaps the range of *Euphilotes enoptes cryptorufes* on Pyramid Mountain in the San Jacinto Mountains.

There are two subspecies in southern California.

a. Dammer's Blue--*Euphilotes dammersi dammersi* (J. A. Comstock & Henne, 1933).

Habitat: Desert areas from the Ord Mountains on the NW side of the San Bernardino Mountains south to the Anza-Borrego Desert State Park area.

Flight: Late August to mid-October.

Southern California TL: Riverside County: Snow Creek.

Distribution: Imperial, Los Angeles, Riverside, San Bernardino and San Diego Counties.

Records: Imperial County: In-Ko-Pah Gorge 2,290', Sep 29, 1967 (F. T. Thorne).

b. Eastern Mojave Dotted Blue--*Euphilotes dammersi opacapulla* Austin, 1998.

Taxonomic note: This subspecies is closely related to *dammersi* from which it was split off and described by Austin (1998c). Subspecies *dammersi* differs by having narrower dark outer markings on the dorsum of males, a whiter (less gray) aspect to the ventral surface, a much fainter flush on the ventral forewing and a paler orange aurora.

Updated status: The current status of *opacapulla* in the Eastern Mojave Desert Preserve is unknown as neither collectors nor watchers go there and few would know what they would be seeing even if they did. This *Euphilotes* does occur on rocky canyon walls with *Eriogonum wrightii* along ravines off the road near the entrance to Hualapai Mountain Park south of Kingman, Arizona.

Habitat: Eastern Mojave Desert in canyons in the Providence Mountains.

Flight: September.

Distribution: San Bernardino County.

Records: San Bernardino County: Macedonia Canyon, Mid-Hills, Aug 13, 1977 (JFE); Wildhorse Canyon, Mid-Hills, Oct. 2, 1982 (G. Ballmer & G. Pratt), on *Eriogonum wrightii*; Providence Mountains near Foshay Pass, Sep 20, 1993 (KD).

138. Ancilla Blue--*Euphilotes ancilla* (Barnes & McDunnough, 1918).

There is evidence that this *Euphilotes* may occur in the southern Sierra Nevada on *Eriogonum umbellatum* among *E. glaucon comstocki* populations as Gordon Pratt, Andrew Warren and Paul Opler examining specimens in series of that butterfly from Piute Mountain Vista in Kern County and the Bald Mountain area in Tulare County have found male genitalia in supposed "*comstocki*" that were in the *enoptes* or *dammersi* groups. While I have taken some "*comstocki*" that may be **ancilla** based on field marks, those have not been examined genitally to confirm that.

It has only recently recognized that *ancilla* is separate from **enoptes** by male genitalia and sympatric occurrence or that *ancilla* is in California.

a. Ancilla Blue--*Euphilotes ancilla giulianii* Pratt & J. Emmel, 1998.

Taxonomic note and updated status: This *Euphilotes* looks like *Euphilotes baueri* but uses *Eriogonum umbellatum* (not *E. ovalifolium*) as the larval host. It differs from other *Euphilotes* that use that host by the amount of blue in the females, the narrow width of the black borders in males, and the small size.

Habitat: The locality in the Last Chance Range has extremely hot conditions at the time this butterfly is in flight. This species was obtained there by collecting one adult and a small series of caterpillars found on the host that were reared to adults. More may have been collected in the Coso Range.

Flight: June-July.

Distribution: Inyo County. Coso Mountains and Death Valley National Park: Last Chance Range.

Records: Inyo County: Last Chance Range July 1, 1979 (Derham Giuliani). Coso Mountains, specific locality and date unavailable (GP).

139. Pale Blue--*Euphilotes pallescens* (Tilden & Dowey, 1955).

There are two subspecies in southern California.

a. Elvira's Blue--*Euphilotes pallescens elvira* (Mattoni, (1966).

Taxonomic note: This butterfly was formerly placed in the genus *Philotes* and in the species *rita*. It has since been placed in the species *pallescens*, closely related to *rita*. Paul Opler (pers. comm.) believes it possible that *elvira* may merit species status.

Southern California TL: Los Angeles County: 3.5 miles southwest of Pearlblossom.

Updated status: Long-term drought appears to have damaged the colony sites in the southern Sierra Nevada. Possibly, rainfall has been insufficient to trigger emergences of adults from pupae.

Habitat: Desert canyons, ravines or flats where the larval hosts grow.

Flight: Second week of July through September.

Distribution: Inyo, Kern, Los Angeles, Riverside and San Bernardino Counties. This butterfly is rarely seen. It flies late in the summer or in early fall when most desert butterflies have ended their flights.

Records: Inyo County: Nine Mile Canyon 5500', Sep 8, 1980 (JFE). **Kern County:** 2 to 4 mi east of Walker Pass, Aug 8 and 9, 1977 and Aug 29, 1978 (KD). Piute Mountains: 2-3 mi west of Sageland, Sep 25 and Oct 1, 2009 (KD). Tehachapi Mountains, Willow Springs road, in Mojave Desert Juniper scrub habitat 4.8 mi. E of Oak Creek Pass, Aug 13, 2015 (KD). **Riverside County:** Keys View road in or near Joshua Tree National Park, Aug 23, 2015 (JZ). **San Bernardino County:** Joshua Tree National Park: Covington Flats Trail, Sep 19, 2015 (JZ).

b. Confusing Pale Blue--*Euphilotes pallescens confusa* Pratt & J. Emmel, 1998.

Taxonomic note: This subspecies occurs in extremely hot and dry habitats in the Death Valley area. The larval host is *Eriogonum deflexum* var *baratum* (Elmer). The name "*confusa*" was chosen because of complexities with possible relationships to other members of the *Euphilotes rita* complex. Adults can resemble nominotypical *pallescens* or *elvira* (Pratt & J. Emmel, 1998b).

Southern California TL and records: Death Valley, Rest Spring, 6640' Cottonwood Mountains, Death Valley National Monument, now Park, July 15, 1982 and July 10, 1983, (probably GP or JFE).

Updated status: Recently described. No one has likely done studies on butterflies in Death Valley in recent years and this subspecies flies at the peak period of extremely hot conditions when it is unsafe to do such studies.

Habitat: Desert mountain ranges in Death Valley.

Flight: Presumably July to early September.

Distribution: Inyo County in Death Valley National Park.

140. Arrowhead Blue--*Glaucopsyche piasus* (Boisduval, 1852).

There are five subspecies of this species in southern California.

a. Arrowhead Blue--*Glaucopsyche piasus piasus* (Boisduval, 1852).

Updated status: Common on the higher elevations of the Kern Plateau. I do not know the current status of this blue in the Greenhorn Mountains. They are not seen during my trips there in June and July (with one exception below).

Habitat: Stands of “non-bush” lupines, usually in coniferous forests. Adults are usually found on or near the host.

Flight: May to mid-July.

Distribution: Kern County (Greenhorn Mountains along road to Shirley Meadows), and Tulare County (high elevations of the Kern Plateau).

Records: Kern County: Greenhorn Mountains, Cedar Creek, June 18, 1977 (KD); Pine Flat, at south end of Kern Plateau, June 10, 2006 (KD). **Tulare County:** Big Meadow (Kern Plateau), June 20, 1980 (KD); west of Sherman Pass 6700-8000', June 21, 1982 and July 9, 1988 (KD); Black Rock Ranger Station, June 23, 1994 (KD); Little Troy Meadow, July 15, 1972 (JB).

b. Coastal Arrowhead Blue--*Glaucopsyche piasus sagittigera* (C. Felder & R. Felder, 1865).

Southern California TL: Glendale, Los Angeles County.

Updated status: Lowland localities have been eliminated by human development in the Los Angeles area. The species still survives at localities given below under records.

Habitat: Canyons with lupines at lower elevations than other subspecies occur in, in the San Gabriel Mountains and in the Sierra Madre Range. This subspecies is local and often overlooked.

Flight: Mid-March to early May.

Distribution: Los Angeles, Santa Barbara, San Bernardino and San Luis Obispo Counties.

Populations in the Frazier Park-Owls Barn area in Kern and Ventura Counties are *sagittigerra* X *excubita* blends.

Records: Los Angeles County: Pine Creek road, about 1-mile SE of Old Ridge Route road, Apr 26 and 30, 2007 (uncommon, KD). **San Bernardino County:** San Gabriel Mountains, Wrightwood, Apr 22, 2013 (Andrew Kim). **San Luis Obispo County:** Atascadero, Apr 2 and 11, 1934 (V. Clemence), but no recent records. **Santa Barbara County:** Sierra Madre Range, Santa Barbara Canyon, Apr 24, 2004 and May 9, 2009; Dry Canyon, May 1, 2004 and May 9, 2009 (all KD).

c. Smoky Arrowhead Blue--*Glaucopsyche piasus umbrosa* J. Emmel, T. Emmel & Mattoon, 1998.

Taxonomic notes and updated status: This population was previously placed as the nominotypical subspecies by Emmel and Emmel in 1973, but this was based on insufficient material. This subspecies was described in the Systematics publication (Emmel, Emmel & Mattoon, 1998f) in which the authors stated: “It is immediately recognizable by the marked

reduction of the sagittate white spots on the ventral hindwing, coupled with a smoky aspect to the ventral surface. Females of this subspecies show greater development of the submarginal pale orange markings than in any other subspecies.”

Habitat: Higher elevations with lupines in the Laguna Mountains.

Flight: Late March-early June.

Southern California TL: San Diego County: Laguna Mountains, slope ca. 0.2 air mile east of Big Laguna Lake, 5450' elevation.

Distribution: San Diego County and extreme southern Riverside County. This subspecies occurs from the Laguna Mountains northwestward to Palomar Mountain and Temecula in extreme Riverside County.

Records: San Diego County: Laguna Mountains, Pine Valley road, Apr 27, 2011 (KS).

d. San Gabriel Mountains Arrowhead Blue--*Glaucopsyche piasus gabrielina* J. Emmel, T. Emmel & Mattoon, 1998.

Taxonomic note: This subspecies differs from subspecies *piasus* by its darker aspect ventrally, and very sharply demarcated markings on the ventral hindwings, broader black borders above, and there is more development of the pale pinkish-orange lunules in the submarginal areas of the dorsal hindwing in females (Emmel, Emmel & Mattoon, 1998f).

Southern California TL: Los Angeles County: Ridge running east from Mt. Islip, WNW of Windy Gap 7600-8000', San Gabriel Mountains.

Updated status: This is no longer considered to be nominotypical *piasus*.

Habitat: Higher elevations in the San Gabriel Mountains, occurring above *sagittigera* which occurs at lower elevations.

Flight: Late April to mid-June.

Distribution: Los Angeles, Riverside (?) and San Bernardino Counties. This subspecies occurs at higher elevations in the San Gabriel Mountains while subspecies *sagittigera* occurs in the same range at lower elevations.

e. Bush Lupine Arrowhead Blue--*Glaucopsyche piasus excubita* J. Emmel, T. Emmel & Mattoon, 1998.

Taxonomic note: This subspecies was described in the Systematics publication (Emmel, Emmel & Mattoon, 1998f). It differs by its much greater contrast in ground color ventrally and generally paler aspect than in nominotypical *piasus*. Populations from the Fairview and Calkin's Flat area along the upper Kern River in Tulare County can be larger than those described in the original description.

Updated status: The name comes from the name of the bush lupine (*Lupinus excubita*) it uses as its larval host and is closely associated with as adults. This subspecies occurs at lower elevations than nominate *piasus*.

Habitats: Lower elevations of the Kern Plateau south of Kennedy Meadows and Lamont Meadows, the upper Kern River at Fairview and Calkin's Flat and in an elevated ravine SW of Sageland N of Kelso Valley in Sierran Mojave Desert washes, E side of the Piute Mountains and at Oak Creek Pass in the Tehachapi Mountains.

Flight: March-early June.

Distribution: Inyo, Kern, Los Angeles and Tulare Counties. Populations in the Frazier Park/Lake of the Woods area in Kern County and Lockwood Valley road in Ventura County are blends of *excubita* and *sagittigera*.

Records: Kern County: ravine 0.7 to 1 mi. SE of Sageland N of Kelso Valley, Apr 3-23, 1977 (KD) and Tehachapi Mountains, Oak Creek Pass, May 7, 2006 (KD). **Tulare County:** upper Kern River at Fairview, Apr 27, 1964 (RLL) and Chimney Peak road at Lamont Meadows, Apr 13, 1994 (KD). Spring, 7 mi south of Kennedy Meadows, June 8, 1985 and June 20, 1992 (KD).

141. Silvery Blue--*Glaucopsyche lygdamus* (E. Doubleday, 1841).

Nine subspecies or segregates occur in this region.

a. Eastern Mojave Desert Silvery Blue--*Glaucopsyche lygdamus deserticola* Austin & J. Emmel, 1998.

Taxonomic note: This is a subspecies of the eastern Mojave Desert, it is distinguished by a combination of larger size, relatively broad margins, large ventral spots (these placed distally) and relatively dark females (Austin & J. Emmel, 1998a).

Updated status: This subspecies was named in 1998.

Habitat: Canyons and hillsides of the eastern Mojave Desert Mountain Ranges, using different varieties of *Astragalus* as larval hosts.

Flight: March-early May.

Distribution: San Bernardino County only with certainty but this subspecies could be in eastern Inyo County in the Death Valley area southward. A population in the southeastern Sierra Nevada Mojave Desert habitat in Kern and Inyo Counties shows some tendencies towards *deserticola* but has more dorsal blue scaling in females than that subspecies. There appears to be blending with the unnamed southern Sierra Nevada segregate and *orcus*.

b. Southern California Silvery Blue--*Glaucopsyche lygdamus australis* F. Grinnell, 1917.

Southern California TL: Pasadena, California.

Updated status: Several new localized subspecies have been described and named since 1973, some within the range of *australis*.

Habitat: Foothill woodland, mixed coniferous forest, desert edges, coastal plains.

Flight: Late February to late June.

Distribution: Imperial, Kern (rare at Frazier Park and vicinity), Los Angeles, Orange, Riverside, San Bernardino, southern San Luis Obispo, Santa Barbara, San Diego and Ventura Counties.

Records: Imperial County: In-Ko-Pah Gorge, Mar 26, 1961 (KH). This subspecies is common in much of southern California. It blends with subspecies *incognita* and *sabulosa* in northern San Luis Obispo County and on the coastal plain there.

c. Palos Verdes Silvery Blue--*Glaucopsyche lygdamus palosverdesensis* E. Perkins & J. Emmel, 1977.

Taxonomic note: This subspecies differs from *G. lygdamus australis* by the exclusive use of *Astragalus trichopodus lonchus* as a host plant, a relatively faster flight than *australis* and several wing characteristics including a slightly darker underside ground color with larger macules well set off by white halos (Mattoni, 1992).

Updated status: Described and named since 1973. This subspecies is a federally endangered species and for a few years was considered extinct.

Habitat: Wastelands or vacant lots on a military complex.

Flight: February-March.

Southern California TL: Rancho Palos Verdes, Palos Verdes Peninsula, Los Angeles, California.

Distribution: This subspecies occurs only on the Palos Verdes Peninsula.

d. Central Coast Silvery Blue--*Glaucopsyche lygdamus sabulosa* J. Emmel, Emmel & Mattoon, 1998.

Taxonomic note: This subspecies is intermediate between northern California coastal *lygdamus* and southern California *australis*. Ventrally these are described as similar to *australis* below but in San Luis Obispo County near Los Osos and Avila Beach, these appear more heavily marked below with some approaching *xerces*. The ground color has a more tannish ground color than the gray ground color of *australis*.

Updated status: When described, Emmel, Emmel & Mattoon (1998f) did not know whether or not *sabulosa* was in San Luis Obispo County but my collecting in the mid-1980's had already turned up this subspecies (I thought it was a dark form) on rocky outcrops between Los Osos and Foothill roads, on Madonna Hill and in Prefumo Canyon.

Habitat: Serpentine rocky outcrops and canyons in the foggy coastal plain in San Luis Obispo and Monterey Counties.

Flight: March-April.

Distribution: San Luis Obispo County only in southern California. Monterey County is in central or northern California. Subspecies *sabulosa* is on the coastal plain in the fog belt, subspecies *incognita* and *australis* occur inland east of the coastal plain and blend with each other.

Records: San Luis Obispo County: Los Osos and Prefumo Canyon, Apr 7, 2007 (KD & RPM); Avila Beach near golf course, Mar 23, 2008 (KD), some individuals resemble *G. xerces*! Cuesta Ridge, Apr 30, 2013 (KD). This subspecies also occurs on serpentine outcrops between San Luis Obispo and Los Osos in March and early April. Those specimens (taken in the early 1980's) are now in the LACM or the Colorado State Museum collections.

e. False Xerces Blue--*Glaucopsyche lygdamus pseudoxerces* T. Emmel & J. Emmel, 1998.

Taxonomic note: This subspecies (Emmel & Emmel, 1998b) resembles the **Xerces Blue** with the relatively dark ground color and the strongly white-haloed spots that resemble *xerces*. One difference is that females of *pseudoxerces* have extensive blue scaling while *xerces* females were mostly brown. Males of *pseudoxerces* have a paler violet ground color dorsally than males of *xerces*.

Southern California TL: Santa Barbara County: Santa Rosa Island, Acapulco Canyon, 100-450' elevation, 2.9-3.5 air miles W, 0.75 -1.9 air miles E. of 1,574' Soledad Mountain Peak.

Updated status: Described and named in 1998.

Habitat: Foothill woodland in a maritime environment on Santa Rosa Island.

Flight: March to April.

Distribution: Limited to Santa Rosa Island in Santa Barbara County.

Records: Santa Barbara County: Santa Rosa Island, Acapulco Canyon Mar 17 and 18, 1990 (TCE & JFE). Many larvae were reared from ova on *Astragalus trichopodus* and others on *Lotus scoparius*.

f. Unrecognized Silvery Blue--*Glaucopsyche lygdamus incognita* Tilden, 1974.

Taxonomic note: The name *behrii* had been applied to this and the southern Sierra Nevada populations in the past. But that name actually applies to a form of *xerces* which likely was itself a *lygdamus* subspecies.

Updated status: Unchanged other than the fact that the name *behrii* had been misapplied to this subspecies.

Habitat: Coast ranges east of the coastal plain in the northern part of San Luis Obispo County.

Flight: March to early July.

Distribution: This subspecies only occurs in the northern part of San Luis Obispo County, blending in some places with subspecies *australis* and *sabulosa*.

g. Great Basin Silvery Blue--*Glaucopsyche lygdamus orcus* (W. H. Edwards, 1869). **Updated status:** Populations on the east side of the Sierra Nevada and in the Great Basin have gone under several names at the subspecies level. Recent discussions among specialists led to the name *orcus* being applied. Many older names in the past were vaguely described as were what those names applied to. This creates many of our problems resolving what names to apply.

Habitat: Brushy chaparral at the base of the east slope of the Sierra Nevada.

Flight: April-May.

Distribution: Inyo County on east slope of the Sierra Nevada.

Records: Inyo County: Lone Pine Creek SE of Whitney Portal, Apr 25, 2005 and Apr 28, 2006 (KD) and up grade to Whitney Portal in drainage basin with stream, Apr 28, 2006 (KD).

h. Silvery Blue-- *Glaucopsyche lygdamus* (E. Doubleday, 1841), southern Sierra Nevada segregate.

Taxonomic notes and updated status: This unnamed population in the southern Sierra Nevada has been called *behrii* or even *columbia* in the past. The name *behrii* is a form name of *G. xerces* and it became obvious that what is in the southern Sierra is not the same as subspecies *columbia*.

Habitat: Foothill woodland, riparian canyons and the the base of rocky canyon walls.

Flight: Late March to early May.

Distribution: Kern and Tulare Counties (western portion along Kern River and on the west slope of the Kern Plateau).

Records: Kern County: Kern River N of Kernville, Apr 14, 2002 (KD); Greenhorn Mountains E slope at Kernville, Apr 24, 1981 and Apr 30, 1983 (KD); Kern Canyon at Democrat Hot Springs, Apr 15, 2015 (KD). **Tulare County:** Upper Kern River at Goldledge Creek, Apr 24, 1981 and Mar 19, 1996 (KD); Limestone Camp area, Apr 21, 1997 (KD); east of Kern River at Ant Canyon, Apr 6 to 21, 2006 (KD).

i. Silvery Blue--*Glaucopsyche lygdamus* (E. Doubleday, 1841); Sierra Nevada high elevation segregate.

Updated status: There is a high elevation Sierra Nevada segregate of this species that occurs as high as the Canadian and Hudsonian Life Zones in the area around Yosemite National Park and which had occurred at higher elevations of the Sherman Pass road. A similar population was common at the Alder Creek crossing at 6800', but with plant succession and warming of the area, that butterfly has either become very scarce or disappeared 2015 to 2017.

Habitat: Rocky riparian canyons with high solar radiation.

Flight: June to early August.

Distribution: Tulare County: West side of Sherman Pass, especially along Alder Creek 6800' elevation, on the Sherman Pass Road.

Records: Tulare County: Sherman Pass Road with large population at Alder Creek 6800', June 20 and July 12, 1999, June 9, 2001 and July 3, 2005 (KD).

142. Reakirt's Blue--*Echinargus isola* (Reakirt, (1867).

Taxonomic note: This butterfly was placed in the genus *Hemiargus* in the Emmels' 1973 book. See Pelham (2008) regarding the name *Echinargus* and *alce* as a subspecies is now viewed as a synonym of *isola*.

Distribution: All counties but San Luis Obispo. But is has been collected just a few feet from that county in the Temblor Range off SR 58.

Updated status: This species has been found to occur with some regularity in Kern and Tulare Counties in both the San Joaquin Valley and in several mountain ranges.

Records: Inyo County: Below Whitney Portal, Aug 25, 1998 (KD). **Kern County:** San Joaquin Valley: SR 58, 3 mi E of Buttonwillow, Sep 2, 1980 (KD); Kern River Basin, 8 mi WSW of Bakersfield Apr 25 to mid-Sep 1984 (RPM); Mojave Desert: Cantil, Sep 27, 1984 (KD). Sierra Nevada: junction of Jawbone Canyon and Kelso Valley roads, Apr 22, 1984 (JGP); Mt. Pinos, June 13 and Aug 31, 1998 (KD). **Santa Barbara County:** Montecito, June, 1960 (SBMNH); Sierra Madre Range: Dry Canyon, May 1, 2004 (JGP); Little Pine Mountain, May 13 & 14, 2004 (NL & Michael Caterino). **Tulare County:** Chimney Peak Road, north side of Lamont Peak on road cuts near Lamont Meadows, July 6, 1983 (KD); Lamont Meadows, May 25, 1985 (KD); Bald Mountain Lookout 9400', July 14, 1985 (JGP); west side of Sherman Pass 9000', July 2, 2006 (KD).

143. San Emigdio Blue--*Plebulina emigdionis* (F. Grinnell, 1905).

Taxonomic note: Pohl, Patterson and Pelham (2016) restored the name *Plebulina* to the genus name rather than a subgenus.

Southern California TL: Kern County: San Emigdio Canyon. There are no recent records for this locality.

Conservation Note: While collecting has probably not affected any colony sites survival, long-term drought, climate change and human development have destroyed many colony sites. This species has symbiotic relationships with ants and scale insects which are also paramount to this species' survival. Gordon Pratt, Greg Ballmer and John Emmel are currently monitoring these issues.

Distribution: Inyo, Kern, Los Angeles, San Bernardino, San Luis Obispo and Ventura Counties.

Records: Inyo County: Mid-elevation ravine in Nine Mile Canyon, Sep 22, 1997 (KD), this colony appears extirpated due to long- term drought; Sage Flat road at Loco Creek crossing, May 5, 2001 (JFE); Lubken Canyon south of Lone Pine just west of U.S. 395, Apr 29, 2005 (Greg Chatman); west of Lone Pine at junction of Movie and Whitney Portal roads, May 6, 2012 (Rob Santry). **Kern County:** Tehachapi Mountains, Sand Canyon, May 22, 1995 (KD); Onyx off SR 178, Apr 25, 2004 (KD). **San Luis Obispo County:** Cuyama River off SR 166 on flats with *Atriplex canescens*, May 28 and June

10, 1983 (KD). Oddly, there were no *emigdionis* found on the Santa Barbara County side of the river where this species has not yet been recorded. **San Bernardino County:** Cajon Pass area west of Rt. 138 & E of I-15, Apr 8, 2000 (Steve Bransky).

144. Greenish Blue--*Icaricia saepiolus* (Boisduval, 1852).

Three subspecies or segregates are in southern California but one now appears extirpated by human development of its colony site.

a. Sierra Nevada Greenish Blue--*Icaricia saepiolus* near *aehaja* (Behr, 1867).

Taxonomic note: The name *aehaja* has replaced the name *saepiolus* for Sierra Nevada populations (Emmel, Emmel & Mattoon, 1998a and b). Also, this species is now placed in the genus *Icaricia*, not in *Plebejus* (Pohl, Patterson and Pelham (2016).

Updated status: This species is still present in the Greenhorn Mountains and also occurs on the Kern Plateau in our extended northward boundary line as well. I call these near *aehaja* because our populations tend to be larger than more typical *aejaja*.

Habitat: Wet meadows and small streams at high elevation.

Flight: Late May to early August.

Distribution: Kern and Tulare Counties. Those *saepiolus* in the southern Sierra Nevada and Greenhorn Mountains are larger than *aehaja* further north and can resemble subspecies *hilda*.

Records: Kern County: Piute Mountains: Landers Creek near Sorrell Peak, July 11, 1976 (JB); wet meadow and stream near turnout to Piute Mountain Vista, June 19, 1981 and July 8, 1982 (KD). Greenhorn Mountains: north of Tiger Flat, June 25, 1995 and June 10-24, 1996 (KD).

Tulare County: Spring, 7 mi south of Kennedy Meadows in creekbed, Sep 22, 2001, very late flight (KD). Greenhorn Mountains: N of Sunday Peak Trailhead, June 25 to Aug 7, 1995 and June 10-24, 1996 (KD); north of Portuguese Pass in wet meadows, June 26 and July 11, 1981 (KD); west of Sherman Pass 8500', Aug 8, 1980 (KD); Big Meadow (Kern Plateau), June 20, 1980 (KD).

b. Golden Greenish Blue--*Icaricia saepiolus aureolus* (J. Emmel, T. Emmel & Mattoon, 1998).

Taxonomic note: The name given this subspecies refers to the extensive golden orange scaling on the dorsal surface of females, unique to this population.

Southern California TL: Los Angeles County: Wet meadow 0.1 air mile WSW of Big Pines Ranger Station, Big Pines, San Gabriel Mountains.

Updated status: This subspecies, known only from Los Angeles County, now seems extinct due to development at the colony site.

Former flight: Early June to mid-July.

c. Hilda Blue--*Icaricia saepiolus hilda*: (J. Grinnell & F. Grinnell, 1907).

Southern California TL: San Bernardino Mountains: upper cienega at the head of the South Fork of the Santa Ana River, at an elevation of about 8,500'.

Updated status: Unchanged except for the changed generic name.

Habitat: Wet meadows and streamsides.

Flight: June to early August.

Distribution: Orange, Riverside, San Bernardino and San Diego Counties. As noted under *aehaja*, populations in Kern and Tulare Counties can be relatively large in size and resemble *hilda*.

145. Boisduval's Blue--*Icaricia icarioides* (Boisduval, 1852).

Many subspecies of this species are weakly distinguished and especially so when others send you, the "expert", photos of a live butterfly showing few field marks or just a ventral or dorsal side and without specific locality information. There are 23 recorded subspecies of *P. icarioides* listed in the Pelham Catalogue (2008). Without locality information, many of these blues would be impossible to place to subspecies with assurance. Eight of these subspecies occur within the region covered as southern California.

Taxonomic note: This species was put back in the genus *Icaricia* in the Pohl, Patterson and Pelham names list (2016). This species was placed in *Plebejus* in their 1973 publication and in the 2008 Pelham Catalogue.

a. Boisduval's Blue--*Icaricia icarioides icarioides* (Boisduval, 1852).

Updated status: This subspecies does not reach southern California unless we add the high elevation Kern Plateau and Greenhorn Mountains. There is a large contact zone between this subspecies and *evius* on the Kern Plateau and in the Tulare County portion of the Greenhorn Mountains.

Habitat: Slopes and roadsides with stands of lupines above 7000' elevation, sometimes lower.

Flight: May-July.

Distribution: Tulare County. There are large areas on the Kern Plateau which are nearest to the nominotypical subspecies.

Records: Tulare County: Big Meadow (Kern Plateau), June 20, 1980 and Aug 2, 1985; meadow E of Sherman Pass, July 4, 2004; road below Bald Mountain, Aug 5, 1982 (all KD).

b. Evius Blue--*Icaricia icarioides evius* (Boisduval, 1869).

Southern California TL: LaCrescenta, Los Angeles County.

Updated status: Unchanged.

Habitat: Foothill woodland with lupines up into mixed coniferous forest. These habitats can be on flats, mountain slopes or road cuts.

Flight: Late March to early August.

Distribution: Kern, Los Angeles, Riverside, San Bernardino, San Diego, Tulare and Ventura Counties. Subspecies *icarioides* and *evius* blend along the Kern River north of the Kern/Tulare County line and along much of the Sherman Pass road. There is similar blending between *evius* and *eosierra* along the Chimney Peak road, connecting SR 178 and Chimney Peak Ranger Station at the south end of the Kern Plateau.

Records: Kern County: south end of the Kern Plateau at Pine Flat, June 6, 1986 (KD); Greenhorn Mountains; Shirley Meadows Ski area, July 6, 1975 (KD); Mt. Pinos, July 14, 1970 (KD). **Tulare County:** Pine Flat at south end of Kern Plateau, June 6, 1986 (KD). Greenhorn Mountains at Portuguese Pass, June 26 and July 11, 1981 (KD).

c. Santa Ana Blue--*Icaricia icarioides santana* J. Emmel, T. Emmel & Mattoon, 1998.

Taxonomic note and updated status: Orsak (1977) reported this blue in his book on the Orange County fauna as the "Trabuco Blue, Lower Santa Ana Mountains segregate" and gave a brief description. The formal description (Emmel, Emmel & Mattoon, 1998f) came later when assigning this butterfly, the name *santana*. This subspecies shows extreme reduction of the black markings on the ventral surface including thin brown borders in males. Postmedian spots are often absent, replaced by whitish smudges.

Habitat: Canyons and hills with lupines, especially in Trabuco Canyon.

Flight: Late April to late June.

Southern California TL: Orange County: Yaeger Mesa, 2900-3100' elevation, above Trabuco Canyon.

Distribution: Orange County only, mostly in Trabuco Canyon.

d. The Morro Bay Blue--*Icaricia icarioides moroensis* Sternitzky, 1930.

Southern California TL: Moro Beach (=Morro Bay Beach), San Luis Obispo County

Updated status: Most locations with this butterfly are now inside State Parks or Preserves.

Habitat: Beach dunes with bush lupines.

Flight: Late April to early July.

Distribution: San Luis Obispo and northern Santa Barbara Counties.

Records: **San Luis Obispo County:** Morro Bay Beach, May 16, 1981 (KD); Oceano near airport May 6, 1996 (KD). **Santa Barbara County:** The southern limit of the range is in Santa Barbara County near Pine Canyon Gate of Vandenberg AFB, May 29, 1986 (WLS).

e. Atascadero Blue--*Icaricia icarioides atascadero* J. Emmel, T. Emmel & Mattoon, 1998.

Taxonomic note: This subspecies appears intermediate between the lighter *evius* to the south and the darker subspecies *pardalis* to the north. As with many butterflies, species in California seem darkest at the north end of their ranges and lightest at the south end of their range. This one is in the middle of a cline.

Updated status: This subspecies was named in 1998.

Habitat: Foothill canyons, roadcuts or slopes below roads with lupines.

Flight: March-June.

Southern California TL: Atascadero, San Luis Obispo County.

Distribution: Kern, San Luis Obispo (mostly area west of Atascadero) and Santa Barbara Counties.

Records: **Kern County:** One record at Diablo Range: Cottonwood Pass, Apr 20, 1987 (KD).

San Luis Obispo County: Los Altos road, Atascadero Creek, Mar 19 and Apr 4, 2015 (JG).

Santa Barbara County: Sierra Madre Range: Santa Barbara and Dry Canyons, May 9, 2009 (KD). A blend zone between *evius* and *atascadero* was noted in the Sierra Madre Range in Bates Canyon, May 18, 2009 (KD).

f. Eastern Sierra Boisduval's Blue--*Icaricia icarioides eosierra* J. Emmel, T. Emmel & Mattoon, 1998.

Taxonomic note: The name "*eosierra*" refers to the fact this subspecies inhabits the eastern Sierra Nevada from Kern County north to about the Mono County line. It blends near its range limits to nominotypical *icarioides*, *fulla* and *evius*. It is a pale subspecies but the spots and markings are well visible most of the time. Other details regarding intergrading with the other three subspecies above are provided in the Systematic book (Emmel, Emmel & Mattoon, 1998f)

Southern California TL: Inyo County, Falls Creek, 5200' elevation, 3 miles south and 3 miles west of Olancho, east slope Sierra Nevada.

Updated status: Until this subspecies was described, populations in the arid southern Sierra Nevada with Mojave Desert vegetation at Bird Springs Pass and the Sageland areas and east side of the Piutes were just viewed as very pallid *evius*.

Habitat: Very dry desert scrub with stands of Joshua Trees in ravines, road cuts and ravines.

Flight: Late March- to early July.

Distribution: Western Inyo, northeastern Kern and eastern Tulare Counties.

Records: **Inyo County:** Nine Mile Canyon, Apr 13 and May 2, 1994 (KD). **Kern County:** 0.7 mi. SW of Sageland, May 15, 1976 (JB & KD); Walker Pass, May 9, 1993 (KD); Bird Spring Pass, May 13 and July 1, 2000 (KD). **Tulare County:** Spring, south of Kennedy Meadows, May 25 and June 8, 1985 (KD); Pine Mountain area, July 3, 1978 and June 18, 2017 (KD).

g. Argus Mountains Blue--*Icaricia icarioides argusmontana* J. Emmel, T. Emmel & Mattoon, 1998.

Taxonomic note: Emmel, Emmel & Mattoon (1998 f) named this subspecies after the Argus Mountains where it is found. It is very small and pale with marked reductions of its marks, undoubtedly because of the very dry conditions where it lives.

Southern California TL: Inyo County: Mountain Springs Canyon 5500' elevation, Argus Mountains.

Updated status: Access is limited in the Argus Mountains because much of the land is military land and other land is on nature preserve land which may require permission for entry. This subspecies was named in 1998.

Habitat: Lupines at relatively high elevation in this range.

Flight: May-June.

Distribution: Inyo County only. The habitat is usually a granitic substrate in sagebrush scrub with *Lupinus excubita*.

Records: Inyo County: Argus Mountains, Mountain Springs Canyon 5500', May 22 and 23, 1935 (Chris Henne); May 17, 1936 (Lloyd Martin).

h. Panamint Mountains Blue--*Icaricia icarioides panamintina* J. Emmel, T. Emmel & Mattoon, 1998.

Taxonomic note: This subspecies (Emmel, Emmel & Mattoon, 1998f) is also very small sized and has light blue coloration above but with prominent black spotting ventrally. It tends to resemble subspecies *evius* but is smaller with heavier black markings below.

Southern California TL: Inyo County: Panamint Range; Telescope Peak trail, between Mahogany Flats and Arcane Meadows, 8400-9500' elevation.

Updated status: Probably unchanged.

Habitat: Very dry desert mountain ranges with lupines.

Flight: June-July.

Distribution: Inyo County, now in Death Valley National Park.

Records: Inyo County: Panamint Mountains, Telescope Peak Trail, between Mahogany Flats and Arcane Meadows, July 10, 1978 (JFE & OS); Eagle Spring 9350', north slope of Telescope Peak, July 10, 1978 (JFE & OS); upper Wildrose Canyon 8000'-8800', June 19 and 20, 1976 (JFE & E M Perkins).

146. Acmon Blue--*Icaricia acmon* (Westwood, (1851).

This is one of the most common butterflies in the state. Spring forms of *acmon* often have much more extensive blue overscaling in females (form 'cottlei').

Taxonomic note: This species has been historically placed in the genus *Plebejus*, but was placed in *Icaricia* in the Pohl, Patterson & Pelham names list (2016).

a. Acmon Blue -- *Icaricia acmon acmon* (Westwood (1851).

Updated status: The issue of what is an Acmon Blue and what is in the Lupine Blue complex has become very contentious. Some believe that since they personally cannot tell them apart, they must be the same species. The two are actually fairly easy to identify a good part of the time. If a member of this group flies in repeated broods spring to fall and uses legumes as a host, it is an Acmon Blue. However, Acmon Blues can also use buckwheats including *Eriogonum fasciculatum* as hosts in many areas and can easily be mistaken for *I. monticola*. Acmon Blues also tend to be smaller in size. Females can be impossible to separate unless they are associated

with the larval host buckwheat but that is not 100% reliable. Acmon Blues also tend to have smaller black spots on the ventral side and the aurora on the hind wing also often has some pink. If you are trying to tell them apart using photographs, good luck! Lupine Blues use various buckweats and not legumes as their hosts.

Habitat: Anywhere in southern California, unrestricted.

Flight: February-November.

Distribution: All counties.

b. Texan Blue--*Icaricia acmon texanus* Goodpasture, 1973.

Taxonomic notes and updated status: Goodpasture originally named *texanus* as an *acmon* subspecies. While James Scott proposed that *texanus* was a *lupini* subspecies (Scott, 1998), the multiple broods and host plants and other unpublished research suggests that *texanus* is an *acmon* subspecies as originally described. Others may believe *texanus* merits species status.

Habitat: The eastern Mojave Desert and likely occurs in the eastern Colorado Desert as well.

Distribution: Eastern Inyo and eastern San Bernardino Counties in the Mojave Desert. This blue is likely in eastern Riverside and Imperial Counties.

Records: San Bernardino County: Providence Mountains, Foshay Pass, Sep 20 and Oct 8, 1993 (KD).

Lupine Blue complex--*Icaricia lupini* (Boisduval, 1869).

Taxonomic note: Actual *Icaricia lupini* probably does not occur in southern California though that species apparently does in more northern Inyo County. What appears to be *Icaricia lupini alpicola* occurs in Tulare County in the area around Sequoia and Kings Canyon National Parks (Davenport, 2014), north of southern California as defined in this publication. But *alpicola* may also represent a species other than *lupini*, an issue needing further study.

John Emmel, Paul Opler and Ken Davenport have been studying this complex for about the past twenty years and agree that some already named populations are actually biological species that are not Lupine Blues. Two of these, *monticola* (Clemence) and *chlorina* (Skinner) are California endemics that use different species of buckweats as larval hosts. Generally, *monticola* occupies lower elevations in the Upper Sonoran Life Zone and are replaced in the higher Upper Sonoran, Transition and lower Canadian Life Zones by *chlorina*. There are areas where both butterflies and their larval hosts overlap but these butterflies maintain their separate identities. DNA work also shows differences within this species complex.

A presentation of the Acmon Blue complex in southern California was made at a Pacific Slope Meeting of the Lepidopterists' Society in the Greenhorn Mountains. That presentation (Opler and Davenport 2018) concluded that *monticola*, *chlorina* and *dedeckera* are better treated as species-level taxa and that *argentata* is a *chlorina* subspecies.

Pohl, Patterson & Pelham (2006) placed these species in the genus *Icaricia*, and not in *Plebejus* where it has usually been placed.

147. Dedeckera Blue--*Icaricia dedeckera* (J. Emmel, T. Emmel & Mattoon, 1998), **New Combination.**

Taxonomic note and updated status: This blue was originally described as an *acmon* (J. Emmel, Emmel & Mattoon, 1998f) because the male genitalia were more like *acmon* (John Emmel, e-mail March 24, 2018) but its being single brooded entity argued it is more likely in the *lupini* group, the arrangement used in Pelham's Catalogue/Checklist (2008). This butterfly is

named after its *Dedeckera* hostplant. It is similar in appearance to *texanus*, in which it differs by the greater development of basal blue scaling dorsally in females, and the greater development of the pink-orange aurora in both sexes.

Type locality: West slope White Mountains; north facing slope of Coldwater Canyon, 5,200-5,600' elevation. Its range is surrounded by that *I. acmon* in the White Mountains where it is parapatric with *I. lupini* populations, with neither of which does it show any intergradation (Opler and Davenport, 2015).

Habitat: North-facing slopes with a stream or seep with *Dedeckera eurekaensis* Reveal and Howell. This butterfly appears to have highly specialized habitats because that is what its host plant requires. Coldwater Canyon is a steep, narrow canyon with sparse vegetation along the stream but which does have *Salix*, Shadscale Scrub, Great Basin Sagebrush Scrub and *Artemisia dracunculus* Linnaeus (Asteraceae).

Flight: Late May to mid-June.

Distribution: There are only three known colony sites, the type locality in Coldwater Canyon, Mono County, California, on the west slope of the White Mountains and two in the Death Valley region in southern California as defined in this work.

Records: Inyo County: south slope above Keynote Canyon, east side of Inyo Mountains in Death Valley NP, May 12, 2000 (JFE & GP); Dedeckera Canyon at south end of Eureka Valley, south end of Last Chance Range, June 1, 1988 (Derham Giuliani).

148. Green Blue--*Icaricia chlorina* (Skinner, 1902), New Combination.

Taxonomic Notes and updated status: There are several reasons for treating this blue as being a different species than *monticola*. It uses *Eriogonum umbellatum* exclusively as its larval host while *monticola* can occur nearby in the same mountains on the same day but on a different host (*Eriogonum fasciculatum*). Both were often taken on butterfly counts on the same day on the Old State road in the Greenhorn Mountains and on the next day, Sherman Pass Road. Usually *monticola* was scarce at lower elevations and ending its flight in late June or early July. This species (*chlorina*) was beginning its flight and was often common at higher elevations. The situation with *chlorina* and *monticola* is much the same as with *E. glaucon comstocki* and *E. bernardino* and involving the same two hosts at the same locality sites in the same mountain ranges in the Tehachapi, Piute, Greenhorn and southern Sierra Nevada Mountain ranges.

This blue was long believed to be just a form with cyanic green overscaling of the wings above but few *chlorina* reared out have such green overscaling and not all human eyes can apparently see that color. This blue is actually common over a wide area and can occur or overlap with *P. lupini monticola* on intermixed host plants at a single location. This can happen in the Frazier Park-Mt. Pinos area and in the area around Kelso Valley in Mojave Desert like hills in the southern Sierra Nevada. On July 4, 2000 in the Piute Mountains at milepost 6 on Piute Mountain road, Ken Davenport found *chlorina* commonly up the road on *Eriogonum umbellatum* and going down road from my car, there were several mostly worn *monticola* on *Eriogonum fasciculatum*. The two butterflies were separated by no more than about 70 yards or so as were *Eriogonum glaucon comstocki* and *Euphilotes bernardino*.

This experience was shared with Paul Opler and Ken Davenport from John Emmel by email on March 24, 2018: "Regarding *chlorina* and *monticola*, Gordon (Pratt) and I collected 3rd to 4th instar larvae of *chlorina* on May 24, 1999 (those emerged in June and early July, this record published in 1999 Season Summary and in Davenport, 2014), along the Pacific Crest Trail southwest of Oak Creek Pass, Tehachapi Mountains. At the same site and date, we collected

about 20 adults of *monticola* closely associated with *Eriogonum fasciculatum*. The phenotype of the *monticola* were very much like *chlorina*, with brown “*acmon*” type females. Males of both were “silvery blue”, with a very subtle greenish tint probably produced by sparse brown scales...so *monticola* and *chlorina* are intimately allochronic, and on different hosts (Davenport, 2002b, Opler and Davenport, 2015). John Emmel referred us to Comstock’s book, (1927), for more details. Comstock referred to *chlorina* as “Skinner’s Blue” (*Plebejus acmon chlorina*) which was believed limited in distribution to the Tehachapi and Tejon Mountains. He wrote “In this form, the male is of a greenish shade on the upper side, but in all other respects resembles *acmon*. The female, which is found in association with the green male, cannot be distinguished from typical *acmon*.” John Emmel shared that the male genitalia are similar to *acmon*, but of course, the range of *chlorina* is much more limited.

148a. *Icaricia chlorina chlorina* (Skinner, 1902), **New Combination**
Southern California TL: Kern County: Tehachapi.

Habitat: This blue occurs on *Eriogonum umbellatum* which can be in sandy soils in the Upper Sonoran Zone in foothill woodland sandy soils but usually occurs above 6000’-9400’, often in coniferous forests on sandy soils or on exposed hills with sagebrush.

Flight: June to early August.

Distribution: Inyo, Kern, Los Angeles, Tulare and Ventura Counties.

Records: **Inyo County:** Near top of Nine Mile Canyon on *Eriogonum umbellatum*, July 6, 1983 (KD) and up grade to Whitney Portal in drainage basin with stream, June 18, 2006 and July 9, 2009 (KD). **Kern County:** Mt. Pinos on Seymour Canyon road near McGill Camp, July 18 and 31, 1998 (KD). Piute Mountains, Piute Mountain road MP 6.1 to MP 7 on *Eriogonum umbellatum*, July 5 and 17, 2000 (KD). *Icaricia lupini monticola* was found just below on *Eriogonum fasciculatum* with little or no mixing. South end of Kern Plateau at Pine Flat, July 5, 2003; Greenhorn Mountains: near Tiger Flat, July 15 and 22, 2000 (KD) and Old State road near Wagy Flat road, July 8, 2001 (KD). **Tulare County:** Sherman Pass road 8000’ near Bald Mountain, at metasedimentary rocky outcrop with *Eriogonum umbellatum*, July 6, 1992 (KD); Cherry Hill road from Lower Alder Creek crossing, to near Poison Meadow and Pine Flat, July 12, 2017 (KD). Greenhorn Mountains: Baker Ridge, July 7, 2002 and July 3, 2004 (very common, KD).

b. Silvered Green Blue--*Icaricia chlorina argentata* (J. Emmel, T. Emmel & Mattoon, 1998), **New Combination.**

Taxonomic note and updated status: The status of this entity is questionable within the Lupine Blue complex. Because *argentata* is usually associated with *Eriogonum umbellatum* and *chlorina* has since become better known as more than just a rare form, but has likely species status, *argentata* appears to be conspecific with *chlorina*. The placement of populations on the east side of the Sierra Nevada and in the Piute Mountains in Inyo and Kern Counties that use *Eriogonum fasciculatum* are questionable because Sierran *monticola* can use that host and has a similar phenotype and *chlorina* which uses *E. umbellatum* as a hostplant has proven to be a much more common and widespread butterfly in the past 20 years since the Systematics book was published.

Southern California TL: Inyo County: east end of Nelson Range, slope 0.2 air miles W of junction of Saline Valley road and Hunter Mountain road, 5950-6100’ elevation.

Habitat: Dry Juniper-Oak Woodland or Mojave Desert habitats in desert ranges.

Flight: Late May to mid-July.

Distribution: Inyo, Kern and Tulare Counties. This subspecies is found in the Panamint, Argus and Coso Ranges in southern Inyo County. It also appears to occur in the arid southern Sierra Nevada (the Whitney Portal records may represent *argentata*) based on the original description commentary, but that may be questionable since we now know there are both *monticola* and *chlorina* colonies on the same desert hills with their respective host buckwheats present.

149. Clemence's Blue--*Icaricia monticola* (Clemence, 1909), **New Combination**

Taxonomic note: This appears to be a species not a *lupini* or a *chlorina* that uses *Eriogonum fasciculatum* as its host plant. While there are some places where both occur in common areas, usually *monticola* occupies lower elevations and *chlorina* the higher elevations. The arguments for giving *monticola* species status were shared above., these two blues appear to represent two different species based on the morphological, biological and genetic species concepts (Davenport, 2002b, Opler and Davenport, 2015).

149a. Clemence's Blue--*Icaricia monticola monticola* (Clemence, 1909), **New Combination**
Southern California TL: Los Angeles County: vicinity of Pasadena with syntypes from upper Arroyo Seco.

Updated status: Some argue **Lupine Blues** and **Acmon Blues** are likely the same species because they can't tell them apart. But biologically *acmon* are multibrooded spring to fall fliers while *chlorina* and *monticola* have a single relatively brief flight, are larger and tend to have brighter more colorful ground colors in the males, and bolder black spots below. True, not all individuals can be identified with certainty, both can look very similar because both can have brown colored females without blue overscaling, but in series most can be readily placed, especially if the collector or photographer notes what buckwheats they may be associated with. In the nominotypical subspecies, females often have blue overscaling, the Tehachapi Mountain population near Oak Creek Pass were an exception.

Habitat: Usually foothill woodland in mountains with *Eriogonum fasciculatum*.

Flight: April to early July.

Distribution: Inyo County? (Reported records may be in the *chlorina* group), Kern, Los Angeles, Orange, Riverside, San Bernardino, San Diego, Tulare, and Ventura Counties. This blue not only occurs in the Coastal ranges, but in the southern Sierra Nevada as well using *Eriogonum fasciculatum* as host.

Records: **Kern County:** Sierra Nevada: Chimney Peak road, south side of Lamont Peak, June 5 and 13, 1999 (KD); Sageland area N of Kelso Valley, May 15, 1976 (KD & JB); Piute Mountains, Piute Mountain road from Bodfish-Havilah road summit to MP 6.1 overlooking Lake Isabella, July 4 and 17, 2000 (KD). Transverse Ranges: Frazier Park, July 5, 1971 (KD). **Los Angeles County:** Old Ridge Route road, July 7-11, 1975 and Pine Mountain road, 1 mi SE of Old Ridge Route road, May 12, 1999 (KD). **San Bernardino County:** Cajon Pass area, Apr 21, 2012 (KD). **Tulare County:** Sherman Pass road 4900', June 18, 1983 (KD); upper Kern River E of Ant Canyon, May 9 and 15, 2007 (KD).

b. Coast Ranges Clemence's Blue--*Icaricia monticola* (Clemence, 1909), Inner Coast Ranges segregate.

Updated status: Until recently (1999), specialists doubted reports of a *lupini* being in the Coast Ranges and believed these reports were misidentifications of *acmon*. Not only are they there, but they can be extremely abundant in San Luis Obispo County and in the Parkfield Grade area of Fresno and Monterey Counties. San Luis Obispo County populations northward lack blue

overscaling in females and bolder black spots on the ventral side than nominotypical *monticola*. The host plant is *Eriogonum fasciculatum*.

Habitat: Juniper woodland and oak woodland with abundant *Eriogonum fasciculatum*.

Flight: May-June.

Distribution: Santa Barbara county populations in the Sierra Madre Range are intermediate between nominotypical *monticola* and this segregate but also tend to lack blue overscaling in females and San Luis Obispo Counties but ranging northward into Monterey, Fresno and San Benito Counties in northern California.

Records: San Luis Obispo County: Syncline Hill, May 22 and 29, 1999 (KD); SR 58, 4-5 miles E Santa Margarita near junction Hwy 229 N, Apr 30, 2013 (KD). **Santa Barbara County:** Sierra Madre Range: Bates Canyon, June 4, 1994; May 4, 1999 and May 17, 2009 (KD); Santa Barbara and Dry Canyons, May 1, 2004 and May 9, 2009 (KD). **Ventura County:** Apache Canyon 1-2 mi. E of SR 33, May 4 and 18, 1999 (KD).

150. Veined Blue *Icaricia neurona* (Skinner, 1902).

Note: This is a southern California endemic highly sought by many. Flight times are highly variable depending on rainfall amounts and patterns.

Southern California TL: San Bernardino County: Doble, San Bernardino Mountains.

Updated status: Several more localities have been discovered since 1973. Individuals in the Sierra Nevada tend to be larger than those I have seen from the Frazier Park-Mt. Pinos areas. Flights tend to be very poor during drought years.

Habitat: Flats or slopes with the larval host *Eriogonum wrightii*. The northern most record I have for Tulare County is at a prominent metasedimentary rocky outcrop on the Sherman Pass road near the Bald Mountain turnoff.

Flight: Mid- April to July with a small second brood in late August and early September in wet years.

Distribution: Kern, Los Angeles, San Bernardino, Tulare and Ventura Counties.

Records: Kern County: McGill Camp area on Mt. Pinos, Sep. 5, 2006 (KD) and Seymour Canyon road, and near entrance to McGill Camp, Aug 19 and 4 Sep 2010 (second brood, KD); Summit Trail to top of Mt. Pinos, June 2, 2017 (SR, Mike Mulligan & Dave Haviland.). Greenhorn Mountains: Sawmill road 3-4 mi. west of SR 155, May 27, 2000 and May 22, 2002 (PAO & KD). **Tulare County:** Sherman Pass road near Bald Mountain at rocky outcrop 8000' with *Eriogonum wrightii*, July 6, 1992 (KD); Chimney Peak road near Lamont Meadows, June 29, 1975 (JB) and July 4 and 6, 1983 (KD). **Ventura County:** Alamo Mountain, June 26, 1976 (R. H. Vanderhoff); near Owls Barn off Lockwood Valley road, June 2, 2016 (KD); junction of Mil Potrero Hwy. and Apache Potrero road, June 11, 1987, (common KD).

151. Melissa or Orange Margined Blue--*Plebejus melissa* (W. H. Edwards, 1873).

There are two subspecies in southern California but this may be controversial. Some believe the two subspecies are essentially the same. Populations found in the Sierras including those near Kelso Valley in Kern County and along the upper Kern River often have blue overscaling of females. But so do both *inyoensis* and *paradoxa*. San Diego County populations may be different

Taxonomic note: This blue is in the subgenus *Lycaeides* (Pelham, 2008).

a. The Inyo Blue--*Plebejus melissa inyoensis* (Nabokov, 1949).

Southern California TL: Olancha, Inyo County.

Updated status: Emmel & Emmel (1973) essentially applied the name *inyoensis* to all southern California populations. If it proves that *inyoensis* and *paradoxa* are similar, then *paradoxa* was named first.

Habitat: Alfalfa fields in the Owens Valley/ River bottomlands and grasslands with good water seepage.

Flight: April-October.

Distribution: Possible intergrade populations between this subspecies and *paradoxa* occur in Kern and Tulare County in the southern Sierra Nevada on the Kern Plateau, the eastern Sierra Nevada, east slope of the Piute Mountains including the Kelso Valley area and Sageland. Females in these areas can have heavy blue overscaling or none. **Inyo County localities:** Nine Mile Canyon, Olancha, Lone Pine area, Whitney Portal area. This subspecies is sometimes common in the Owens River river bottomlands.

b. Orange-margined Blue--*Plebejus melissa paradoxa* D. Chermock, 1945.

Southern California TL: Tehachapi Mountains, Kern County.

Updated status: See comments under *inyoensis*.

Habitat: Flats or ravines with *Lupinus excubita*, the larval host.

Flight: April to October.

Distribution: Kern, Los Angeles, Orange, Riverside, San Bernardino, San Diego and Ventura Counties.

Records: Kern

County: Tehachapi Mountains: Oak Creek Pass, July 5, 1978 and May 7, 2006 (KD); Tehachapi Mountain Park near Ranger Station, June 9, 1982 (KD); Lake of the Woods, Sep 26, 1999 and July 12, 2003 (KD). **San Bernardino County:** Lake Silverwood below Dam, June 16, 2001 (Dave Goodward). **Tulare County:** upper Kern River at Fairview, Apr 27, 1964 (RLL); Calkin's Flat, Apr 28, 2001 (KD); south end of Kern Plateau at Lamont Meadows, May 20 and 21, 1983 (Sterling O. Mattoon).

152. Sierra Nevada Blue--*Agriades podarce cilla* (Behr, 1867).

Taxonomic note: The Systematic book (Emmel, Emmel & Mattoon, 1998a.) provides lengthy reasons on why *podarce* was given species status and a discussion of subspecies *cilla*. The discovery of the Heather Blue (*Agriades glandon cassiope*) in the Sierra Nevada mandated a study of the taxonomy of these two blues.

Updated status: This species reaches southern California by adding the Kern Plateau to what we consider southern California. Pohl, Patterson & Pelham (2016) used *Agriades* as the genus rather than a subgenus.

Habitat: This is a locally common Sierra Nevada butterfly that occurs in wet subalpine meadows with the shooting star host.

Flight: June to early August in very wet years.

Distribution: Tulare County.

Records: Tulare County: In stream bed on west side of Big Meadow, June 13, 1972 (JB & CS) and June 6, 1986 (KD); Subalpine meadow about 1 mile E of Sherman Pass, June 9, 1994 and July 4, 2004 (KD); wet meadow west side of Sherman Pass, off road to Mosquito Meadow, July 4, 2004 (KD); Paloma Meadows, Sherman Pass Road east of Sherman Pass and west of Bald Mountain, June 24, 2004 (KD).

The Metalmarks--Family Riordinidae.

153. The Fatal Metalmark--*Calephelis nemesis dammersi* McAlpine, 1971.

Southern California TL: Riverside County, Blythe.

Taxonomic note and updated status: Priority was given for use of the name *dammersi* over that of *californica* McAlpine, 1971. The TL: for *californica* is Riverside, Riverside County.

Habitat: Streams and canyons near the coast. Host plants are *Baccharis glutinosa* Pes. (Asteraceae), and *Encelia californica* Nutt. (Asteraceae).

Flight: All months but mostly February-October.

Distribution: Imperial, Los Angeles, Orange, Riverside, San Bernardino, Santa Barbara and Ventura Counties.

Records: Santa Barbara County: Upper Ynez River, 0.5 mi. upstream Paradise road, July 12, 2004 (NL); San Marcos Pass, Sep 8, 2012 (Marc Kummel); Birabent Canyon, Oct 11, 2016 (William Van Dam). **Ventura County:** N of Ojai, trailhead of Cozy Dell Trail, SR 33, Aug 18, 2012 (David Horner).

154. Wright's Metalmark--*Calephelis wrighti* W. Holland, 1930.

Southern California TL: Suggested to be "oases in the deserts of southern California, especially in Riverside and San Diego Counties."

Updated status: This species was believed to be limited to the Colorado Desert but since 1973, this species has been found at several locations in the Mojave Desert as well.

Habitat: This species usually occurs in deserts but sometimes this species occurs to the west of deserts in interior Riverside, Orange and San Diego Counties. This species occurrence is tied in with the occurrence of its host plant (sweetbush) and canyons with adequate periodic water drainage and rainfall.

Flight: Usually March to October.

Distribution: Imperial, Inyo, Orange, Riverside, San Bernardino and San Diego Counties.

Records: Inyo County: Argus Mountains: Indian Joe Canyon, Jan 27, 2006 (Bob & Susan Steele); Homewood Canyon, Apr 11, 2009 (locally common, KD); Mar 26, and Nov 10, 2010 (KD). Gordon Pratt has also found this species in the Coso Mountains. **San Bernardino County:** Caruthers Canyon, New York Mountains, Sep 14, 1984 (OS); Cornfield Springs, Providence Mountains, Sep 17, 1984 (JFE); Big Morongo Preserve, June 30, 2017 (JZ).

155. Mormon Metalmark--*Apodemia mormo* (C. Felder & R. Felder, 1859).

This metalmark has a biotype of one generation per year that flies in late summer and the first part of fall. There are at least five members of the *mormo* group in southern California. It is possible that the metalmarks in the Coast Ranges that resemble the federally endangered metalmark could actually be a sixth entity dependent on *Erigonum indictum* and DNA work has actually shown some populations so checked have distinctive MtDNA while the actual endangered subspecies *langei* has the same DNA as the black Coast Ranges *Apodemia mormo* (Prochek, Dubuis, Engberg, Davenport, Opler, Powell & Sperling, 2015).

a. Mormon Metalmark--*Apodemia mormo* near *mormo* (C. Felder & R. Felder, 1859), San Bernardino Mountains segregate.

Taxonomic note: James Scott (Scott & Fisher, 2007) disputes that the late season metalmark in the high elevations of the San Bernardino Mountains is a black *mormo*. He believes it is a second brood of what is now called *A. virgulti dialeucoides*, which John F. Emmel and Gordon Pratt

(Emmel, Emmel & Pratt, 1998) believe is a single brooded entity that flies in June and early July, the development times for *dialeuca* at such high elevation (8000'+) do not allow enough time for a second generation.

If Scott were correct, it would undo his basis for his proposal that *dialeucoides* is the same metalmark as *Apodemia dialeuca* in the Sierra San Pedro Martir of Baja California del Norte, Mexico (Gordon Pratt believes this may be possible, pers. comm.), and should be the name of a newly recognized species comprising single brooded members of the *virgulti* group with the biotype of being a single brooded species which has a single flight in the spring or early summer. Butterflies in both populations are closely associated with *Eriogonum wrightii*, their probable larval host. The biological status of the *dialeuca* in Mexico is unknown beyond the host plant and it seems unlikely that two butterflies in the *mormo* group are identical that occur 500m apart from each other (John Emmel, pers. comm.) is possible, but not proven. Because of the issues that are unresolved, I don't recognize "*Apodemia dialeuca*" as a species in this publication until this and other issues are worked out. I do think it likely that more than one species is in the *Apodemia virgulti* group, but which ones are problematical.

Pelham (2008) and Pohl, Patterson & Pelham (2016) do not treat *dialeuca* as a species in those catalogues/checklists. Segregates are not included in those publications.

Habitat: This metalmark occurs at many of the same habitats where *A. virgulti dialeucoides* occurs and on the same host: *Eriogonum wrightii* var. *subscaposum*.

Flight: Late summer-early fall.

Distribution: San Bernardino County, San Bernardino Mountains.

b. Coast Ranges Mormon Metalmark--*Apodemia mormo* near *mormo* (C. Felder & R. Felder, 1852), California Coast Ranges segregate.

Taxonomic note: Adults near the edge of this segregate in interior San Luis Obispo County can resemble black *mormo*, *cythera/tuolumnensis*, *virgulti* and *langei*. The *langei* forms and black forms at Ortega Grade (not the endangered subspecies) dominate in association with *Eriogonum indictum*. This mixing of many forms was observed at Navajo Flat on blooming rabbitbrush where hundreds of adults were present August 27, 2013 and on other dates by Stephen Randall and the author. This population in interior San Luis Obispo County has not been DNA tested and evaluated and several scientists working on this group are hoping to use nuclear DNA testing with the *Apodemia mormo* complex. Different workers using traditional "bar coding" mtDNA testing have had contradictory results with the *mormo* complex, some not published. Scientists are hoping that nuclear DNA testing multiple genes will resolve taxonomic issues.

Updated status: In many areas, this segregate is characterized by being a predominately black butterfly, especially north of Monterey County and southern California in the Coast Ranges. This mixing of forms in interior San Luis Obispo was discovered when this writer went along SR 58 in late summer 2000, sampling members of the *Apodemia mormo* complex. Far from being rare, all of these forms were very abundant.

Habitat: Foothill woodland with abundant *Eriogonum fasciculatum* and other buckwheat species and abundant blooming rabbitbrush which adults were avidly visiting.

Flight: August-September.

Distribution: Kern and San Luis Obispo Counties.

Kern County: Inner Coast Ranges on Davis Road at Ortega Grade (the predominately black form), and east end of Annette Road, Sep 7 and 16 1992 (KD & Kevin Davenport); Sep 18, 2009 (KD); Annette Road, Sep 7, 1992 (KD) and Sep 18, 2009 (Jack Levy & KD). **San Luis Obispo**

County: west side of Cottonwood Pass, Sep 3 and 7, 1992 (KD); Davis road, from Hwy. 41, to Ortega Grade, Sep 7, 1992 (KD); SR 58 from Syncline Hill to near Santa Margarita, Sep 18, 2000 (KD). Form *langei* is also common along Red Mountain Road, Navajo Flat, Cottonwood Pass and Navajo Flat Camp.

c. Mormon Metalmark--*Apodemia mormo autumnalis* Austin, 1998.

Taxonomic note: This subspecies (Austin, 1998c) occurs in the eastern Mojave Desert in late summer and fall where it can be very difficult to separate (in terms of field marks and coloration) from *Apodemia mejicanus deserti* which differs biologically by being multiple brooded with spring, summer or fall flights depending on rainfall. It also differs from *deserti* by being larger in size, more blackish than the more gray colored *deserti* and has smaller white spots.

Updated status: This metalmark was listed as *Apodemia mormo mormo* in the Emmel's 1973 book.

Habitat: Desert canyons with the buckwheat host plants.

Flight: Late August to early October.

Distribution: Inyo and San Bernardino Counties.

Records: San Bernardino County: Providence Mountains, Foshay Pass, Sep 20 and Oct 6, 1993 (KD); Granite Mountains and Pass, Sep 20 and Oct 6, 1993 (KD).

d. Cythera Metalmark--*Apodemia mormo cythera* (W. H. Edwards, 1873).

Taxonomic note: This subspecies has predominately orange colored wings with more whitish spots above than subspecies *tuolumnensis*.

Southern California TL: One suggested location was from 9 miles west of Lone Pine, Inyo County. Another suggested type locality was "the area of Independence, Inyo County" which is just a few miles north of Lone Pine. This metalmark is common in the Whitney Portal area which fits well with the 9 miles west of Lone Pine locality.

Habitat: Juniper/oak woodland, chaparral and roadsides with the host *Eriogonum umbellatum*.

Flight: Second week of July to early October.

Distribution: Inyo County.

Records: Inyo County: Whitney Portal area, in association with the host plant growing on sandy soils in dry mixed coniferous forest and sagebrush, Lone Pine Canyon and along the road higher up near Whitney Portal itself: Sep 20, 1986; Aug 25, 1998 and Sep 1, 2002 (all KD). Records from Nine Mile Canyon, Aug 26, 1983 and July 29, 1988 (KD) may be *cythera* or *tuolumnensis* or a blend of the two.

e. Tuolumne Metalmark--*Apodemia mormo tuolumnensis* Opler & Powell, 1962.

Taxonomic note: This subspecies is very similar to *cythera* but has fewer white spots above and the underside markings may differ somewhat. The two subspecies appear weakly differentiated and thus it is difficult to tell where one ends and the other begins.

While *tuolumnensis* at its type locality in Tuolumne County uses predominately *Eriogonum nudum* (Opler and Powell, 1961), the populations along the east side of the Sierra Nevada use *Eriogonum fasciculatum* as their larval host. In contrast, there are several *Eriogonum umbellatum* feeding populations in Kern and Tulare Counties.

In interior San Luis Obispo County, the more orange subspecies *tuolumnensis* in the *cythera* group meets the blackish coast ranges *mormo* and there also seems to be mixing with *virgulti* and *langei*. DNA work has not yet been done with this population.

Updated status: This metalmark ranges much further west of its previously known range, even into the California Coast Ranges in Ventura, Santa Barbara and San Luis Obispo Counties in southern California and Monterey and Fresno Counties to the north in the Parkfield Grade and Wathan Canyon areas in central California. Many previously collected members of the *Apodemia mormo* complex in these areas were misidentified as *Apodemia mormo virgulti*. My trips to this region in interior San Luis Obispo County in the spring found no members of the *mormo* complex on the wing.

Habitat: Foothill woodland and chaparral.

Flight: Mid- July to early October.

Distribution: Inyo?, Kern, Los Angeles, San Bernardino, San Luis Obispo, Santa Barbara, Tulare and Ventura Counties.

Records: Kern

County: Walker Pass, Aug 29, 1978 (KD); Chimney Peak road south of Lamont Peak, Oct 6, 2001 (KD); Butterbrecht Peak-Tom's Hill area July 30, 1982 and Aug 26, 1988 (KD); E side base of Greenhorn Mountains, 1-2 mi. south of Kernville, 1 Sep to 28 Oct 2000 overlapping ranges with a black *virgulti* near *mojavelimbus* (KD); Piute Mountains 2-5 mi. south of Bodfish, Aug 25 to Sep 11, 1995 (KD). **Los Angeles County:** 5 miles NE of Warm Springs, Sep 2 and Oct 7, 2007 (KD); Old Ridge Route road, Sep 2 and 16, 2007 (KD); Pine Creek Canyon south of Three Points, Sep 2 and 16, 2007 (KD). **Santa Barbara County:** Big Pine Mountain, Sep 2, 2011 (NL). Sierra Madre Range: Bates Canyon, Sep 8, 1997 (KD); Cottonwood Canyon, Sep 8, 1997; Santa Barbara and Dry Canyons, Aug 21, 2004 and Sep 20, 2012 (all KD.) **San Luis Obispo County:** Normal *tuolumnensis* phenotypes only at Syncline hills, Sep 18, 2000 (KD) and Aug 27, 2013 (KD & SR); NW of La Panza Range, Sep 18, 2000 (KD); at mid-elevations on Hi Mountain overlooking Lopez Lake, Aug 27 and Sep 17, 2013 (KD & SR), all members of the *mormo* group were predominately orange like *tuolumnensis* while *virgulti* phenotypes were on the Pozo road Pass route junction from Red Hill road Sep 17, 2013 (KD & SR). **Tulare County:** colonizing several locations along the Sherman Pass road the past few years, very common 4900-6800', Sep 4 and 16, 2014 KD). This species was not observed in these areas even before the 2002 fire!; Chimney Peak road N side of Lamont Peak, Aug 26, 1983 (KD); Bald Mountain Lookout 9350', Aug 14, 2010 (KD); upper Kern River south of Corral Creek, Sep 6, 1999 (KD). **Ventura County:** Hills near Owls Barn, Oct 3, 1980 and Sep 14, 2012 (KD); Frazier Mountain near Chuchupate Camp, Oct 9, 1981 and July 17, 1993 (KD).

156. Behr's Metalmark--*Apodemia virgulti* (Behr, 1865).

The *virgulti* group has a biotype that can have two or three broods a year but some subspecies or populations may have only a single brood per year, usually in the spring. The host plants are often *Eriogonum fasciculatum* but *Eriogonum wrightii* is also used. There are ten subspecies or segregates in the *virgulti* group. It appears that *mojavelimbus* can be either a single brooded or double-brooded entity but the complexities involved and significance of that still need to be resolved (Gordon Pratt, pers. comm.). Field marks when looking at MtDNA results can be untrusty in the *mormo* complex in assessing identified named populations (Proscheck, Dubuis, Engberg, Davenport, Opler, Powell and Sperling, 2015). Scientists hope to study this complex more thoroughly using nuclear DNA to read several genes in hopes it will lead to an improved understanding of the group.

a. Behr's Metalmark--*Apodemia virgulti virgulti* (Behr, 1865).

Southern California TL: LaTuna Canyon, 1200' elevation, Verdugo Mountains, Los Angeles County.

Updated status: Several entities formerly "lumped" with *virgulti* have been given names.

Habitat: This metalmark tends to be localized in foothill woodland canyons with high solar radiation. The northern limit of nominotypical *virgulti* appears to be in the Castaic Lake-Warm Springs area in Los Angeles County.

Flight: March to October (two or three broods).

Distribution: Los Angeles, Orange, Riverside, San Bernardino, Santa Barbara, San Luis Obispo, San Diego and Ventura Counties.

Records: Los Angeles County: Lake Castaic, Apr 12, 2006 (KD); Lake Hughes road E of Castaic, Oct 7 and 14, 2007 (KD); Lake Hughes road near Warm Springs, Apr 24, 2007 and Oct 7 and 14, 2007 (KD).

b. Peninsular Ranges Metalmark--*Apodemia virgulti peninsularis* J. Emmel, T. Emmel & Pratt, 1998.

Taxonomic note: The type series of this at the LACM does look very much like *Apodemia mormo tuolumnensis* but it flies in the spring and not in the fall. It has more orange scaling and less black than *Apodemia virgulti virgulti* which also flies very near *peninsularis*.

Southern California TL: San Diego County: Laguna Mountains, northeast edge of El Prado Meadow, 5,500' elevation.

Updated status: The status of this as a possible species is hypothetical but possible as this entity and *virgulti* occur close together but there are is apparently little or no interbreeding.

Habitat: Large open dry meadow areas in sparse Jeffrey Pine forest.

Flight: Mid-May (late April in some very dry years) to late June.

Distribution: Riverside (San Jacinto Mountains) and San Diego Counties (Palomar and Laguna Mountains).

c. Sand Dunes Metalmark--*Apodemia virgulti arenaria* J. Emmel & T. Emmel and Pratt 1998.

Taxonomic note: This metalmark uses *Eriogonum parvifolium* as the larval host, not *E. fasciculatum* which is used by *Apodemia virgulti virgulti*. This subspecies is multiple brooded. Emmel, Emmel & Pratt (1998) described *arenaria* as having the ground color dorsally as a blackish-gray while it is brownish-gray in *virgulti*; the two white spots in the basal area of the dorsal forewing are greatly reduced in size in *arenaria* but are usually well developed in *virgulti*; the postmedian series of white spots on the dorsal hindwing is fairly well developed in *arenaria*, but virtually absent in *virgulti*. Ventrally, *arenaria* has a more blackish-gray aspect, while *virgulti* is brownish gray.

Southern California TL: Los Angeles County: El Segundo sand dunes, foredunes area 0.1 to 0.2 miles air mile NNE intersection Imperial Highway and Vista Del Mar, 100-150' elevation.

Updated status: Described in 1998, separation between *arenaria* and *virgulti* can be difficult-see above.

Habitat: Near the beach in sand dunes, with brush and buckwheats.

Flight: April to late September or October (at least two broods).

Distribution: Los Angeles County and probably the San Luis Obispo County coastal population at Los Osos which is double brooded.

Records: San Luis Obispo County: Los Osos, scarce July 3, 2008 and common Sep 7, 2000 (KD).

d. Blackish Metalmark--*Apodemia virgulti nigrescens* J. Emmel & T. Emmel, 1998.

Taxonomic note: This subspecies is very dark and blackish on both forewings and hindwings, more so than any other member of the *virgulti* group (Emmel & Emmel, 1998f). This metalmark is multiple brooded flying from spring to fall.

Southern California TL: San Bernardino County: Colton, sandy area 0.1 air mile NW of intersection of Pepper St. and Slover Ave, ca 0.8 air mile WBW of Slover Mt., 1040'.

Updated status: No change since description in 1998.

Habitat: Small hills on mostly flat ground with brush and abundant *Eriogonum fasciculatum*.

Flight: Spring to fall.

Distribution: This subspecies is limited to the type locality in San Bernardino County.

Records: San Bernardino County: Colton, Apr 12, 2006, very abundant (KD).

e. Pratt's Metalmark--*Apodemia virgulti pratti* J. Emmel & T. Emmel, 1998.

Taxonomic note: This subspecies is distinguished by its enlarged white spots and over-all dark aspect on the dorsal side but differs from *dialeucoides* by having increased orange-brown scaling on the dorsal forewing as well as on the postmedian area of the hindwing (Emmel & Emmel, 1998f). The larval host is *Eriogonum kennedyi*.

Southern California TL: San Bernardino County: San Bernardino Mountains, Holcomb Valley.

Updated status: This subspecies was described in 1998.

Habitat: Holcomb Valley is a brushy valley with grass and the host buckwheat among the brush. There was a major fire in the Holcomb Valley in the summer of 2017. It remains to be seen if the population was affected.

Flight: May to mid-June.

Distribution: San Bernardino County: Limited to the San Bernardino Mountains.

Records: San Bernardino County: San Bernardino Mountains: Holcomb Valley, common June 11, 2005 (KD); only one on June 5, 2017 (KD).

f. The Whitish Metalmark--*Apodemia virgulti dialeucoides* J. Emmel, T. Emmel & Pratt, 1998.

Taxonomic note: This subspecies was believed to be double brooded until it became known that the late summer flight was actually an *Apodemia mormo* black phenotype with a different biotype. It seems that flight times between when *dialeucoides* flies and that of the black metalmarks begin that fly in late summer at those high elevations above 8000', is too brief to be a second generation of *dialeucoides*. Subspecies *dialeucoides* needs considerable time to develop from egg to adult (Gordon Pratt, pers. comm.).

This subspecies is extensively a dark gray ground color dorsally, with only small amounts of orange-brown scaling, usually confined to the discal area, combined with enlarged white spots both dorsally and ventrally, the basis for the common name of this subspecies (J. Emmel, Emmel & Pratt).

Southern California TL: San Bernardino County: San Bernardino Mountains, Sugarloaf Mountain.

Updated status: Recent reports suggest that this metalmark has either become scarce or disappeared in recent years.

Habitat: Elevated coniferous or mixed coniferous forest, often on gravelly slopes 8500-9500' near the host *Eriogonum wrightii* spp *subscaposum*.

Flight: Late May to late June.

Distribution: San Bernardino County: Limited to the San Bernardino Mountains.

Records: San Bernardino County: San Bernardino Mountains: Sugarloaf Mountain, June 3 and 5, 1966 (John Justice, KH and RES); Radford road above Moonridge, June 24, 1978 and June 14, 1979 (KD). Wildhorse Meadows, on dry slopes above 8500', June 15, 1985 (KD); hilltop west of Onyx summit, June 15, 1985 and June 13, 1994 (KD).

g. Desert's Edge Metalmark--*Apodemia virgulti mojavelimbus* J. Emmel, T. Emmel & Pratt, 1998.

Taxonomic note: This subspecies is similar biologically to *davenporti* but blacker and darker ventrally and dorsally. It is similar in appearance to *Apodemia mormo mormo* but has more orange on the forewing. Populations on the desert side of the Tehachapi Mountains, lower Kern Canyon, the east slope of the Greenhorn Mountains and around Lake Isabella are double brooded but similar in appearance to *mojavelimbus*, or the *virgulti* segregate similar in appearance to *deserti*. There are black forms similar to *mojavelimbus* that occur regularly at a *davenporti* colony site at Ant Canyon along the upper Kern River in Tulare County.

Southern California TL: San Bernardino County: Ord Mountains, near the north slope of the San Bernardino Mountains.

Updated status: In an American Butterflies article entitled "The Buckwheat Metalmarks" by Gordon Pratt, John F. Emmel and Gary Bernard (2011), the authors characterized the blackish population at Lake Isabella south of Kernville as a *davenporti-mojavelimbus* blend zone (90% look like *mojavelimbus*) that existed within the range of *davenporti*. A problem with that concept was *davenporti* and *mojavelimbus* are both supposed to be single brooded in the spring but the so-called "blend" populations fly in two broods: late May to early July and late September to early November. Gordon Pratt (email, Feb. 20, 2018) stated that rearing needs to be done to resolve this issue of real identity. Field marks alone in this complex are not reliable and the statement that one can always identify butterflies by looking at "readily identifiable field marks" does not always work in several groups, including this one.

Habitat: Desert edge habitats or drier slopes in the southern Sierra Nevada.

Distribution: Kern, Los Angeles, San Bernardino and likely in Tulare County

Records: Kern County: 0.5 mi south of Kernville, June 6, 1999 (KD); east slope of Greenhorn Mountains about 1.5 to 2 mi south of Kernville, May 20 and 27, 2000 (KD). Sierra Hwy. E side Lake Isabella at base of hill 3 mi south of Kernville, Oct 14, 2000 (KD); Stine Cove on east side of Lake Isabella, Sep 20, 2008 (KD). Greenhorn Mountains: Sawmill road 3-4 mi west of SR 155, Oct 14, 2000; May 23 and June 2, 2002; Oct 30, 2002 (all KD). Similar looking double brooded populations exist in lower Kern Canyon and in the Tehachapi Mountains on the Mojave Desert's edge that may be *mojavelimbus* or what may be a *virgulti* subspecies that resembles *deserti*. **Los Angeles County:** Hilltop above Little Rock Dam, Mar 6, 2015 and in ravines and on hillsides, Mt. Emma road, Mar 10, 2015 (KD). **San Bernardino County:** rocky slopes above Rock Corral, Apr 8, 1979 (KD); one male 3 mi SSE of Hesperia in Ord Mountains, Apr. 21, 2012 (KD). **Tulare County:** These metalmarks occur at least as forms in a *davenporti* population at Ant Canyon, Apr 6, 2006; Apr 5, 2008 and Mar 17, 2015 (KD), or are they two separate entities here? This *davenporti/mojavelimbus* population has no fall flight, it is single brooded in the spring.

h. Davenport's Metalmark--*Apodemia virgulti davenporti* J. Emmel, T. Emmel & Pratt, 1998.

Taxonomic note and updated status: This subspecies closely resembles nominotypical *Apodemia virgulti* except that the white spots are more prominent both dorsally and ventrally along with a number of other technical details in the original description. Perhaps the biggest difference is that *virgulti* is multiple brooded. Subspecies *davenporti* has only one brood in the spring. To make things more interesting *davenporti* shares the Kern River drainage and the Kern River Valley and east slope of the Greenhorn Mountains with a double brooded black member of the *virgulti* complex that looks like *mojavelimbus* but has an occasional orange-red form that resembles *davenporti*. Gordon Pratt, John Emmel and Gary Bernard (2011) called this a *davenporti/mojavelimbus* intergrade, but both *davenporti* and *mojavelimbus* are supposed to be single brooded in the spring. How do two spring fliers have intergrades that fly in the late spring after *davenporti* finishes its flight and then fly again from late September into November?

Subspecies *davenporti* flies east below Walker Pass where it overlaps with *Apodemia mejicanus deserti* on the same days. The black double brooded *virgulti* can be sympatric and synchronic with *Apodemia mormo tuolumnensis* at some areas around Lake Isabella and on the Sawmill road in the Greenhorns in the fall. Another interesting situation is a colony of *davenporti* along the upper Kern River at Ant Canyon in Tulare County is about 70% like *davenporti* and about 30% *mojavelimbus* with only a single spring flight. Back in 1973, Emmel & Emmel were puzzled by spring and fall records of "cythera". The spring record had to be *davenporti*. Subspecies *cythera* (including *tuolumnensis*) does not fly in the spring!

Southern California TL: Kern County: Walker Pass, 5,300' elevation.

Habitat: Foothill woodland and Juniper woodland with either *Eriogonum fasciculatum* or *Eriogonum wrightii*.

Flight: Late March to early June.

Distribution: Inyo, Kern, Los Angeles and Tulare Counties.

Records: **Inyo County:** Sage Flat road 0.2 mi west of U.S. Forest boundary, May 5, 2001 (JFE); Nine Mile Canyon 1.5 mi below road summit, May 18, 2003 (KD). **Kern County:** Walker Pass 5300', May 21, 1983 (Sterling Mattoon); east below Walker Pass, May 9 and 15, 1993, overlapping occurrence with *A. mejicanus deserti*; Butterbrecht Peak, May 21, 1988 (KD); Piute Mountains, 2-4 mi south of Bodfish, May 8 and 21, 1979 (KD). **Los Angeles County:** Old Ridge Route road, Apr 28, 2015 (KD); San Gabriel Mountains on Mt. Emma road near Little Rock Dam, March 10, 2015 (KD). **Tulare County:** Chimney Peak road on hillside near Lamont Meadows, June 13, 1999 (Kevin Davenport); Sherman Pass road, 1 mi. E of Kern River at Dry Creek Canyon, and the Brush Creek turnoff at the helipad, Apr 24, 2013 (KD), these colony sites were destroyed in the 2002 fire and it took *davenporti* 11 years to turn up at this locality again.

i. Sierra Madre Mountains Metalmark--*Apodemia virgulti* (Behr, 1865), Sierra Madre Mountains-Frazier Park segregate.

This metalmark is similar to *davenporti*, but is much blacker with a smudged appearance.

Habitat: Steep west-facing canyons or in canyon bottoms.

Flight: April-May.

Distribution: NE Santa Barbara and extreme SW Kern Counties.

Records: **Kern County:** Frazier Park in canyon near fire station off Mt. Pinos Way, Apr 22, 2012 (KD and RPM); May 12, 2012 and Mar 25, 2014 (KD). **Santa Barbara County:** Sierra

Madre Range: Santa Barbara Canyon, May 1, 2004 and Apr 20, 2006 (KD); Dry Canyon, Apr 19, 2005 and Apr 20, 2006 (KD).

j. Desert Metalmark--*Apodemia virgulti* near *deserti* W. Barnes & McDunnough, 1918.

Taxonomic Notes: MtDNA testing (some such studies are not published) indicates some butterflies identified as “*deserti*” in California actually have *virgulti* MtDNA while *deserti* in other states belong to *mejicanus*. James Scott believes *mejicanus* is conspecific with *virgulti* (Scott and Fisher, 2007). These tend to have less black on the forewing above. These can have more than one brood. There could be a name change ahead. Two different species can't share a single subspecies name. Or will nuclear DNA work involving several genes solve this problem?

Habitat: Desert hills and canyons with *Eriogonum fasciculatum*.

Flight: Records based on field marks with this metalmark and *mejicanus* are untrustworthy. Apparently, there are spring and late summer broods in wetter years. The real *Apodemia mejicanus deserti* have more extensive black on the forewing above.

Distribution: Inyo, Kern and Los Angeles Counties.

Records: Inyo County: Lone Pine Creek near Alabama Hills (resembles *A. mejicanus deserti*), July 9, 2009 (KD) and Lubken Canyon (2 mi south of Lone Pine) about ¼ mi. west of US 395 on hillside, Apr 22, 2015 (KD). Both were determined by Gordon Pratt, however, both were near *Eriogonum inflatum*.

157. The Sonoran Metalmark--*Apodemia mejicanus* (Behr, 1865)

Taxonomic Notes: As mentioned above, it appears many California populations are actually a segregate of *virgulti*. As of the present, we cannot reliably sort this issue out with assurance. This needs further study.

a. Sonoran Metalmark *Apodemia mejicanus deserti* W. Barnes & McDunnough, 1918.

Southern California TL: San Diego County: La Puerta Valley, Southern California.

Updated status: This metalmark has long been a controversial issue as to taxonomy. MtDNA work suggests that two different species are hidden in the *deserti* phenotype.

Distribution: Imperial, Inyo, Kern, Los Angeles, Riverside, San Bernardino and San Diego Counties.

Records: Inyo County: Lower Nine Mile Canyon at bridge crossing in ravine, Mar 28 to May 18, 2003 (KD); Argus Mountains, Homewood Canyon, Apr 11 and Aug 24, 2009 (KD). **Kern County:** Mid-elevation slopes below Walker Pass, Apr 29 and May 9, 1993 (KD); Jawbone Canyon between Butterbredt Peak and SR 14, May 26, 1978 (KD); Homestead along SR 14, Aug 29 and Sep 18, 1978 (KD). **Imperial County:** 2 mi W of Ocotillo, Mar 14, 1995 (John B. Vernon). **Riverside County:** Chino Canyon near Palm Springs, Oct 17, 1976 (KD). **San Bernardino County:** Granite Mountains near Lucerne Valley, May 2, 1980 (KD).

158. Palmer's Metalmark--*Apodemia palmerii palmerii* (W. H. Edwards, 1870).

Taxonomic Notes: The name *palmerii* at the subspecies level was applied to the Arizona entity in southeastern Arizona for many years and the name *marginalis* Skinner was applied to California populations (T. Emmel & J. Emmel, 1973). Austin (1987, (1988) corrected this and the name *palmerii* now applies to the California populations and the name *arizona* has been given to those in SE Arizona.

Habitat: Stands of Mesquite in fairly well watered desert areas.

Flight: April to early November.

Distribution: Inyo, Imperial, Kern, Los Angeles, Riverside, San Bernardino and San Diego Counties.

Records: **Inyo County:** Tecopa, July 4, 1979 (JFE & OS). **Kern and Los Angeles Counties:** Edward's Air Force Base: Branch Memorial Park and Buckhorn Dry Lake, May 31 and Sep 20, 1994 (GP & KD, with the proper permit).

Brush-Foot Butterflies--Family Nymphalidae.

159. Western Snout Butterfly--*Libytheana carinenta streckeri* Austin & J. Emmel, 1998.

Taxonomic note: There was a change of species from *Libytheana bachmanii* to *carinenta* because no convincing arguments were made in the past to support *bachmanii* as a different species from *carinenta*. Many now call this species the "American Snout."

Austin & J. Emmel (1998a) applied the name *streckeri* to California and Arizona populations. James Scott believes the name *larvata* still applies to Snouts in California. The name *bachmanii* still applies to eastern U. S. populations as a subspecies. The name *larvata* now applies to a subspecies in south-central Texas.

Updated status: There are now more documented records to show this species reaches even the Coast Ranges, the southern San Joaquin Valley and southern Sierra Nevada.

Habitat: Strays can potentially show up anywhere but are most likely to show up in the deserts at water or at blooming rabbitbrush.

Flight: Most records are from September and October but in recent years it appears the species is successfully overwintering and several winter and spring records have been reported.

Distribution: There are likely transient populations where *Celtis reticulata* Torr. (Netleaf Hackberry trees) grow, but most Snouts in the State occur as rare strays from Arizona or Mexico.

Records: **Inyo County:** Haiwee Reservoir, Oct 25, 2003 (Bob & Susan Steele); Death Valley NP: Fall Canyon, Oct 30, 2014 (Stacy Holt). **Kern County:** San Joaquin Valley: Bakersfield, Oct 6, 1963 (KD); Mojave Desert at Koehn Dry Lake, Sep 27, 1984 (KD); China Lake, Nov 5, 2001 (Bob & Susan Steele); Jawbone Canyon, Sep 6, 2006 (KD). Kern River Valley: Weldon near junction Kelso Creek road & SR 178, Oct 27, 2008 and in numbers, Oct 28 to Nov 14, 2014 (KD). **Riverside County:** Chuckwalla Mountains, Feb 6, 2015 (MW & BB); Joshua Tree National Park: Covington Flats Trail, Sep 19, 2015 (JZ). **Santa Barbara County:** Carpinteria, Dec 29, 1963 (Demorest Davenport). **San Bernardino County:** Providence Mountains, Foshay Pass, Sep 20, 1993 (KD); Cima in eastern Mojave Desert, Oct 21, 2003 (Lynn & Gene Monroe). **San Diego County:** upper Plum Canyon, Anza Borrego State Park, Jan 22, 2013 (Pete Spino) and Jan 17, 2015 (KS) very unusual winter records. **San Luis Obispo County:** 6-7 miles E of Paso Robles, Feb 12, 2015 (JG). **Santa Barbara County:** UC Santa Barbara, Lagoon road./Trail, Nov 18, 2015 (Mary Maki). **Tulare County:** Chico Flat N of Riverkern, Oct 28, 2003 (KD).

160. Monarch--*Danaus plexippus plexippus* (Linnaeus, 1758).

Updated status: Many are concerned about a trend of decreasing numbers of these butterflies at overwintering sites. Some adults overwinter inland away from the coast, giving Monarchs some back up protection during the winter. Prolonged drought and the heavy use of effective pesticides are two reasons for the numbers drop, though this butterfly remains a frequently seen butterfly.

Distribution: All counties. This species is well known for its spring and fall migrations and overwintering sites.

161. Queen--*Danaus gillippus thersippus* (H. Bates, 1863).

Taxonomic note: The name *thersippus* has priority over the name *strigosus* (Bates) (Austin, 1998d).

Updated status: This butterfly is now known to reach San Luis Obispo, Kern and Tulare Counties with regularity and establishes transient breeding populations in the southern San Joaquin Valley (Greenfield and Tule Elk Preserve) on narrow-leaved milkweeds (*Asclepias fascicularis* Decaisne). One individual even turned up in a grove of Giant Sequoias!

Habitat: Deserts, straying to coastal plains and into mountains including the Kern River Valley. This species turns up frequently on narrow-leaved milkweeds and on blooming rabbitbrush in the southern Sierra Nevada.

Flight: March to early November.

Distribution: All counties but rare in Ventura, Santa Barbara and San Luis Obispo Counties. This species establishes transient populations in the southern Sierra Nevada in the Kern River Valley in Kern County most years.

Records: **Inyo County:** Lubken Canyon 2 mi south of Lone Pine, Sep 8, 1984 and Aug 25, 1998 (KD); Olancho, Aug 29 and Sep 18, 1978 (KD). **Kern County:** Transient population at Tule Elk State Park, Aug 20 and Sep 5, 1981 (KD, under permit); Kern River Valley: below Lake Isabella Dam in swamp, June 18 and Sep 16, 2001 (KD). **San Luis Obispo County:** 6 miles E of Paso Robles, Oct. 29, 2010 (JG); sightings Red Hill road just SE of Navajo Flat, and west of Pozo at stream crossing at base of Hi Mountain, Sep 17, 2013 (KD). **Orange County:** San Clemente, Sep 7 and Oct 25, 2016 (DBG). **Santa Barbara County:** Coal Oil Point Reserve near Santa Barbara Sep 25, 2003 (NL); Channel Islands NP, Mar 28, 2015 (Chris Leslie). **Tulare County:** Freeman Creek Grove of Giant Sequoias, July 16, 1983 (KD); Kennedy Meadows, June 30, 1988 (KD); Kern River 2-3 mi south of Calkin's Flat, Sep 2, 2014 (KD) and Corral Creek Camp, Sep 16, 2014 (KD). **Ventura County:** Ventura River 180', Sep 26, 1984 (Tom Dimock).

162. Arizona Red-spotted Purple--*Limenitis arthemis arizonensis* W. H. Edwards, 1882.

Distribution: Extreme eastern Mojave Desert at Fort Piute, San Bernardino County.

Records: **San Bernardino County:** Eastern Mojave Preserve: Fort Piute in streambed with willows, June 9, 2015 (photograph of a fresh individual, Dave Goodward). It is possible a small population could be resident inside California. Gordon Pratt (pers. comm.) reported seeing a possible individual of this species on the California side of the Colorado River near Lake Mojave.

This species is a breeding resident on the other side of the Colorado River south of Lake Havasu City, Arizona at the Bill Williams River NWR and probably strays into California on occasion there. Red-Spotted Purples are sometimes common in the Hualapai Mountains south of Kingman, Arizona.

163. Lorquin's Admiral--*Limenitis lorquini* Boisduval, 1852.

This species has had two new subspecies recognized and described recently by George T. Austin and John F. Emmel (1998a). The boundaries for those subspecies are not clear cut which is to be expected because these riparian butterflies are not isolated.

Updated status: The recognition of *powelli* as a valid subspecies and not just a form could call in to question as to whether many of the Sierra Nevada populations are really subspecies *lorquini* or intermediates with *powelli*.

a. Lorquin's Admiral--*Limenitis lorquini lorquini* Boisduval, 1852.

Habitat: Streamsides or wet meadows with willows.

Flight: Mid-April to mid-October.

Distribution: Inyo, Kern and Tulare Counties.

Records: **Inyo County:** upper Nine Mile Canyon, July 4 and 6, 1983 (KD). **Kern County:** Greenhorn Mountains: Kern Canyon at Miracle Hot Springs (now Hobo Camp), May 21, 1976 (KD); Kern River Valley at Weldon, Aug 8, 1979 and Oct 5, 1998 (KD); Piute Mountains, 2-4 mi. south of Bodfish, May 8 to 30, 1976 (KD). **Tulare County:** Sherman Pass road, 4300-8600', July 24 and Aug 5, 1982 (KD); 1 to 4 miles north of Chimney Peak Ranger Station, June 18, 2005 (KD), these show blending with *powelli*; Greenhorn Mountains, Portuguese Pass area, June 24, 1996 (KD).

b. Powell's Lorquin's Admiral--*Limenitis lorquini powelli* Austin & J. Emmel, 1998.

Taxonomic note and updated status: The name *powelli* was originally applied to what was viewed as an aberration, but in fact is representative of populations in southern California (Austin & J. Emmel, 1998a). This subspecies is recognized by having relatively wider bands, the spots are more contiguous and only narrowly divided by dark veins. The apical orange patch is narrower than in nominotypical *lorquini*. The key differences are on the ventral surface. The orange-brown color is more extensive at the expense of the white. The submarginal series of whitish lunules on both wings are broad on subspecies *lorquini* but are comparatively narrow in *powelli* (Austin & J. Emmel, 1998a). The orange ventral surface in the species is common well northward into the Sierra Nevada and in the Coast Ranges

Habitat: Streamsides, wet meadows or lake edges with willows.

Flight: March to late October.

Southern California TL: San Bernardino, San Bernardino County.

Distribution: Kern, Los Angeles, Orange, Riverside, San Bernardino, San Luis Obispo, Santa Barbara, San Diego and Ventura Counties. Material I have seen from the Coast Ranges in Santa Barbara and San Luis Obispo County often looks intermediate between *powelli* and subspecies *lorquini*.

Records: **Kern County:** Tehachapi Mountain Park, June 20, 1962; Aug 17, 2002; June 26 and Sep 5, 2005 (KD); Tehachapi Creek at Keene, May 13, 1990 (KD); Lake of the Woods, in deep ravine and streambed, Sep 15, 2010 and June 23, 2016 (KD); Mt. Pinos, May 14, 1970 and Pine Mountain Club area, June 28, 2006 (KD). **Los Angeles County:** Warm Springs between Castaic and Lake Hughes, Apr 24, 2007 and Sep 2, 2007 (KD); Castaic near Lake Castaic, July 15, 2005 (KD). **San Luis Obispo County:** Lopez Canyon, May 13 and June 9, 1978 (KD); 5 miles east of Santa Margarita in stream bed, May 4, 2013 (KD); Hwy 101, Cuesta Pass 1522', July 7, 2015 (JG).

c. Pallid Lorquin's Admiral--*Limenitis lorquini pallidafacies* Austin & J. Emmel, 1998.

Taxonomic note: This is a pale colored subspecies with broader white bands, large orange tips on the forewings and a paler orange coloration below (Austin & J. Emmel, 1998a). In extreme southeast Tulare County and in upper Nine Mile Canyon, Inyo County, there appears to be gene flow between subspecies *lorquini*, *powelli* and *pallidafacies*.

Updated status: This subspecies was described in 1998.

Habitat: Streams or wet meadows with willows in the Owens Valley region but blending with more typical *lorquini* on the east slope of the Sierra Nevada in the Owens Valley western edge.

Flight: Late May to early September.

Distribution: Inyo County. This butterfly occupies riparian areas in the Owens Valley along streams or in wet pastures.

Records: Inyo County: Whitney Portal area and Lone Pine Canyon, June 18, 2006 (KD). Lubken Canyon 2 mi south of Lone Pine, ¼ to 1 mile west of US 395, May 31, 1999; Aug 13, 2001 and other dates (KD).

164. Arizona Viceroy--*Limenitis archippus obsoleta* W. H. Edwards, 1882.

Habitat: This popular butterfly was formerly found along the Colorado River where adults reportedly stayed high in the willows or Cottonwood Trees.

Flight: April-October.

Distribution: Imperial, Orange, Riverside, San Bernardino, and San Diego Counties. This butterfly may be extirpated from along the Colorado River. Much of the area along the river is now private land, Indian reservation land or nature preserves with limited access to the public.

Records: Orange County: Santa Ana Canyon, June 1, 1961 and Sep 1961 per K. Denton at UC Irvine Collection. These records may be questionable. The Viceroy was collected by students as a class project (Orsak, 1977); Mission Viejo, Sep 25, 2016 (David Marriott). The latter record may be an accidental import. The photo I saw was definitely an Arizona Viceroy. It is vouchered in David Marriott's collection, while worn, it is still quite a prize!

165. Arizona Sister--*Adelpha eulalia* (E. Doubleday, (1848).

Taxonomic note and updated status: Recent studies have shown that *Adelpha bredowii* Geyer is actually three species so both *eulalia* and *californica* are now species and not subspecies of *bredowii* (Prudic, Warren and Llorente-Bousquets, 2008).

Habitat: Higher elevations in the New York, Providence and Granite Mountains where the likely host *Quercus chrysolepis* Liebm. (Fagaceae) occurs.

Flight: Late May to July.

Distribution: San Bernardino County only. This species is rare in California and is likely to be difficult to photograph in the eastern Mojave Desert because the proper habitat is hard to reach and the dangers that go with being in the hot Mojave Desert, poor roads, dangerous plants and animals. This species is common in the Spring Mountains near Las Vegas, Nevada and in the Hualapai Mountains near Kingman, Arizona where this species readily visits wet mountain canyons without many such dangers.

Records: San Bernardino County: New York Mountains; Providence Mountains, May 30, 1968 (KH); Bull Canyon, Granite Mountains near Amboy, June 17, 1988 (JFE & GP); Old Woman Mountains; Joshua Tree NP: N end of Coxcomb Mountains 0.9 mi. NNE of Peak 4416, Oct 23, 1985 (JFE & GP).

166. California Sister--*Adelpha californica* (Butler, 1865).

Taxonomic note: This butterfly now has species status (Prudic, Warren and Llorente-Bousquets, 2008).

Updated status: Except for no longer being a subspecies of *Adelpha bredowii* (Geyer), this butterfly remains a common species in most mountain areas outside the deserts.

Habitat: Oak woodland and mixed coniferous forest. Adults favor well watered canyons and can stray downwards to desert springs and valleys late in the season. Adults can also stray higher into Canadian Life Zone forests.

Flight: April through October. In recent warm and dry years, this species appears to be overwintering in coastal mountains and is being observed even in February.

Distribution: All counties except Imperial.

Records: **Inyo County:** upper Nine Mile Canyon, July 4 and 6; Aug 26, 1983 (common, KD); up grade to Whitney Portal, July 5, 2004 (seen KD) and July 7, 2006 (JGP). **Kern County:** Two individuals in Mojave Desert habitat north of Kelso Valley, at spring 0.8 miles southwest of Sageland, Oct 1, 2009 (KD). **San Luis Obispo County:** Lopez Canyon, apparently overwintering Feb 4, 2009 (WB).

167. Gulf Fritillary--*Agraulis vanillae incarnata* (N. Riley, 1926).

Updated status: This species has been extending its range in the region and in northern California.

Habitat: Most common in city gardens with passion vines and lantana. Sometimes, strays turn up in unusual locations.

Flight: Late February to November.

Distribution: All counties except southern Inyo County, but recorded in that county Specific records were unavailable, not in published literature.

Records: **Imperial County:** Brawley, Aug 6, 1994 (KD). **Kern County:** Kern River Valley: Wofford Heights near Lake Isabella during butterfly count, June 29, 2013 (FH); Weldon near junction of SR 178 and Kelso Creek road, Nov 12, 2014 (KD). **San Bernardino County:** unusual stray to Dead Mts., Mt. Manchester, Apr 22, 2005 (JGP).

168. Zebra Butterfly--*Heleconius charithonia vazquesae* W. Comstock & F. Brown, 1950.

Updated status: T. Emmel & J. Emmel (1973) reported a sighting for San Diego County. Some suspect recent sightings of this species may have been of accidental escapes from butterfly houses.

Records: **Los Angeles County:** Long Beach, Feb 2 and 3, (Richard James). **San Diego County:** North Park, San Diego, Nov 11, 2005 (Mark & Camille Stratton). Others have reported strays in San Diego. Oakley Shields reported a sight record in the Laguna Mountains in this county (Emmel & Emmel, 1973).

169. Variegated Fritillary--*Euptoieta claudia* (Cramer, 1775).

Updated status: There have been many more records in southern California in recent years, despite the prolonged drought.

Habitat: This is well known as a desert or prairie butterfly but it can turn up anywhere and in unexpected places.

Flight: Late May to October.

Distribution: Rare strays in Imperial, Inyo, Kern, Los Angeles, Orange, Riverside, San Bernardino, Santa Barbara, San Diego and Ventura Counties.

Records: **Kern County:** alfalfa field, east side Hwy. 14 in Cinco/Cantil area Sep 20, 1984 (KD); E side of Sierra Nevada, Grapevine Canyon Oct 2, 2008 (Bob & Susan Steele). **Los Angeles County:** Ballona Wetlands Ecological Preserve, photo Oct 7, 2014 (Jonathan Coffin); La Mirada, Oct 9, 2008 (BB); Claremont, Sep 17, 2015 (Nancy Hamlet). **Riverside County:**

Blythe, "October" (Larry Orsak); Temecula, Murrieta Creek, Aug 11, 2012 (Robert Allen). **San Bernardino County:** Cedar Canyon road in eastern Mojave Desert, Oct 3, 2008 (Gene & Lynn Monroe); Morongo Valley, Morongo Valley Preserve, Oct 1, 2014 (JZ); San Bernardino Mountains: Glass road near Seven Oaks, July 22, 2017 (David Haviland). **Santa Barbara County:** Sierra Madre Range: Santa Barbara Canyon, Sep 20, 2012 (KD). **San Diego County:** Little Laguna Lake, Aug 1, 2004 (KS); Roberts Ranch North, Descanso, June 2, 2017, photo (Ken Wilson); Tijuana Slough NWR, Aug 12, 2012 (Steve Moore). **Ventura County:** Hall Canyon near Ventura (three individuals), during the summer of 1956 or 1957, two sight records by Peter Jump and one collected by D. Stover.

170. Western Meadow or Pacific Fritillary--*Boloria epithore sierra* E. Perkins 1973.

Updated status: This species has been found only in the Greenhorn Mountains in southern California.

Habitat: Wet meadows and creeksides usually above 7000'.

Flight: Late May or June through mid to late July (depending on timing of the snowpack melting).

Distribution: Kern (Tiger Flat north); and Tulare Counties in Greenhorn Mountains only. There are no records for the Kern Plateau.

Records: **Kern County:** Greenhorn Mountains: base of Sunday Peak 6700' along Tiger Flat road, June 24, 1961 (RES); June 25, 1995 (KD, first record there since 1961) and several more records there since. **Tulare County:** Greenhorn Mountains: Tiger Flat road just N of Sunday Peak, June 10 and 24, 1996 (KD); 2 miles N of Portuguese Pass, June 26 and July 11, 1981 (KD); wet Meadow below Tobias Peak, Aug 7, 1995 and June 10, 1996 (KD).

171. Coronis Fritillary--*Speyeria coronis* (Behr, 1864).

There are two subspecies in southern California.

a. Semiramis Fritillary--*Speyeria coronis semiramis* (W. H. Edwards, 1886).

Southern California TL: Camp Wasewagan for Boy Scouts, San Bernardino Mountains, San Bernardino County.

Updated status: Unchanged.

Habitat: Foothill woodland and pine forest clearings.

Flight: Mid-May to September.

Distribution: Los Angeles, Orange, Riverside, San Bernardino and San Diego Counties.

b. Henne's Fritillary--*Speyeria coronis hennei* (Gunder, 1934).

Southern California TL: "near summit. elevation 7,700', Mt. Pinos, Frazier Mountain Park, Santa Barbara National Forest, (now Las Padres NF) Ventura County."

Updated status: This fritillary went several years with only a handful of sightings or none at all and some feared this subspecies may have gone extinct. Good rainfall in the winter of 2016-17 led to a good flight the following season in 2017.

Habitat: Chaparral and mixed coniferous forests.

Flight: June to early September.

Distribution: Kern, Los Angeles and Ventura Counties.

Records: **Kern County:** huge numbers on Tehachapi Mountain summit, June 9 and July 27, 1997 (KD); near summit of Mt. Abel 8200', Aug 24, 2011 (KD); Summit Trail to top of Mt. Pinos and Lake of the Woods, June 7, 2017 (SR, Mike Mulligan & Dave Haviland). **Ventura**

County: Pine Mountain 6800', July 2, 1995 (Tom Dimock); Summit Trail to Mt. Pinos, June 2, 2017 (SR, Mike Mulligan & David Haviland); Frazier Mountain, Chuchupate Camp and hillside, June 20, 2017 (MW).

172. Zerene Fritillary--*Speyeria zerene monticola* (Behr, 1863).

Taxonomic note: The reasons for changing the southern Sierra name *Speyeria zerene zerene* to subspecies *monticola* is explained in the Systematics publication (Emmel, Emmel & Mattoon, 1998b). One major reason was that the type locality for nominotypical *zerene* was moved northward of Yosemite which now represents another phenotype.

Distribution: Tulare County.

Updated status: This butterfly is added to southern California by adding the Kern Plateau and the Sherman Pass road to southern California. Had the Emmels similarly added the same region to their southern California boundaries, *Speyeria zerene* would have not been on their list. This fritillary colonized the Sherman Pass area in 2005 following the major forest fire there three years earlier. After becoming common, it appears that *zerene* may be disappearing again due to plant succession in 2017.

Habitat: Upper Lower Sonoran Zone foothill woodland, Transition Zone mixed coniferous forest and lower Canadian Zone pine forest and chaparral, often with water and dogbane.

Flight: Late June to early September.

Records: Tulare County: The first records of *Speyeria zerene* for what is defined as southern California in this publication was off the Sherman Pass Road at Alder Creek 6800', Aug 27, 2005 and July 2 to 22, 2006 (KD); west of Sherman Pass 7900', July 1 and Oct 2, 2012 (KD); stray 2 mi south of Powell Meadow, NE of Black Rock Ranger Station and N of Kennedy Meadows, Sep 20, 2002 (KD). *Speyeria zerene* was very common in 2017 at Peppermint Creek in the Sierra about 15 air miles to the north and is still common at Freeman Creek Grove north of the southern California boundaries as defined in this publication.

173. Callippe Fritillary--*Speyeria callippe* (Boisducal, 1852).

There are three subspecies in southern California.

a. Comstock's Fritillary--*Speyeria callippe comstocki* (Gunder, 1925).

Southern California TL: Los Angeles, Los Angeles County. This butterfly was extirpated from Griffith Park many years ago.

Updated status: Unchanged but *comstocki* was discovered in the Temblor Range in Kern County.

Habitat: Foothill woodland and mixed coniferous forest in the Coast Ranges (including the Sierra Madre and Temblor Ranges) and peninsular ranges. As expected by the Emmels in 1973, *comstocki* and *macaria* blend on the summit of McPherson Peak 5750' June 28, 1995 (KD) in the Sierra Madre Range in Santa Barbara County.

Flight: May to mid-July.

Distribution: Kern, Los Angeles, Orange, Riverside, San Bernardino (very rare in this county, see record below), San Luis Obispo, Santa Barbara, San Diego and Ventura Counties.

Subspecies *comstocki* flies on the Sierra Madre road in Santa Barbara County while it is *macaria* on the east side of the range in Dry Canyon.

Records: Kern County: west of Temblor Range Summit off SR 58, singletons May 16, 1987 (RPM) and June 4, 1987 (KD). **San Luis Obispo County:** Cerro Alto Peak, June 12, 2014; Cerro Alto Camp, Apr 16, 2015 (JG); Santa Rita road between Templeton and road summit, June

23. 2015 (JG). **Santa Barbara County**: west of Miranda Pines Camp, Sierra Madre road to McPherson Peak, all *comstocki* June 28, 1995 (KD). Santa Cruz Island: on knoll south of Chinese Harbor, June 9, 1966 and June 28, 1978 (both Glenn Gorelich). **San Bernardino County**: Blue Mountain summit, Box Springs Mountains, May 29, 2001 (Dave Goodward).

b. Macaria Fritillary--*Speyeria callippe macaria* (W. H. Edwards, 1877).

Southern California TL: Havilah, Kern County.

Updated status: Something unusual happened with *macaria* and *laurina*. Specialists believed this was a cline of *macaria* being a mostly silvered fritillary blending in a cline to mostly unsilvered *laurina*, which likely would become totally unsilvered *inornata* now (*rupestris*, in a names replacement switch) as one went further north. Surprise! Subspecies *laurina* is replaced by a darker version of *macaria* that is 100% silvered!

Habitat: Foothill woodland, mixed coniferous forest with frequent strays even up into Canadian Zone forest west of Sherman Pass above 8000'.

Flight: Late May-third week of July.

Distribution: Kern, Los Angeles, eastern Santa Barbara, Tulare and Ventura Counties.

Records: **Santa Barbara County**: Sierra Madre Range: Dry Canyon, May 31, 2004 (KD) and road to Tinta Creek, May 31 and June 24, 2004 (KD). **Tulare County**: 3 to 4 mi west of Sherman Pass at 8400', July 24, 1982 (KD); Sherman Pass Road at Alder Creek 6800', June 18, 1983 and July 9, 2005 (KD); south end of Kern Plateau at Pine Flat, July 5, 2003 (KD).

c. Unsilvered Macaria Fritillary--*Speyeria callippe laurina* (W. G. Wright, 1905).

Taxonomic note: This entity has become more accepted as a valid subspecies. It was viewed as a form of *macaria* by Emmel & Emmel in 1973.

Southern California TL: Greenhorn Mountains, Kern County.

Updated status: There was a major forest fire in 2016 that did major damage to the forest in the Greenhorn Mountains along the Tiger Flat road downslope to Cedar Creek. I made an investigative trip down that road to assess the damage. Surprisingly, an unusual number of mints were in bloom on the road shoulders and *laurina* was among the most common butterflies of the day! Many other species were missing altogether.

Habitat: Foothill woodland and mixed coniferous forest.

Flight: Late May to about the third week of July.

Distribution: Kern and Tulare Counties, Greenhorn Mountains only.

Records: **Kern County**: Greenhorn Mountains at top of ski lift above Shirley Meadows, July 6, 1975; Cedar Creek, July 6 and 11, 1975 (KD); Rancheria road towards Bakersfield, June 23, 1995 (KD) and 1.5 mi. south of Tiger Flat, June 11 and 17, 2001 (KD). **Tulare County**: Greenhorn Mountains: Baker Ridge near Lookout 7753', June 11 and 26, 1981; north of Portuguese Pass, July 24, 1996 and Tobias Peak Lookout, June 10, 1996 (all KD).

174. Great Basin Fritillary--*Speyeria egleis* (Behr, 1862).

There were two subspecies of *Speyeria egleis* in southern California. It turned out nominotypical *egleis* that was not listed for southern California in 1973 even made it inside southern California boundaries as defined by the Emmels on Owens Peak and at Pine Flat in Kern County and temporarily extended its range southward into the Greenhorn Mountains in the mid-1990's only to disappear again. But *tehachapina* that was known in southern California may have been extirpated by long-term drought and rising daily temperatures.

a. Great Basin or Egleis Fritillary--*Speyeria egleis egleis* (Behr, 1862).

Updated status: This fritillary colonized the Greenhorn Mountains following a 1990 forest fire. Now this fritillary appears to have disappeared from all or most of the Greenhorns in recent years due to plant succession and increasing brush on the floor of the forest. Populations on the Kern Plateau also appear to be decreasing, likely due to long-term drought and climate change.

Distribution: For a few years this subspecies extended its range southward into northern Kern (Sunday Peak area) and Tulare Counties in the Greenhorn Mountains. This subspecies is common on the Kern Plateau and occurs on Owens Peak (Kern County). It was absent from the Greenhorn Mountains until a major forest fire (Big Stormy Fire) several years ago in about 1990. This fritillary is often common at higher elevations of the Sherman Pass road and is occasional on Bald Mountain at 9400'.

Habitat: Sherman Pass Rad from about the 4 X 4 road to Sherman Peak at about 7500' to 9200' at Sherman Pass, Big Meadow at 7000' in coniferous forest, and forest glades at high elevation. Adults often visit mint flowers on roadside slopes.

Flight: Late June to mid- September.

Records: Kern County: Greenhorn Mountains: N of Tiger Flat, July 31 and Aug 7, 1995 (KD); Sunday Peak 8320', July 31, 1995 (KD); Pine Flat area, at south end of Kern Plateau, Kern & Tulare Counties Aug 2, 1985 and July 5, 2003 (KD); Owens Peak 8300', July 16, 1986 (Derham Giuliani). **Tulare County:** Sherman Pass area, June 25 and Aug 3, 1981; July 24, 1982 and Oct 1, 2005; Bald Mountain Lookout 9400', July 10, 1982 and June 2, 1997; Greenhorn Mountains: Tobias Peak Lookout, Aug 7, 1995 and June 10, 1986 (KD).

b. Tehachapi Fritillary--*Speyeria egleis tehachapina* (J. A. Comstock, 1920).

Southern California TL: Highest Peak in the Tehachapi Mountains, Kern County.

Updated status: None have been seen so far as known since 1998. With long-term drought and loss of habitat due to recent warming trends, this fritillary many now be extinct, but there is possible habitat in the Piute Mountains that is inaccessible but has not yet been explored for butterflies.

Distribution: Kern County only on the highest Peaks in the Tehachapi and Piute Mountains.

Records: Kern County: Tehachapi Mountain summit and ridge, July 11, 1975 (KD); July 24, 1979 (KD) and last seen on Tehachapi Mountain just below the summit, Aug 1, 1998 (KD). Piute Mountains: Piute Peak 8432', July 23, 1971 and July 1 and 3, 1972 (JB); June 30, 1974 (Gary File); Piute Mountain Vista 8326', July 6, 1996 (JB); Liebel Peak, July 7, 1973 (JB).

175. Unsilvered Fritillary--*Speyeria adiaeste* (W. H. Edwards, 1864).

There are two subspecies historically known in southern California. Subspecies *clemencei* reappeared for the first time since 1975 in San Luis Obispo County in 2016, thanks to the efforts of Josiah Gilbert (Gilbert, 2017). Subspecies *atossa* appears extinct and long-term drought would seem to make that certain.

a. Clemence's Fritillary--*Speyeria adiaeste clemencei* (J.A. Comstock), 1925).

Southern California TL: Atascadero, San Luis Obispo County.

Habitat: Deep moist riparian canyons and moist mixed coniferous forests.

Flight: Late May to July.

Distribution: San Luis Obispo County only in southern California and Monterey County in northern California.

Records: San Luis Obispo County: Hi Mountain, July 4, 1975 (JB); Cypress Mountain Drive in deep wooded canyon, May 28 and June 27, 2016 (JG) and June 1, 2016 (KD, SR & Mike Mulligan).

b. Unsilvered Fritillary--*Speyeria adiate atossa* (W. H. Edwards, 1890).

Southern California TL: Tehachapi, Tehachapi Mountains, Kern County.

Distribution: Formerly Kern, Los Angeles, Santa Barbara and Ventura Counties. This butterfly appears to be extinct, it was last seen in 1960. There were two captures in 1959, both specimens are at the LACM.

Records: Santa Barbara County: Cuyama Peak 5,875' June 15, 1957 (J. D. Gunder).

176. Greenhorn Hydaspe Fritillary--*Speyeria hydaspe viridicornis* (J. A. Comstock, 1925).

Taxonomic note: In 1973 it was believed that the subspecies *viridicornis* was limited to the Greenhorn Mountains. Emmel, Emmel & Mattoon (1998a) redefined the type locality of nominotypical *hydaspe* and the name *viridicornis* now applies to populations as far north as El Dorado County, California.

Southern California TL: Greenhorn Mountains, Kern County.

Updated status: Unchanged, but what was considered a subspecies that was limited to a small population endemic to the Greenhorn Mountains now has a very good-sized range and distribution.

Habitat: High elevation forests. Adults hilltop on the ski lift hill on the mints overlooking Shirley Meadows and occur northward in the Greenhorns to at least somewhat north of Tobias Peak. This fritillary appears to be absent on the Kern Plateau. It reappears again to the north at Peppermint Creek and Freeman Creek Grove a few miles north of our southern California boundary.

Flight: June-July.

Distribution: Kern and Tulare Counties.

Tulare County: Greenhorn Mountains: 2 miles N of Portuguese Pass, June 26 and July 11, 1981 (KD); Poison Meadow south of Tobias Peak, July 21, 1997 (KD); near junction of Portuguese Pass and Tiger Flat road at several sites, July 3, 2004 (KD).

177. Mormon Fritillary--*Speyeria mormonia mormonia* (Boisduval, 1869).

Taxonomic Notes: Until recently (Emmel, Emmel & Mattoon, 1998a), the subspecies name for the Sierra Nevada populations was *arge* (Strecker, 1878), the latter was described from Monache Meadows, just a few miles north of our definition of "southern California" for this work.

Updated status: This fritillary is added to the southern California faunal list by adding the Kern Plateau.

Habitat: High elevation meadows with *mormonia* sharing smaller forest glades with *Speyeria egleis* in the Sherman Pass, Poison Meadow and Big Meadow areas.

Flight: Late June-September.

Distribution: Tulare County only in high elevation meadows of the Kern Plateau. This species has never been found in the Greenhorn Mountains, it does occur in Inyo County at high elevation meadows to the north or at higher elevations near Mt. Whitney of what is here considered southern California.

Records: Tulare County: meadow about 1 mile east below Sherman Pass, Aug 8, 1980 and Aug 3, 1981 (KD); Kern Plateau at Poison Meadow, July 26, 2004 (KD) and Big Meadow (Kern Plateau), July 12, 1978 (KD).

178. Hackberry Emperor--*Asterocampa celtis* Boisduval & Le Conte, (1835).

Distribution: Inyo and San Bernardino Counties. *Celtis reticulata* (Netleaf Hackberry) is a possible host plant in southern California.

Updated status: This butterfly is included here on the outside possibility this species may be in the State in small overlooked colonies. More likely, these records are either strays or accidental introductions. There are small colony sites in Clark County, Nevada and in the Hualapai Mountains south of Kingman in Mohave County, Arizona.

Habitat: This species is usually found near the host hackberry trees, often in riparian canyons in Arizona.

Records: Inyo County: Death Valley National Park: photographs were taken at 329 Skyline Dr. on the back porch near Cow Creek (an employee housing area), June 27, 2012 (Jay Snow); and a dead individual was photographed at that same location June 12, 2012 by Jay Snow (Davenport, Holt & Snow, 2013). **San Bernardino County:** San Bernardino Mountains in southern California tentatively considered a stray (Friedlander, 1986(87)). The name of the collector, locality and date were not provided.

179. American Painted Lady--*Vanessa virginiensis* (Drury, 1773).

Updated status: T. Emmel & J. Emmel (1973) used the genus name *Cynthia* for species we are now calling *Vanessa* again.

Habitat: This butterfly is usually found outside the deserts and is often found more in montane or well watered “wild” areas than in cities and gardens.

Flight: Late February to early November.

Distribution: All counties. This species is often more common in the mountains than in cities. Numbers in the mountains seem highest from August into early October.

180. Painted Lady--*Vanessa cardui* (Linnaeus, 1758).

Updated status: Unchanged except for the genus name *Cynthia* used by the Emmel’s in 1973, which is back to *Vanessa*.

Distribution: All counties. This species migrates northward in the spring and like the Monarch, migrates south in the fall. There are places where this species overwinters in the state as in Bakersfield and at the south end of the Sierra Nevada where it meets the Mojave Desert in the Jawbone Canyon-Cantil area.

Habitat: Unrestricted.

Flight: Mostly March to November but this common butterfly can appear on warm winter days in city parks and backyards.

181. West Coast Lady--*Vanessa annabella* (W. D. Field, 1971).

Southern California TL: First valley west of Arroyo Verde Park, Ventura, Ventura County.

Updated status: It has been noted that this species seems to move upslope to higher elevations in the southern Sierra Nevada in August and September where few are seen at other times of the year. Emmel & Emmel (1973) placed this species in the genus *Cynthia*.

Habitat: Usually most common in yards, city gardens and parks. Common on blooming rabbitbrush high in the mountains in late summer and early fall.

Flight: Late February to November but this butterfly can appear even on warm winter days.

Distribution: All counties.

Records: Kern County: west of Sherman Pass, common 7700-9150', Sep 16 to Oct 7, 2014 (KD), this species is scarce there at other times of the year. There were 80 to 100 *annabella* observed at Weldon at about 2600' near the junction of SR 58 and Kelso Creek road Nov 12, 2014 (KD).

182. Red Admiral--*Vanessa atalanta rubria* (Fruhstorfer, 1909).

Updated status: This butterfly is no longer placed in the genus *Cynthia*.

Habitat: Most common in older resident areas and city parks. This species can turn up almost anywhere, even in the Mojave Desert at springs, seeps and riparian canyons, often where nettles grow.

Flight: Late February-November but this unique butterfly can fly even on warm winter days.

Distribution: All counties.

183. Milbert's Tortoiseshell--*Aglais milberti subpallida* (Cockerall, 1889).

Taxonomic note: Our southern California populations formerly went under the subspecies name *furcillata* (Say), considered a synonym of nominotypical *milberti* in the Pelham Catalogue (2008). Emmel & Emmel (1973) placed *milberti* in the genus *Nymphalis* which still is by some authors.

Updated status: This is considered a rare butterfly in nearly all of southern California but it can be common at times in the Greenhorn Mountains, Tehachapi Mountain Park and on the Kern Plateau.

Habitat: Riparian canyons with nettles and water.

Flight: Late February to mid-July, rarely late August-early September.

Distribution: Inyo, Kern, Los Angeles, San Bernardino, San Luis Obispo, San Diego, Tulare and Ventura Counties.

Records: Inyo County: Wildrose Springs, Panamint Mountains in Death Valley National Park (Emmel & Emmel, 1973). **Kern County:** unusual records for the San Joaquin Valley along the Kern River at Hart Park near Bakersfield, Mar 31 and Apr 4, 1972 (KD). **Los Angeles County:** Swarthout Valley 6400, San Gabriel Mountains, July 15, 1980 (JFE). **San Luis Obispo County:** Atascadero, May 10, 1934 (Col. Perine, specimen at LACM.) **Tulare County:** Three individuals, Kern River at Limestone Camp, Jan 19, 2003 (KD); Bald Mountain Lookout 9400', July 10, 1982 (KD); west of Sherman Pass 6800 to 9000', June 21 to July 24, 1982 (KD); Big Meadow (Kern Plateau), June 20, 1980 (KD). **Ventura County:** Mt. Pinos, June 15, 1957 (N. D. LaDue); Mt. Pinos, along stream above McGill Camp, June 28, 1979 (KD).

184. California Tortoiseshell--*Nymphalis californica californica* (Boisduval, 1852). **Updated**

status: Unchanged. This species can be abundant some years, rare or absent in others. It was observed that this species had a major southward movement (in the Coast Ranges) in the fall of 2017 after a season in which *Nymphalis californica* was seen in many parts of southern California where this species is usually rarely seen or absent.

Habitat: Frequents well-watered areas along streams, seeps, canyons and wet ravines even in elevated Mojave Desert canyons in the southern Sierra Nevada where I have observed this

species move from the Sierra Nevada westward across Joshua Tree-filled Mojave Desert terrain into the Piute Mountains.

Flight: Late February to early October with adults overwintering.

Distribution: All counties.

Records: **Imperial County:** In-Ko-Pah Gorge, Mar 26, 1960 (KH). **Kern County:** Lake of the Woods, at pond near Ventura County line Oct 12, 2017 (KD). **Orange County:** San Clemente, Apr 27, 2017 (DBG). **Riverside County:** Joshua Tree National Park: Lower Covington/Smithwater Canyon area, Apr 30, 2017 (JZ); Elsinore Peak, Mar 19, 2017 (DBG). San Jacinto Mountains: Thomas Mountain road to Tool Box Spring, Oct 4, 2017 (BBX). **San Luis Obispo County:** SR 58, Temblor Range, several seen May 13, 1987 (KD); Lopez Canyon, thirty individuals apparently overwintering, Feb 4, 2009 (WB). **Santa Barbara County:** Sierra Madre Range: Aliso County Park, June 10, 1983 (KD). Fish Creek. /Davy Brown Trail near Figueroa Mountain, Apr 22, 2017 (NL). **Tulare County:** Bald Mountain 9400', July 10, 1982 (KD); common west of Sherman Pass 6800 to 7600', May 29, 2017 (KD). **Ventura County:** Lockwood Valley road at Kern County line, and Frazier Mountain at Chuchupate Camp, Oct. 12, 2017 (KD).

185. Mourning Cloak--*Nymphalis antiopa antiopa* (Linnaeus, 1758).

Updated status: Unchanged.

Habitat: Usually in well-watered areas with streams or in willow thickets, city parks or older residential areas.

Flight: Late February to October.

Distribution: All counties.

186. Satyr Comma or Angleming--*Polygonia satyrus* (W. H. Edwards, 1869).

Updated status: Unchanged, but populations seem reduced in numbers with long-term drought and less nettle growth in the mountains.

Habitat: Riparian areas and shaded areas near streams with nettles or glade openings.

Flight: Mid-February-October.

Distribution: All counties but Imperial and Inyo. The only Inyo County record was along Bishop Creek north of the southern California boundary.

Records: **San Luis Obispo County:** Lopez Canyon, Feb 24, 1978; May 13, 1978 and Mar 18, 1989 (KD); Cerro Alto Camp, Feb 11, 2011 (KD). **Santa Barbara County:** Sierra Madre Range: Bates Canyon, Feb 19, 1995 (KD). **Tulare County:** Cherry Hill road at Alder Creek Crossing 5680', May 22 and July 1, 2012 (KD).

187. Oreas Comma or Angleming--*Polygonia oreas oreas* (W. H. Edwards, 1869).

Updated status: This species' historical occurrence in San Luis Obispo County was apparently unknown and overlooked in 1973. The Homer Edgecomb records were provided to Robert Allen and I many years ago by John F. Emmel.

Distribution: San Luis Obispo County only. There are no reported records since 1955.

Conversion of streams to agricultural purposes (especially the making of canal banks) may have destroyed colonies of this butterfly on the coastal plain.

Habitat: Favors streams with willows and the host *Ribes divericatum*.

Flight: See records below.

Records: San Luis Obispo County: 1 male Oceano, Sep 9, 1932; 1 female Oceano, Oct 8, 1932; Huasna, Sep 16, 1932; Arroyo Grande, Sep 16 and 17, 1932 (all Homer Edgecomb); There is a specimen I found at the LACM with the labels: San Luis Obispo Creek near San Luis Obispo, April 1955 (Chris Henne). *Ribes divericatum* grows along Morro Creek and this butterfly may still occur somewhere in the county.

188. Zephyr Anglewing or Hoary Comma--*Polygonia gracilis zephyrus* (W. H. Edwards, 1870).

Taxonomic note: This butterfly was known as *Polygonia zephyrus* in 1973. Shortly thereafter, several authors came to the realization how similar this butterfly was to the **Hoary Comma** (*Polygonia gracilis*) in appearance and the idea *zephyrus* was a *gracilis* subspecies was quickly accepted.

Updated status: *Zephyrus* is a variable subspecies that can be brighter orange-red or more yellowish on the dorsal side and not as dark below as in nominate *Polygonia gracilis* (Grote & Robinson, 1867). There are darker forms of *zephyrus* that occur at high elevation in the Sherman Pass area (and elsewhere further north in the Sierra Nevada) associated with willows that make some of us wonder if two cryptic species may be hidden in what we call *zephyrus*.

Habitat: High elevations on Mt. Pinos and in the higher mountain ranges, often along streams or wet meadows. Overwintering adults have been seen as low as 1500' at Richbar in Kern Canyon.

Flight: March to early October.

Distribution: Kern, Los Angeles, Orange, Riverside, San Bernardino, San Diego, Tulare and Ventura Counties. There are two specimens at the San Diego County Museum with San Diego County labels without locality information with the date 7-1-07 (1907?) by George H. Field. There are apparently no recent records for San Diego County.

Records: Kern County: Mt. Pinos, May 14, 1970; June 30, 1975; July 17, 1978 and June 28, 1979 (KD); one record in a Mojave Desert ravine near Sageland, north of Kelso Valley, Apr 1, 2000 (KD); Kern Canyon at Richbar 1500', Apr 12, 1977 and Feb 15, 1985 (KD). **Tulare County:** Bald Mountain Lookout 9400', May 31, 1986 (KD); upper Kern River along stream by hydroelectric dam, Mar 11, 2000 (KD). **Ventura County:** Many of the Mt. Pinos records above were also in this county.

189. Common Buckeye--*Junonia coenia grisea* Austin & J. Emmel, 1998.

Taxonomic note: This is a grayer colored Buckeye than the browner eastern populations and has a persistent broad orange band on the hindwing. Females usually have submarginal orange towards the apex of the forewing. Additional differences are described by Austin & J. Emmel, (1998a).

Updated status: Many have been critical of Austin & J. Emmel for giving the California populations a name, but they do differ from the buckeyes I collected from northwest Arkansas.

Habitat: This common butterfly often flies in open fields, canyons and ravines and in forest openings up to the Canadian Life Zone.

Flight: March to November.

Southern California TL: South Pasadena, elevation 198m, Los Angeles County.

Distribution: All counties.

190. Dark Buckeye--*Junonia evarete nigrosuffusa* (Cramer, 1780).

Updated status: This butterfly has been placed as a subspecies of *J. evarete* but that is tentative as is the taxonomy of this whole genus in the USA. Some continue to call this butterfly *Junonia nigrosuffusa*. Others believe that Dark Buckeyes are a form of the Common Buckeye. In Arizona, one can find many individuals that seem to intergrade with Common Buckeyes. Other individuals would seem well beyond the possible variation of *Junonia coenia*. I will leave this as an unsolved mystery.

Habitat: Adults often patrol ravines, flats and well watered canyons, but in California adults of this fast flying and elusive butterfly are likely to occur as strays and may turn up in unexpected places.

Flight: March-October.

Distribution: Imperial, Riverside, San Bernardino and San Diego Counties.

Records: **Imperial County:** Winterhaven, Sep 3, 1957 (RES). **Riverside County:** Chuckwalla Mountains, Mar 20, 2015 (MW & BB). **San Bernardino County:** Cornfield Springs, Providence Mountains, Sep 17, 1984 (JFE).

191. Edith's Checkerspot--*Euphydryas editha* (Boisduval, 1852).

Nine subspecies or segregates occur in southern California but the populations called *rubicunda* that occur in this region may be worthy of a different name. It appears that there is a mixing of *aurilacus*, *rubicunda*, *augustinus* and the Walker Pass *editha* taking place on the Kern Plateau.

a. Edith's Checkerspot--*Euphydryas editha editha* (Boisduval, 1852).

Taxonomic note: This is a relatively large more blackish subspecies that occupies areas and hills near the coast while the subspecies *luestherae* occurs further inland. See Emmel, Emmel & Mattoon (1998a) for a discussion of what nominotypical *editha* is, and its relationship with *bayensis* Sternitzky 1937.

Updated status: In 1973, it was the Walker Pass population that was being called the nominotypical subspecies. The adjusted understanding in 1998 of what nominate *editha* is, left the Walker Pass population unnamed.

Habitat: Serpentine outcrops near the coast, foothill canyons and rocky hills within the coastal fog belt. A colony near Cholame is well inland out of the fog belt.

Flight: Late March-April.

Distribution: San Luis Obispo and Santa Barbara Counties.

Records: **San Luis Obispo County:** Serpentine outcrop near junction Los Osos & Foothill roads, Apr 7, 1984 (KD); large population summit ridge between See and Prefumo Canyons, Apr 4, 1994 (KD and Kevin Davenport), the colony now damaged by home construction; near Cholame on Davis road on hills south of junction of Highways 41 and 46, April 4, 1995 and Mar 29, 1996 (KD); Los Osos, Mar 12 and Apr 1, 1994 (JGP). **Santa Barbara County:** Records for *editha* on the coastal plain are likely this subspecies. Those in the mountains further inland are likely not.

b. Santa Rosa Island Checkerspot--*Euphydryas editha insularis* T. Emmel & J. Emmel, 1974. Southern California TL: Santa Barbara County: Santa Rosa Island.

Updated status: This subspecies is little collected and was described by the Emmels in 1974. Since Santa Rosa Island is in Channel Islands National Park, collecting is restricted but on the

positive side, there have been groups of individuals gathering information and doing studies on the islands that have been turning up unusual strays to the islands.

Habitat: Foothill woodland.

Flight: March to April.

Distribution: **Santa Barbara County:** Santa Rosa Island.

Records: **Santa Barbara County:** Santa Rosa Island, Apr 1, 1941 (Chris Henne) and Apr 10, 2014 (NL).

c. August Checkerspot--*Euphydryas editha augustina* (W. G. Wright, 1905).

Taxonomic note and updated status: Examinations of collected series from many localities have shown that this subspecies is not limited to the San Bernardino Mountains. Similar populations occur on the east slope of the Sierra Nevada in Inyo County, the Piute Mountains in Kern County, and at low to mid-elevations in Tulare County on the Kern Plateau.

Southern California TL: “Southern California, San Bernardino Mountains, San Bernardino and Riverside Counties.”

Habitat: Serpentine outcrops at high elevation in the Piute Mountains, common in higher portions of the San Bernardino Mountains and wet brushy meadows of the Kern Plateau and drier hilltops and ridges on the Kern Plateau at Pine Flat.

Flight: Late May to early July.

Distribution: Inyo, Kern, Riverside, San Bernardino and Tulare Counties.

Records: **Kern County:** Sierra Nevada at Pine Flat Cannell VABM, June 9, 1994 (seen, KD); Piute Mountains: Piute Peak, June 8, 1974 and July 6, 1996 (JB); rocky outcrops along Piute Crest, June 19, 1981 and July 8, 1982 (KD); Piute Mountain Vista, May 28, 2001 (KD). **Tulare County:** Big Meadow (Kern Plateau), June 15, 1976 and July 12, 1978 (KD); Troy Meadow, July 5 and 14, 1985 (JGP); Pine Flat on small hills, June 10, 2006 (RPM & KD).

d. Quino Checkerspot--*Euphydryas editha quino* (Behr, 1863).

Taxonomic Notes: In 1973, this was called Wright’s Checkerspot with the scientific name *Euphydryas editha wrighti* Gunder. The name *quino* had then been misapplied to what is now named *Euphydryas chalcedona hennei*. The name *quino* was reapplied to this subspecies of *E. editha* for reasons explained in Emmel, Emmel & Mattoon (1998b).

Southern California TL: Near San Diego, San Diego County.

Conservation notes and updated status: This butterfly went from being very common in the 1980’s to a population bust (human development) and became a federally endangered species. Reports on the recovery progress of this checkerspot have been encouraging.

Habitat: Grasslands with junipers and formerly on the coastal plains.

Flight: February to early May.

Distribution: San Diego, Orange, western Riverside and San Bernardino Counties.

e. Ehrlich’s Checkerspot--*Euphydryas editha ehrlichi* Baughman & Murphy, 1998.

Taxonomic note: This is a small, very orange-red subspecies. The uppersides of both wings are dominated by orange- red and yellow markings. Other details are given in the original description by the describers (Baughman & Murphy, 1998).

Southern California TL: **San Bernardino County:** Ord Mountains at northwest end of San Bernardino Mountains, west of Victorville, 4400 to 4520’ elevation.

Habitat: High desert or a mixture of stands of Joshua Trees and Sage scrub plant communities.

Flight: April. Very few records have been reported.

Distribution: San Bernardino County only.

Records: San Bernardino County: Ord Mountains near Victorville at northwest end of the San Bernardino Mountains 4400-4520', this *editha* was reared from larvae collected at Bowen Ranch road; Ord Mountains, Mar 30, 1983 (JFE), emerged Apr 16, 1983; Ord Mountains, Apr 14, 1990 (Bruce O'Hara); Ord Mountains, near Coxe Meadows, Apr 11, 2017 (Dennis Holmes).

f. Ruddy Checkerspot--*Euphydryas editha* near *rubicunda* (Hy. Edwards, 1881).

Updated status: The name *rubicunda* may or may not apply to the *editha* in the Greenhorn Mountains along Cedar and Alder Creeks or along the Kern River in Kern and Tulare Counties. They are much paler than *rubicunda* further north but become darker as one gains elevation on the Sherman Pass road, apparently blending with *augustina* and higher elevation populations there.

Habitat: Foothill woodland, rocky riparian canyons and hillsides.

Flight: Late April to about mid-June.

Distribution: Kern and Tulare Counties

Records: Kern County: Greenhorn Mountains: Alder Creek Camp, May 29, 1978 (JB). west of Alder Creek Camp/Cedar Creek, May 8, 1993 and May 21, 1995 (JGP). **Tulare County:** west of Sherman Pass at Alder Creek 6800', May 22, 2012 (KD); lower Alder Creek crossing, on Cherry Hill road 5680', May 22 and June 12, 2012 (KD); Kern River south of Limestone Camp, May 7 and 14, 2010 (KD).

g. Walker Pass Checkerspot--*Euphydryas editha* (Boisduval, 1852), Walker Pass segregate.

Taxonomic Notes: The name *Euphydryas editha editha* Boisduval "was described in 1852 from the mountains of the area now known as Kern County" in Emmel & Emmel (1973). The type locality for nominotypical *editha* was redefined by Emmel, Emmel & Mattoon (1998a) as "Twin Peaks, San Francisco, San Francisco County."

Updated status: The population at Walker Pass seems to have been extirpated due to prolonged drought. Lowland populations along the upper Kern River in Tulare County appear similar but are treated as near *rubicunda* in this publication.

Distribution: Kern County at Walker Pass, and on the microwave hill near Bird Spring Pass. Kern River populations in Tulare County are similar.

Records: Kern County: Walker Pass 5250', May 3, 1975 (JB); May 10 and 12, 1976 (KD); near Bird Springs Pass on microwave hill, May 13, 2000' (KD).

h. LuEsther's Checkerspot--*Euphydryas editha luestherae* Murphy & P. Ehrlich, 1980.

Taxonomic note and updated status: This is an Inner Coast Ranges subspecies that was recognized and described by Murphy and Ehrlich (1980). Formerly lumped with subspecies *bayensis*, which was formerly found on serpentine outcrops, hilltops and ridges and brushy grassland on the coastal plains in the San Francisco Bay area, *luestherae* differs in choice of hostplants (*Pedicularis*, not *Plantago*), habitat and phenetically it can be recognized by the overall lighter appearance on the dorsal side due to more extensive red and yellow scaling. The red bands are more prominent than those in *bayensis* (= *editha editha*) which tends to be a more blackish *editha* than *luestherae*.

Habitat: Foothill woodland, often in or near streambeds.

Flight: Late April-June depending on the years weather patterns.

Distribution: San Luis Obispo County. There are inland populations in Santa Barbara County that may be this subspecies. Photographs of such *editha* are difficult to assess conclusively to assign to subspecies. Those records include Fish Creek/Davy Brown Trail near Figueroa Mountain, Apr 22, 2017 (NL). Emmel & Emmel (1973) included the Pozo population under the name *E. editha* near *bayensis*, before *luestherae* was described. Those *editha* on the coastal plain are now known as nominotypical *editha*.

Records: San Luis Obispo County: Pozo, May 7, 1974 (Paul Ehrlich); 7 miles west of Pozo, June 22, 1977 (KD); 4.7 miles east of Santa Margarita off SR 58, common May 22, 1999 and less so May 29, 1999 (KD). There was another record a little further east on SR 58, May 11, 1999 (KD).

i. Edith's Checkerspot--*Euphydryas editha* (Boisduval, 1852), Sherman Pass high elevation segregate.

Taxonomic Notes: What to call the usually scarce Edith's Checkerspots high up on the Sherman Pass Road (Tulare County) from 6800' up to over 10,000' is difficult, with choices of what names to call these include *aurilacus* Gunder, 1928 and *augustina* which does occur commonly at lower mid-elevations including Big Meadow to the south at 7000' on the Kern Plateau. There appears to be a blend zone between three entities (add *rubicunda*) in this area as at Alder Creek 6800' elevation. Lower down along the Kern River and Johnsondale there appears to be a very light version of *rubicunda*.

Updated status: Including the Kern Plateau in southern California adds butterflies to the fauna but adds problems in the sense many butterflies in this area do not fit well into the subspecies concept.

Habitat: Serpentine outcrops, streamsides, mostly above 8000' elevation.

Flight: Late May-early July.

Records: Tulare County: Bald Mountain Lookout 9400', May 31, 1986; June 2, 1997 and June 9, 2001 (all KD); Sherman Peak 10,050', June 19, 2002 (KD); rocky outcrops west of Sherman Pass at about 9000', July 3 and 9, 2005 (KD).

192. Chalcedon Checkerspot--*Euphydryas chalcedona* (E. Doubleday, (1847).

There are five subspecies that occur in southern California.

a. Chalcedon Checkerspot--*Euphydryas chalcedona chalcedona* (E. Doubleday, (1847).

Updated status: Unchanged, but we now recognize many populations in the southern Sierra Nevada show blending towards *olancha*.

Habitat: Foothill woodland and lower mixed coniferous forest; riparian canyons. Adults favor Yerba santa (*Eriodictyon*: Boraginaceae) flowers.

Flight: March to early July.

Distribution: Western Kern, Los Angeles, Orange, Riverside, San Bernardino, San Luis Obispo, Santa Barbara, San Diego and Ventura Counties.

Records: Kern County: Tehachapi Mountains: Frazier Park, July 5, 1971; Apr 29, 1988 and June 12, 2007 (KD); 7 miles south of Tehachapi at Cummings Creek, June 9 and 11, 1982 and June 9, 1996 (KD); Caliente Canyon in Tehachapi Mountains, May 29 and June 13, 1992 (KD).

b. Desert Mountain Checkerspot--*Euphydryas chalcedona kingstonensis* T. Emmel & J. Emmel, 1973).

Southern California TL: San Bernardino County: rocky canyon ¾ air mile SE of Horse Thief Springs, Kingston Range.

Updated status: Unchanged. This desert subspecies can be a strongly orange-brown colored checkerspot, it appears to blend with *Euphydryas chalcedona klotsi* dos Passos, 1938 in side canyons off old route 66 in the Black Mountains between Oatman and Cool Springs in Mohave County, Arizona, not far east of California.

Habitat: Desert canyons and washes in eastern Mojave Desert Mountain Ranges.

Flight: Late March to early May. Fall flights can occur following good summer rains.

Distribution: Inyo and San Bernardino counties.

Records: San Bernardino County: Providence Mountains, Bonanza King Mine Canyon, Apr 4, 1988 (KD); Foshay Pass Sep 20 and Oct 6, 1993 (KD) and Sep 24, 2013 (JB).

c. Rock Corral Checkerspot--*Euphydryas chalcedona corralensis* J. Emmel & T. Emmel, 1973.

Southern California TL: San Bernardino County: Rock Corral.

Updated status: Unchanged. Because of this checkerspot's red-orange coloration and pattern, it could easily be misidentified as an *Euphydryas anicia* (E. Doubleday, 1847) subspecies, but *corralensis* has *chalcedona* male genitalia.

Habitat: Mojave Desert hills and canyons at Rock Corral.

Flight: Late March to April.

Distribution: Riverside and San Bernardino Counties.

Records: San Bernardino County: Rock Corral, Apr 7 and 8, 1979 (KD) and Feb 12, 2006 (BG & Greg Chatman).

d. Henne's Checkerspot--*Euphydryas chalcedona hennei* Scott, 1981.

Taxonomic note: In 1973, this was known as *quino*, a name now applied to the *Euphydryas editha* then known as *wrighti* (Edwards). The name's change left this *chalcedona* without a name. James Scott renamed this butterfly *hennei* (Scott, 1981), after the noted lepidopterist Chris Henne. Emmel & Emmel (1973) aptly described its appearance in their book.

Southern California TL: Chino Canyon, Palm Springs, Riverside County.

Habitat: East slopes of San Jacinto and Laguna Mountains in Colorado Desert canyons.

Flight: Late February to early May. This butterfly occasionally has a good fall flight following heavy summer rains as it did in Chino Canyon, Riverside County Oct. 17, 1976 (KD).

Historical note: For several years, this subspecies disappeared and was not reported for many years. This butterfly has since recovered and has become common again. Apparently *hennei* larvae can survive many years awaiting adequate rains to fall in the deserts.

Distribution: Imperial, Riverside, San Bernardino and San Diego Counties.

e. Olancho Checkerspot--*Euphydryas chalcedona olancha* (W. G. Wright, 1905).

Southern California TL: "Sierra Nevada" Olancho Peak, Tulare & Inyo Counties. This high elevation locality may be just outside "southern California" for the same reason I excluded Mt. Whitney, the highest mountain in the continental United States, outside of Alaska. Both mountains are above timberline and on the boundary between south and central California. John

Emmel (pers. comm.) shared with me that the *olancha* population is reasonably similar to those from the Whitney Portal area.

Updated status: This subspecies is added to the southern California faunal region primarily on the east side of the Sierra Nevada in Inyo County and on the Kern Plateau area in Tulare County, but Kern County records off the Chimney Peak road south to Kelso Valley would be within the Emmel & Emmel 1973 boundaries.

The populations that seem to best match the concept of *olancha* are those on the grade below Whitney Portal, some *olancha* from there are very orange (most are yellow and black with some orange-red) and may show past gene flow with *Euphydryas anicia wheeleri* (Hy.

Edwards, 1881). That species occurs on the east side of the Owens Valley in the Inyo and White Mountains, just north of southern California. Populations called “*olancha*” here from much of the Kern Plateau southward may be closer to a *chalcedona* X *olancha* blend.

Habitat: Riparian canyons and flats at base of canyon walls.

Flight: Late April to early July.

Distribution: Inyo, Kern and Tulare Counties.

Records: Inyo County: Nine Mile Canyon, 1.5 mi. east of Tulare County line, May 18, 2003 (KD); Up grade to Whitney Portal, June 18, 2006 (KD). **Kern County:** 0.7 mi. SW of Sageland, May 1, 1981 (stray, KD); Chimney Peak road, south of Lamont Peak, May 22, 1982 and June 25, 1985 (KD). **Tulare County:** Pine Mountain area north of Kennedy Meadows, July 3, 1978 (KD); canyon off Chimney Peak Road near Lamont Meadows, May 22 and June 25, 1985 (KD); upper Kern River east of Ant Canyon, Apr 19 and 21, 2006 (KD).

193. Arachne Checkerspot--*Poladryas arachne* (W. H. Edwards, 1869).

There was one subspecies of this species known from the state, but Gordon Pratt found a population in the Coso Mountains that he believes differs from *monache* and may be an undescribed subspecies.

a. Monache Arachne Checkerspot--*Poladryas arachne monache* (J. A. Comstock, 1918).

Distribution: Inyo and Tulare Counties.

Updated status: This species has become very scarce since a major forest fire in 2000 along with an extended drying pattern that has damaged the habitat. Many former populations now appear extirpated, with no *Penstemon* hostplants growing at the former sites. The records below do not include older records, but such records are given in the Kern and Tulare County publication (Davenport, 2014). The Kennedy Meadows region is on the Kern Plateau and is an already known region for this species, an area added to “southern California.”

Habitat: Males and females favor hills with females usually near the host. There is only a dozen or so localities where *monache* has been found.

Flight: June to mid-July.

Records: Inyo County: This butterfly was reportedly found on a hilltop above the summit of Nine Mile Canyon by Charles Sekerman. **Tulare County:** Pine Mountain area north of Kennedy Meadows, June 28, 2008, (seen by KD and NABA field trip group); hill south of Fish Creek Camp, June 1, 2013 (KD) and June 21, 2015 (KD & Jonathan Pelham).

b. Arachne Checkerspot--*Poladryas arachne* (W. H. Edwards, 1869), Coso Mountains segregate.

This butterfly was found in the Coso Mountains (inside the 1973 southern California boundary) by Gordon Pratt in the 1980’s. This mountain range is inside a military base and access is

restricted. Pratt in personal communication reported that this species was common and double brooded.

194. Leanira Checkerspot--*Chlosyne leanira* (C. Felder & R. Felder, 1860).

Taxonomic note: Austin & Smith (1998) included a description of a new subspecies *elegans* and revised the group, changing the status of the “Cerrita Checkerspot”, formerly subspecies “*cerrita*” (W. G. Wright, 1905) to an orange form of *Chlosyne leanira wrighti*. Populations of “*cerrita*” which occur away from *wrighti* populations (almost all of them) are now combined with subspecies *alma* which now has an enlarged extensive range in southern California. The status of “Davie’s Checkerspot” was also changed and that is now considered a form of nominotypical *leanira* which is not in southern California, though there is obvious blending between subspecies *leanira* and “*daviesi*” forms, *wrighti* and *alma* in the southern Sierra Nevada.

For several years, this species was placed in the genus *Thessalia*.

a. Elegant Coastal Checkerspot--*Chlosyne leanira elegans* (Priestaf & J. Emmel, 1998).

Taxonomic note: This subspecies appears closest to subspecies *wrighti* of southern California Mountains. It is double brooded, unlike *wrighti* which has only one brood, and *elegans* has much less red-orange scaling in the basal area and post-basal area of the forewing and has somewhat less prominent cream spotting on both forewings and hindwings. In nominotypical *leanira*, the marginal area on the hindwing dorsally is devoid of any orange-red spots in this area but in *elegans*, there is a very prominent row of orange-red spots (Priestaf and J. Emmel, 1998b).

Southern California TL: San Luis Obispo County: Oso Flaco Sand Dunes, in the vicinity of Oso Flaco Lake.

Habitat: Coastal sand dunes.

Flight: April to mid-May; Late June to July (two broods).

Distribution: San Luis Obispo and Santa Barbara Counties (near *elegans*).

Records: San Luis Obispo County: Oso Flaco Sand Dunes, SE of Oso Flaco Lake, Apr 13 and 16, 1983 (WLS); Apr 28, 1977; Apr 25, 1979; Apr 30 and May 7, 1983 (all WLS). **Santa Barbara County:** Guadalupe Sand Dunes, Apr 19, 2009 (NL). There appears to be a *wrighti* X *elegans* blend zone in the Sierra Madre Range in Santa Barbara and Dry Canyons, Apr 24 and May 1, 2004 (KD).

b. Wright’s Leanira Checkerspot--*Chlosyne leanira wrighti* (W. H. Edwards, 1886).

Southern California TL: San Bernardino, San Bernardino County.

Taxonomic note and updated status: The populations in the southern Sierra Nevada and in the subranges of the Piute and Greenhorn Mountains show mixed characters. Most look like *wrighti* but individuals can also often resemble the nominotypical subspecies *leanira* or the desert subspecies *alma*. Such blends also occur in the Cajon Pass area in San Bernardino County where subspecies *wrighti* and *alma* mixed creating what was called *cerrita* (W.G. Wright, 1905); type locality “Southern California, edge of the Mojave Desert by David Bauer (in Howe, 1975), now viewed as a form.

Habitat: Foothill or Juniper woodland with the paintbrush host. Males frequent hilltops and ridges.

Flight: Late April to mid-June.

Distribution: Imperial, Kern, Los Angeles, Orange, San Bernardino, San Luis Obispo, Santa Barbara, San Diego, Tulare and Ventura Counties.

Records: Santa Barbara County: San Rafael Mountains, May 13 & 14, 2004 (NL & Michael Caterino); Cachuma Mountain, San Rafael Mountains, May 21 and June 3, 2017 (NL).

Riverside County: Cactus Springs Trail, Santa Rosa Mountains, Sep 20, 2014, rare fall record (Dennis Walker). **Tulare County:** Sherman Pass road, 1 mi. E of Kern River on hill at Brush Creek helipad, May 29, 2012 (KD), subspecies *wrighti* was common on the Sherman Pass Road before the 2002 forest fire including June 18, 1983 and May 21, 1990 (KD). It took 10 years for this species to reappear on the Sherman Pass Road again after the fire and it was common in 2016; Limestone Camp area along Kern River, Apr 21, 1997 (KD). **Ventura County:** Mataui Flat road, 2.25 mi south Lockwood Valley road, May 4, 2013 (Paul Johnson II).

c. Alma Checkerspot--*Chlosyne leanira alma* (Strecker, (1878).

Updated status: Several years of drought and higher temperatures seem to have caused many populations in the deserts to go into decline or disappear. There have been no reports of this orange washed desert subspecies in Kern County in many years. There were flights of *alma* in the eastern Mojave Desert in San Bernardino County in 2017.

Habitat: Desert hills or the arid east slopes of the Sierra Nevada with paintbrush.

Flight: Late March to mid-May.

Distribution: Inyo, Kern, Los Angeles, Riverside, San Bernardino and Tulare Counties.

Records: Inyo County: Olancho Creek 5200', May 7, 1990 (JFE). **Kern County:** NW of Homestead off Hwy.14, Apr 9, 1993 (JGP). **Tulare County:** Kennedy Meadows Camp, south fork of Kern River, June 19, 1976 (Doug Mullins) and May 26, 2001 (KD).

195. California Patch--*Chlosyne californica* (W. G. Wright, 1905).

Southern California TL: "Colorado Desert of Southeast California", San Bernardino County.

Updated status: Unchanged. This distinctive desert butterfly draws many people interested in butterflies to the deserts to observe them. Scientists are interested in their relationship with *Chlosyne lacinia* which in some of its many forms can look similar to a California Patch.

Habitat: Desert Canyons in the eastern Mojave and Colorado Deserts and at Rock Corral in the southern Mojave Desert. Adults often hilltop or fly in canyon bottoms.

Flight: March to May. Later flights depend on summer and fall rainfall.

Distribution: Imperial, eastern Inyo, Kern (one sight record only), Los Angeles (rare), Orange, Riverside, San Bernardino, and San Diego Counties.

Records: Kern County: Tom's Hill, southwest of Butterbrecht Peak, Apr 13, 1985 (seen, RPM).

Los Angeles County: San Antonio Canyon near Mt. Baldy, Oct 9, 2003 (BG).

196. Bordered Patch--*Chlosyne lacinia crocale* (W. H. Edwards, 1874).

Updated status: Unchanged. This butterfly is one of our most variable butterflies, but fortunately for collectors or watchers, it is only confused occasionally with *Chlosyne californica*. Some ask why subspecies names are applied to a species so variable.

Habitat: Citrus groves or agricultural fields overgrown with sunflowers.

Flight: April to October.

Distribution: Imperial, Riverside and San Diego Counties. This butterfly can be common in areas with sunflowers that are supported by irrigation in orange groves (Brawley, Imperial County) and along the edges of agricultural fields (Indio and Coachella, Riverside County).

Records: San Diego County: Jacumba, Sep 20, 2015 (KS).

197. Acastus or Sagebrush Checkerspot--*Chlosyne acastus* (W. H. Edwards, 1874).
(1870). **Taxonomic**

note: Some butterflies formerly believed to be *Chlosyne palla* subspecies or even full species were found to be conspecific with *acastus*. Field marks did not prove accurate when rearing was done. There are two subspecies in southern California.

a. Neumoegen's Checkerspot--*Chlosyne acastus neumoegeni* (Skinner, 1895).

Taxonomic note and updated status: This checkerspot was treated as a full species in 1973. Rearing studies (Emmel, Emmel & Mattoon, 1998d) showed that *neumoegeni* was interfertile with *Chlosyne acastus acastus* and that the two are conspecific.

Habitat: Desert hills and washes in the Mojave and Colorado Deserts. On the east slope of the Piute Mountains in Kern County, *neumoegeni* can sometimes be common in Pinyon-Pine/Juniper woodland on steep slopes.

Flight: Late March to early May. Later flights are not unusual but depend on summer rainfall.

Distribution: Imperial, Inyo, Kern, Los Angeles, Riverside, San Bernardino and San Diego Counties.

Records: Inyo County: Death Valley National Park: Klare Spring, Titus Canyon, 28 Nov 2015 (very late in season, Dawn Nelson). **Kern County:** East slope of Piute Mountains, 3 miles west of Sageland in Pinyon-Juniper woodland, April 6, 2002 (KD). **Riverside County:** Chino Canyon near Palm Springs, common Oct 17, 1976 (KD). **San Bernardino County:** Providence Mountains at Foshay Pass, Sep 24, 2013 (JB); Interstate 15 at Mountain Pass summit, Sep 29, 2013 (RPM) and Granite Pass, Kelbaker road off Interstate 40, Sep 24, 2013 (JB).

b. Death Valley Checkerspot--*Chlosyne acastus vallismortis* (J. Johnson, 1938).

Taxonomic note: This butterfly was formerly believed to be a *Chlosyne palla* subspecies based on appearance. It is now placed in the *Chlosyne acastus* complex (Emmel, Emmel & Mattoon, 1998d). Sometimes field marks are just not enough!

Southern California TL: "Tuber Canyon Spring in the Panamint Mountains...Tuber Canyon, Panamint Mountains, elevation 8000', Death Valley National Monument.

Updated status: Unknown. No one is sending in reports for this butterfly in Death Valley National Park. Butterfly collectors do not go there to collect because of the legalities, watchers rarely go there.

Habitat: Canyons and hillsides at higher elevations in the Panamint Mountains.

Flight: June to early July.

Distribution: Inyo County in Death Valley in the Panamint Mountains at upper Tuber Canyon, Baldy Peak and Telescope Peak.

Records: Inyo County: Panamint Mountains: Water Canyon, June 15, 1974 (JFE).

198. Gabb's Checkerspot--*Chlosyne gabbii* (Behr, 1863).

There are two subspecies in southern California.

a. Gabb's Checkerspot *Chlosyne gabbii gabbii* (Behr, 1863).

Southern California TL: Mountains near Los Angeles, La Tuna Canyon, Verdugo Mountains, Los Angeles County.

Updated status: Unchanged. This species and *Chlosyne palla* are often confused with each other, especially in the southern Sierra Nevada where it is not unusual for *palla* to resemble *gabbii* or *acastus* on the dorsal surface. Gabb's Checkerspot does not occur there.

Habitat: Mountain canyons and ravines openings in mixed coniferous forests. Males patrol on dirt roads. This checkerspot sometimes occurs among coastal sagebrush near the ocean.

Flight: Late March to early July.

Distribution: Imperial (record questionable), Kern, Los Angeles, Orange, Riverside, San Bernardino, San Luis Obispo, Santa Barbara, San Diego and Ventura Counties.

Records: Kern County: Frazier Park, June 7 and 12, 2007 and June 20, 2012 (KD); Mil Potrero road, between base of Mt. Pinos and near Pine Mountain Club, June 28, 2006 (KD), these individuals show gene flow between *Chlosyne palla* and *gabbii*. **San Luis Obispo County:** Montana de Oro State Park, Aug 14, 2014 (late in season, WB).

b. Santa Cruz Island Gabb's Checkerspot-- *Chlosyne gabbii atrifasciata* Hawks & J, Emmel, 1998.

Southern California TL: Santa Barbara County: Santa Cruz Island, La Cascada.

Taxonomic note: This new subspecies differs from mainland *gabbii* by being much darker in appearance both ventrally and dorsally. There is marked expansion of the dull dark brown ground color in the postmedian and submarginal areas ventrally (Hawks & J. Emmel, 1998).

Updated status: This subspecies was described in 1998 and is protected inside Channel Islands National Park.

Habitat: Foothill woodland.

Flight: March to early June.

Distribution: Santa Barbara County. This subspecies occurs on Santa Cruz and Anacapa Islands.

199. Northern Checkerspot--*Chlosyne palla* Boisduval, 1852).

There are two or more subspecies in southern California. Subspecies status within this species is complex, difficult and can be contentious.

a. Northern Checkerspot--*Chlosyne palla* near *palla* (Boisduval, 1852).

Taxonomic note: Southern California populations were placed in nominotypical *palla* in the Emmel's book in 1973. Several other subspecies or names were since given subspecies status in the Systematics book. Emmel, Emmel & Mattoon (1998d) assigned all the southern California populations to *australomontana* in their original description information, but I have long series of *palla* from the region and believe material from the west slopes of the Sierra below 6800' west slope of the Piute range and those from both slopes in the Greenhorn Mountains look more similar to nominotypical *palla*. The Tehachapi Mountains material may be *australomontana* but there is a possibility those heavily marked checkerspots may be closer to San Francisco Bay Area subspecies *eremita* (W. G. Wright, 1905).

Habitat: Foothill and Juniper woodland and mixed coniferous forest in canyons and ravines or flats along the base of canyon walls. This butterfly avidly visits yerba santa (*Eriodictyon*) blossoms.

Flight: Late April to mid-July.

Distribution: Kern and Tulare Counties on the west slope of the Sierra Nevada and Piute Mountains, the Greenhorn Mountains and Kern Canyon below Lake Isabella.

Records: Kern County: Greenhorn Mountains: Old State road, May 17, 2005; Isabella Highlands along Sawmill road, Apr 28, 2002 (KD); Erskine Creek Canyon east of Lake Isabella (town), May 20 and 23, 2001 (KD). **Tulare County:** Upper Kern River south of Limestone Camp, Apr 21, 1997 (KD); lower Sherman Pass Road 3700-5000', June 15, 1976 (KD). Greenhorn Mountains: Baker Ridge, July 4, 1995 (KD).

b. Southern Sierra Nevada Northern Checkerspot--*Chlosyne palla australomontana* J. Emmel, T. Emmel & Mattoon, 1998.

Taxonomic note and updated status: This was described as the lightest subspecies of *palla* in California which can closely resemble *Chlosyne acastus neumoegei* which is extremely true near the road summit of Nine Mile Canyon but not elsewhere in the given range. However, many individuals especially females can resemble *Chlosyne acastus acastus* W. H. Edwards or both males and females can resemble *Chlosyne palla palla* or *eremita*. They can also be confused with *Chlosyne gabbii*. Emmel, Emmel & Mattoon (1998d) considered all the southern California *palla* to be *australomontana*. Since not all Southern California populations match the description of this subspecies, I believe further study is warranted. Many populations were treated as *Chlosyne palla palla* in a publication covering Kern and Tulare County butterflies (Davenport, 2014). I refrain from putting a name on the Tehachapi Mountains population until those can be compared to a series of *eremita* and reconcile its status with *australomontana* which is extremely variable even within itself.

Notes: A collected series of this species from Frazier Park with a few individuals from Frazier Mountain (Ventura County) seem unusually more heavily marked than *australomontana* from the Kern Plateau and resemble subspecies *eremita*, type locality "Lake County, California" and San Rafael, Marin County, California as defined by John Emmel. The subspecies *eremita* occurs in several counties in the Bay area.

Identification problems even as to species abound with these checkerspots. They can not always be identified in the desert ranges as not being *acastus* or *gabbii* by the coloration of the bands or spots on the hind wings below as mentioned in the original description. The bands on the hindwings below in some desert ranges are pale creamy white and not pearly white spots or bands that *gabbii*, *neumoegei* and nominotypical *acastus* have. These butterflies don't always have readily identifiable field marks.

Southern California TL: Tulare County: Kennedy Meadows road, 16-20 miles west of US 395.

Habitat: Elevated chaparral and pinyon-juniper woodland in the Kennedy Meadows area and on the south slope of the Kern Plateau with occasional (now rare or absent there) individuals in the Kelso Valley area.

Flight: May to mid-July.

Distribution: Inyo, Kern, Los Angeles, Tulare and Ventura Counties. This subspecies occurs mostly on the east side of the Sierra Divide but does extend over into the western slope mostly at high elevation.

Records: Inyo County: Upper Nine Mile Canyon, July 6, 1983 (KD). **Kern County:** 0.7 mi SW of Sageland north of Kelso Valley, May 15, 1976 (JB & KD); May 26, 1978 (KD); hills and canyons, Piute Mountains east slope, May 1, 1981 and May 27, 1993 (KD). **Tulare County:** Kennedy Meadows, July 2, 1983 (JGP); Spring, south of Kennedy Meadows, May 22, 1982 (KD); summit of Nine Mile Canyon, May 26, 2001 (KD). **Ventura County:** Alamo Mountain, June 26, 1976 (R. H. Vanderhoff) road above Chuchupate Camp, Frazier Mountain, June 22, 1979 (KD).

200. Imperial Tiny Checkerspot--*Dymasia dymas imperialis* (Bauer, 1959).

Southern California TL: Palm Springs, Riverside County.

Updated status: Unchanged.

Habitat: Colorado Desert scrub near the larval host, Chuparosa (*Justicia californica*: Acanthaceae). This butterfly is rarely seen away from that plant.

Flight: March-April; September-October. Flight times are dependent on the timing and amounts of rainfall.

Distribution: Imperial, Riverside and San Diego Counties.

201. Texan Crescent--*Anthanassa texana texana* (W. H. Edwards, 1863).

Distribution: Kern (one record), Orange (record unknown), San Bernardino and San Diego Counties. This butterfly occurs in the State only as rare strays.

Updated status: This species was never collected in the state until after 1973. The records below are all I know of for the state.

Habitat: This species usually occurs in well-watered canyons in southeast Arizona.

Flight: All dates for the state are in May. In Arizona, this species flies from spring to fall.

Records: Kern County: North of Kelso Valley at Sageland, May 24, 1992 (JGP).

San Bernardino County: Providence Mountains: Bonanza King Mine Canyon, two on May 18, 1973 (Richard Priestaf); May 9, 1987 (JGP); Cornfield Springs Canyon, May 3, 1992 (JFE) and Providence Mountains, May 13, 1992 (JGP). **San Diego County:** NE of Lakeside, May 23, 1973 (P. Spade). Orange County has a dot for this species in the Atlas of Western USA Butterflies by Stanford & Opler, 1993; and is in the Season Summary county records list in my possession as the Coordinator for California. I do not know the record that dot in Orange County was based on.

202.

Mylytta Crescent--*Phyciodes mylytta mylytta* (W. H. Edwards, 1861).

Updated status: Unchanged.

Habitat: Riparian canyons, roadsides and meadows from low elevations to high elevations in mountains.

Flight: February into early November.

Distribution: All counties except Imperial. This common species is actually taken with some frequency in desert areas.

Note: Females of *mylytta* are frequently misidentified as *Phyciodes pulchella* and *Phyciodes orseis*. The latter species does not occur in southern California.

203. Phaon Crescent--*Phyciodes phaon jalapeno* Scott, 1998.

Taxonomic note: This crescent received its subspecies name in Papilio (New Series) #10 by James Scott in 1998a. The western *phaon* differ from those in the eastern USA by having a pale upper hindwing median band. Nominotypical *phaon* have the same band orange-yellow colored. Also, the upperside hindwing and postmedian bands are nearly always separated by a strong black line in *jalapeno*.

Updated status: Populations in the coastal counties have reportedly disappeared. The status of this butterfly in the Imperial Valley and along the Colorado River is unknown. At the Needles colony site, access is now denied to visitors.

Habitat: Grasslands vacant lots and city residential areas with Lippia lawns.

Flight: Mid-March through October.

Distribution: Imperial, Riverside, San Bernardino and San Diego Counties.

Records: Imperial County: Brawley, Mar 25 and Oct 16, 1976 (KD); Oct 5, 1986 and Aug 6, 1988 (KD). **San Bernardino County:** Needles, near Colorado River, Apr 5, 1988; June 9, 1989; May 29 and Sep 20, 1990 (KD).

204. Pearl Crescent--*Phyciodes tharos tharos* (Drury, 1773).

Taxonomic Note: Emmel and Emmel used the name “near *pulchella*” (which name now applies to what was formerly known as *Phyciodes campestris*) as the name of the *tharos* subspecies in California. Later, the Imperial Valley population was given the name *distincta* Bauer, 1975 with a type locality of Calexico, Imperial County, California. The name *distincta* is listed as a synonym of *tharos* in the Pelham Catalogue.

Updated status: This population has not been reported in many years. Kilian Roever (pers. comm.) believes modern agricultural practices related to land preparation, irrigation and use of more potent pesticides contributed to this butterfly’s extirpation.

Distribution: Imperial and Riverside Counties.

205. Field Crescent--*Phyciodes pulchella* (Boisduval, 1852).

Taxonomic notes: The names *pulchella*, *campestris* (Behr, 1863) and *pratensis* (Behr, 1863) have all been used for this species. Jonathan Pelham suggests this may need a decision by the I.C.Z.N. It has been a popular belief that there are no blend zones between subspecies *pulchella* and *montana* but both color forms are common in Kern and Tulare Counties in most populations so those are considered a segregate in this publication.

a. Field Crescent--*Phyciodes pulchella pulchella* (Boisduval, 1852).

Updated status: This subspecies is rare in southern California and is rarely found in numbers.

Habitat: Streams and canyons or meadowland.

Flight: March to early October.

Distribution: Los Angeles, San Bernardino and Santa Barbara Counties.

Records: Los Angeles County: San Gabriel Mountains: Big Cienega Spring, June 22, 1974 (JFE). **Santa Barbara County:** Arguello road in Bishop Pine Forest, July 24, 2004 (GP); Bear Creek near coast, Sep 22 and Oct 18, 2004 (GP) and mouth of Santa Ynez River, Sep 15, 2005 (GP).

b. Field Crescent--*Phyciodes pulchella* (Boisduval, 1852), southern Sierra Nevada segregate.

Taxonomic Notes: Populations in the southern Sierra Nevada can be very black like subspecies *pulchella* or very orange like subspecies *montana* (Behr, 1863).

Updated status: This species can be very common at Havilah, Weldon, along the upper Kern River, and along the Sherman Pass road to 8400’.

Habitat: Woodland openings along the Kern River, side canyons with small streams, wet pastureland and meadows from 2800-8600’.

Flight: Late April to early October.

Distribution: Inyo, Kern and Tulare Counties.

Records: Inyo County: upper Nine Mile Canyon, June 6, 1983 Aug 26, 1985 and May 2, 1994 (KD). **Kern County:** Weldon, Sep 8, 1974 (JB); July 12 1985 (KD); Onyx, June 30 to Aug 4, 1981 (KD). Greenhorn Mountains: Old State Road at Wagy Flat road along stream, July 2, 2005 (KD). **Tulare County:** Kennedy Meadows, Aug 31, 2002 (KD); Spring, south of Kennedy

Meadows, June 20, 1992 (KD); Sherman Pass Road, Dry Creek Canyon 4300' to 8600', Aug 8, 1980 and July 10, 1982 (KD).

c. Field Crescent--*Phyciodes pulchella* (Boisduval, 1852), Owens Valley segregate.

Taxonomic note: These crescents show some tendency to look like *camillus* W. H. Edwards, the Rocky Mountain subspecies. These can be blackish or predominately orange-colored crescents.

Habitat: Grassy openings along seeps or streams.

Flight: May to September.

Distribution: Inyo County. This butterfly was once common in Lubken Canyon along the creek there in open grassy areas. Recent plant succession seems to have crowded out this butterfly but it must still occur in the extensive well-watered pastures nearby.

Records: Inyo County: Lubken Canyon, 2 miles south of Lone Pine, Sep 8, 1984; May 7, 1992; very common May 31, 1999 and May 30, 2000 (all KD).

The Common Ringlet complex--*Coenonympha tullia* Müller, 1764.

Taxonomic Notes: Pelham and many others place all of *Coenonympha* in North America except *C. haydeni* (W. H. Edwards, 1872) as subspecies of *C. tullia*. I follow the Emmels (1973) in treating the *tullia* complex as several separate species in North America. Those who accept *tullia* is what we have in North America are free to use that name.

206. California Ringlet--*Coenonympha californica californica* Westwood, (1851).

Updated status These drab mothlike butterflies regularly occur upwards to elevations of more than 8000' on the Sherman Pass road and up to 7000' in the Greenhorn Mountains along the Tiger Flat road. This butterfly also commonly occurs in Mojave Desert scrub where the desert meets the southern Sierra Nevada and in the Kelso Valley region.

Habitat: Brushy grasslands, pastures, foothill woodland, desert scrub with grasses and mixed coniferous forest.

Flight: Late February to early October.

Distribution: All counties except Imperial. Rare in Inyo County where it occurs in some numbers in Nine Mile Canyon near the southern boundary of that county, and a few strays are known from the Argus Mountains.

207. Ochre Ringlet--*Coenonympha ochracea* near *furcae* Barnes & Benjamin 1926.

Taxonomic Note: The subspecies *pseudobrenda* Austin & R. Gray, 1998 occurs in the Spring Mountains in Clark County, Nevada within 40 air miles of California. The subspecies *furcae* occurs on the south rim of the Grand Canyon in Coconino County, Arizona. This entity was listed in a Emmel, Emmel & Mattoon's (1998h) checklist of butterflies and skippers for butterflies of California.

Record: Inyo County: Charcoal Kilns, Wildrose Canyon, Panamint Mountains, June 27, 1976 (Doug Mullins). This butterfly is known from the state from only one specimen.

208. Common Wood-nymph--*Cercyonis pegala* (Fabricius, 1775).

There are three subspecies or segregates in southern California. The Santa Barbara County population is very scarce and poorly represented in collections or photographs. The Greenhorn Mountains subspecies is well studied and a full type series was reared, but that butterfly's habitat

is very small and on private land. The third may have occurred at Owens Lake but is apparently extinct. So, in southern California, the “Common” Wood-nymph is not so common.

a. Southern Sierra Nevada Wood-nymph--*Cercyonis pegala australosierra* J.

Emmel, T. Emmel, & K. Davenport.

Taxonomic note: This subspecies has similarities to *boopis* (Behr, 1864) but is characterized by very prominent eyespots on the forewings, relatively large size and generally pale grayish tan undersides which give it a resemblance to some *Cercyonis sthenele*. The forewing spots tend to be circled with prominent yellow and a more prominent forewing patch than other populations in the Western United States.

Southern California TL: Poso Creek drainage north end of Linn’s Valley, Greenhorn Mountains, Tulare and Kern Counties.

Updated status: Unknown. The unfenced land that was formerly open tall grass is now fenced off to visitors. No one has checked the site to my knowledge for many years.

Habitat: Several streams converge to create a high grassy riparian habitat in an otherwise very dry range.

Flight: Mid-July to early September.

Distribution: Kern and Tulare Counties.

Records: Kern County: 1.5 miles N of Glennville, July 21, 1997 (KD). At type locality: July 17 and Sep 7, 1998; July 15 and 22, 2000 and July 23, 2001 (KD). **Tulare County:** At type locality, Aug 4 and 11, 1997; July 17, 1998; July 24, 1999 (all KD). There are September records.

b. Common Wood-nymph--*Cercyonis pegala* (Fabricius, 1775), Santa Barbara County population. This may or may not be the Ox-eyed Wood-nymph, subspecies *boopis* (Behr, 1864). There are too few actual specimens or photographs of this very small population, to assess what subspecies name applies, if any.

Habitat: Apparently, this butterfly occurs in a wetland area with tall grasses.

Flight: Presumably late June to early September.

Records: Santa Barbara County: Tranquillon Peak, Vandenburg AFB, July 13, 2007 (GP). Other populations are in the area.

c. Wheeler’s Wood-nymph--*Cercyonis pegala wheeleri* (W. H. Edwards, 1873).

Taxonomic note: This subspecies is believed extinct and was believed to occur around Owens Lake. The draining of the Owens River for Los Angeles water rights is probably the cause for its disappearance, if this was the actual site where *wheeleri* was found. This butterfly was discussed and illustrated in a paper by Austin (1992) which described and clarified the status of many *Cercyonis pegala* populations in California and Nevada. This highly distinctive phenotype is characterized by an invariably double apical ocellus on the forewings. The pale ventral surface is crossed by coarse striations and the ventral hindwing has six, relatively large, submarginal ocelli, the central one of the anterior group is elongate.

Habitat and flight: Unknown.

Southern California TL: Believed to be Owens Lake, Inyo County.

Distribution: Formerly Inyo County around Owens Lake, now believed extinct.

209. Great Basin Wood-nymph--*Cercyonis sthenele* (Boisduval, 1852).

There are four subspecies in southern California. The subspecies *silvestris* was formerly believed (1973) to occur in most of southern California, but actually reaches its southern limits near Sequoia National Park along the Mineral King road. There are areas inside southern California where phenotypes appear to blend with *silvestris* or occur as a form.

a. Mason's Great Basin Wood-nymph--*Cercyonis sthenele masoni* (Cross, 1937).

Updated status: Formerly, it was believed that the subspecies in the eastern Mojave Desert was *paulus*. The current existence of the eastern Mojave Desert Preserve and the harsh temperatures and hazardous desert conditions limit our current knowledge of this butterfly's distribution in the eastern Mojave Desert in California. This butterfly is locally common in the Spring Mountains, Clark County, Nevada.

Habitat: Juniper woodland with other brushy plants and grass.

Flight: Late June-August.

Distribution: Occurs in the Eastern Mojave Desert Preserve in San Bernardino County.

Records: San Bernardino County: Bull Canyon, Granite Mountains near Amboy, June 17, 1988 (JFE & GP).

b. Little Wood-nymph--*Cercyonis sthenele paulus* (W. H. Edwards, 1861).

Updated status: This subspecies is no longer considered to be in the desert ranges of the eastern Mojave Desert. It does occur on the western edge of the Mojave Desert along the east side of the Sierra Nevada and east of the Sierra Divide on the Kern Plateau and in the ranges east of the Sierra Nevada.

Habitat: Juniper/Pinyon Pine woodlands with chaparral and brushy vegetation.

Flight: Late June to mid-September.

Distribution: Inyo (below the grade up to Whitney Portal is a classic locality) and Tulare Counties (Kennedy Meadows area).

Records: Inyo County: Whitney Portal area mostly below the grade in pinyon pine-oak woodland, Lone Pine Creek and Canyon area, Aug 25, 1998 (RPM & KD) and July 9, 2009 (KD). Nine Mile Canyon, July 4 and 6, 1983 and Aug 26, 1983 (KD), appear to be *behrii* X *paulus* intergrades. **Tulare County:** Kennedy Meadows and vicinity, June 30 and July 8 and 29, 1988; and Sep 22, 2001 (KD), Spring about 7 miles south of Kennedy Meadows, July 29, 1988 (KD).

c. Behr's Wood-nymph--*Cercyonis sthenele behrii* F. Grinnell, 1905.

Taxonomic note: Many believed (or still believe) *Cercyonis behrii* was extinct but T. Emmel & Emmel (1998a) defined what the name *behrii* represents and that it is actually the subspecies of *Cercyonis sthenele* in the Coast Ranges of California. As in many other cases, this "Coast Ranges" butterfly horseshoes its range into the southern Sierra Nevada at least as far north as Johnsondale and the western Sierran slope below Sherman Pass, not *silvestris* which is in the Sierra Nevada to the north of southern California. Subspecies *behrii* has distinctive banding on the hindwing below. In contrast, Sierran *silvestris* has indistinctive scrawling on the undersides of the wings. Some populations in the Tehachapi Mountains in Kern County and in coastal San Luis Obispo County tend towards *silvestris*.

Habitat: Oak and Juniper woodland, chaparral as high as mixed coniferous forest. This butterfly also occurs in elevated Mojave Desert vegetation in the Sierra Nevada at Butterbrecht Peak and vicinity and north of the Kelso Valley area to Bird Springs Pass and Walker Pass.

Flight: Late May to early September.

Distribution: All counties but Imperial. See comments above. This supposedly “extinct” butterfly had a population explosion on the Chimney Peak road near Lamont Peak and along the Kern River south of Limestone Camp in 2017 following good winter rainfall.

Records: **Kern County:** Tom’s Hill (near Butterbredt Peak) and ridge to the southwest, June 28, 1983 (KD); Piute Mountains: 4 mi west of Sageland on Piute Mountain road, May 27, 1993 and Sep 21, 2011 (KD); Frazier Park, June 22, 1979 (KD). **San Luis Obispo County:** Cerro Alto Peak 2600’, June 12, 2014 (JG); Santa Rita road between Templeton and road summit, June 23, 2015 (JG). **Santa Barbara County:** south end Davy Brown Trail off Figueroa Mountain road 3700’, June 11, 2014 (William Van Dam); Birabent Canyon June 23, 2016 (William Van Dam). There was one September record for Santa Barbara Canyon (KD). **Tulare County:** common, Chimney Peak road near Lamont Peak and Meadows, July 4 and 6, 1983; June 19, 2017 (KD); outbreak numbers, upper Kern River, ¼ mi. south of Limestone Camp, June 12 and 27, 2017 (KD); Sherman Pass road at 4500’, June 25, 1985 (KD). **Ventura County:** Frazier Mountain, June 22, 1979 (KD).

d. Santa Cruz Island Wood-nymph-- *Cercyonis sthenele hypoleuca* Hawks & J. F Emmel, 1998.

Taxonomic Notes: This subspecies name comes from the whitish frosting on the ventral hind wings. Its appearance resembles the now extinct subspecies *sthenele* (Boisduval, 1852) from San Francisco and also shows past influence from subspecies *behrii* which occurs 30 air miles away on the mainland (Hawks & J. Emmel, 1998). This new subspecies does appear to have less white frosting below than the now extinct nominotypical *sthenele* from San Francisco.

Southern California TL: Santa Barbara County: Santa Cruz Island, Canada Sauces Oeste.

Habitat: Foothill woodland and grassland.

Flight: June-August.

Distribution: **Santa Barbara County:** Santa Cruz Island.

Records: **Santa Barbara County:** Santa Cruz Island, Canada Sauces Oeste, July 26, 1975 (Richard Priestaf). Santa Cruz Island collection dates range from June 6 to August 25.

QUESTIONABLE RECORDS AND EXTREMELY RARE STRAYS.

HESPERIIDAE

Broken Silverdrop--*Epargyreus exadeus* (Cramer, 1779).

Ray Stanford (personal communication) states a specimen so labeled exists. But is it correctly identified and labeled? There are no other verified records for this species in the state. Its occurrence in a state list is hypothetical. The specimen in question may be *Epargyreus windi*.

Wind's Silverdrop--*Epargyreus windi* H. A. Freeman, 1969.

This is included here based on the possibility a museum specimen of "*E. exadeus*" may actually be this species (Opler & Warren, 2002), and noted in Davenport's 2004 update of southern California butterflies. Opler and Warren apply their comment to Arizona records of *E. exadeus*, but this would apply to California records as well. The occurrence of this species in California is hypothetical.

Dorante's Long Tailed Skipper--*Urbanus dorantes dorantes* (Stoll, 1790).

This would seem to be the *Urbanus* species most likely to stray to southern California. Emmel & Emmel (1973) reported a specimen at the National Museum of Natural History with a Southern California/Barne's collection label but with no specific locality or date. The only other California record is from Sonoma County in Northern California which would have to be an accidental import.

Plain Longtail—*Urbanus simplicius* (Stoll, 1790).

J. W. Tilden (1976) reported that a specimen of this species brought to the San Diego Museum by David Faulkner who reported the specimen was raised ex-larva from garden beans at Solana Beach about 25 miles north of San Diego (San Diego County). Four other larvae reared became *Urbanus proteus*.

Brown Longtail--*Urbanus procne* (Plötz, 1881).

Emmel & Emmel (1973) reported a record from Fertilta, Riverside County, Calif. by J. D. Gunder. There are no known published records of this species in Arizona or Baja California books on those faunas.

Golden Banded Skipper--*Autochton cellus* (Boisduval & Le Conte, (1837).

There are no known records for the state.

Southern Cloudywing--*Thorybes bathyllus* (J. E. Smith, 1797).

A specimen in the American Museum of Natural History reportedly from California is believed to be mislabeled. This species occurs nowhere near California.

Mexican Cloudywing--*Thorybes mexicana mexicana* (Herrich-Schäffer, 1869).

This subspecies was apparently a misidentification of *Thorybes pylades*. *Thorybes mexicana nevada* ranges as far south as Big Meadow, Tulare County and is included herein as a Southern California resident. It does not occur within the boundaries used by Emmel & Emmel, 1973.

Mimosa Skipper--*Cogia calchas* (Herrich-Schffer, 1869).

Emmel & Emmel reported a specimen of this species from Indian Wells, Riverside County dated 23-IV-23 from a specimen at the American Museum of Natural History and believed it could be an authentic record. I could not find records for this species from the state of Arizona or Baja California, Mexico. So, this would be a remarkable record if valid.

Mexican Sootywing--*Pholisora mejicanus* (Reakirt, (1876).

This is believed to be a misidentification of *Pholisora catullus*.

Dreamy Duskywing--*Erynnis icelus* (Scudder & Burgess, 1870).

This species is rare even in northern California. While some have reported this species in southern California (including the author, one I took on the Sherman Pass Road at high elevation), all have turned out to be *Erynnus brizo*, or in my case...a very atypical *Erynnis persius*.

Juvenal's Duskywing--*Erynnis juvenalis* (Fabricius, 1793).

This was listed in error by Comstock as a California resident. Until John Burns work was published in 1966, misidentifications of *Erynnis* were even more frequent than today. Most of the misidentifications of *juvenalis* in California are *Erynnis propretius*.

Rocky Mountain Duskywing--*Erynnis telemachus* Burns, 1960.

The Emmels speculated this species could turn up in the Providence or New York Mountains in the Eastern Mojave Desert, now a Preserve. With the legalities, regulations and high cost of permits to do scientific research in California and in Preserves, it may be some time before we can answer that question.

Southern Sicklewing--*Achylodes mithridates tamenund* (W.H. Edwards, 1871).

A specimen in the National Museum of Natural History collection is labeled "Calif." and is believed mislabeled. Emmel and Emmel (1973) referred to this skipper as *Achylodes thraso tamenund*.

Streaky Skipper--*Celotes nessus* (W.H. Edwards, 1877).

I observed a small skipper May 27, 1973 in a ravine near the Colorado River across from Topock, Arizona in San Bernardino County, California that may have been this species. I failed to net it or get a good enough look at it for positive identification. This species is a resident species at Kingman and in the Hualapai Mountains in Mohave County, Arizona about 40 air miles away.

Desert Checkered Skipper--*Pyrgus philetas* (W.H. Edwards, 1881).

There is one record for the state by Kilian Roever: Ferguson Lake, 28 miles north of Bard, Imperial County, November 6, 2014.

Laviana White Skipper--*Heliopetes laviana* (Hewitson 1868).

John S. Garth & J. W. Tilden (1986) reported three individuals were collected at Joshua Tree National Monument, Riverside County July 13, 1960. The Emmels doubt its authenticity and believe these were misidentifications.

Russet Skipperling--*Piruna pirus* (W.H. Edwards, 1878).

There is a record of a male of this species being collected at Carlsbad, San Diego County, September 2, 1934 by Hulbirt by the edge of a salt marsh.

Comstock's Giant Skipper--*Megathymus comstocki* (Harbison).

The Emmels reported this as a likely resident at Point Loma, San Diego County where the *Agave shawii* Engelm host grows. Housing developments eliminated the habitat and the butterfly, if it was there. It occurs several miles to the south in Baja California, Mexico.

Navajo Yucca Giant Skipper--*Megathymus yuccae navajo* (Skinner, 1911).

This was listed by Freeman as occurring in the Little San Bernardino Mountains of San Bernardino County, but that population is inseparable from subspecies *martini*.

Garita Skipperling--*Oarisma garita* (Reakirt, 1866).

American Museum of Natural History specimens from "Paso Robles" and "San Joaquin Co" are likely mislabeled. Collecting at those localities since 1973 has not substantiated this species in those areas.

Orange-headed Roadside Skipper--*Amblyscirtes phylace* (W. H. Edwards, 1878).

This species was suggested to be an occasional straggler to California by J. A. Comstock (1927). Since this skipper is highly localized in the White Mountains and Chiricahua Mountains in easternmost Arizona, that is highly unlikely.

Neamathla Skipper--*Nastra neamathla* (Skinner & R. Williams).

This species (Garth & Tilden, 1986) was reported to occur along the lower Colorado River. Kilian Roeber reports (pers. comm.) that indistinctly marked little brown skippers were occasionally collected in that region, but their identities were not resolved.

Hobomok Skipper--*Poanes hobomok* (T. Harris, 1862).

A report of this occurring in California is not supported by collection records and this species occurs very far away eastward in eastern New Mexico and Oklahoma.

Zabulon Skipper--*Poanes zabulon* (Boisduval & Le Conte, (1837).

There reportedly is a record for Havilah, Kern County. The Emmels doubted its authenticity and I have failed to find that species at Havilah despite many trips to that location. What does occur there nearby is *Poanes melane*.

Taxiles Skipper--*Poanes taxiles* (W. H. Edwards, 1881).

There are no California records to support this species being in the state.

Meadow Skipper--*Ochlodes pratincola* (Boisduval, 1852).

Garth & Tilden (1986) listed this as a species found in the Tehachapi Mountains in June and this entity is apparently based on misidentifications of either *Ochlodes sylvanoides* or *Ochlodes agricola*. Some very lightly colored *Ochlodes* have been collected in June near Cummings Creek in the Tehachapi Mountains and near Pine Mountain Club in the Mt. Pinos area but these appear

to be either the light inner Coast Ranges *Ochlodes agricola* or a western range extension of *verus*.

Nyctelius Skipper--*Nyctelius nyctelius* (Latreille).

There is one record for El Cajon, San Diego County in October 1958, by Oakley Shields. It was identified by C. Don MacNeill.

PAPILIONIDAE

Polydamas Swallowtail--*Battus polydamas* (Linnaeus, 1758).

Comstock (1927) reported a freshly emerged specimen was captured in Santa Monica (Los Angeles County) by Dr. Frank Clark in 1924. This specimen was likely introduced on a steamer from Mexico or on nursery stock.

PIERIDAE

Edward's Queen Alexandra Sulphur--*Colias alexandra edwardsii* W. H. Edwards, 1870.

There was a yellow *Colias* seen in Keystone Canyon in the New York Mountains June 1, 1968 by Bruce Griffin which may have been this species. Similarly, the author saw a large yellow *Colias* in a canyon off an unpaved road connecting Kelso Valley road and Bird Spring Pass in Kern County in late April one year. *Colias harfordii* occurs in the Southern Sierra in the Kelso Valley area with some regularity, but the size of this sulphur was larger than *harfordii*.

Boisduval's Yellow--*Eurema boisduvaliana* (C. Felder & R. Felder, 1865).

There is a record in the Stanford & Opler (1993) ATLAS represented as a dot in San Diego County. The source for the record was unstated.

Western White--*Pontia occidentalis* (Reakirt, 1866).

This species is reported with some regularity from Mt. San Geronio in the San Bernardino Mountains and County and also in the Sierra Nevada along the Sherman Pass Road. To date, all have turned out to be *Pontia protodice*, the darker spring form "vernalis."

Howarth's White--*Ascia howarthi* (Dixey, 1915).

This species is listed for Emmel, Emmel & Mattoon's 1998 state checklist as having one specific record for the state. There are no published records I know of but I believe Kilian Rover mentioned seeing one along the Colorado River near Yuma on the California side.

LYCAENIDAE

Ruddy Copper--*Lycaena rubidus* (Behr, 1866).

This species was reportedly taken from Monolith, Kern County in the 1950 Season Summary. This area has dried out considerably from climate change and does not presently seem suitable for this species. My searches for *L. rubidus* near Monolith turned up *Lycaena gorgon*. The species ranges as far south in the Sierra Nevada as Monache Meadows and in Sequoia National Park in Mineral King Valley in Tulare County north of what is defined here as Southern California.

Colorado Hairstreak--*Hypaurotis crysalus* (W.H. Edwards, 1873).

Comstock (1927) included this species on the state list based on the basis of three records for southern California. Those specimens have not been located and there have been no substantiated reports since Comstock's day so mislabeling or misidentification is suspected in those three records. The host plant *Quercus gambelli* Nutt, does not occur in California. Misidentifications or mislabeling are suspected.

Sooty Hairstreak--*Satyrrium fuliginosa* (W.H. Edwards, 1861).

In a listing of "Butterflies of Death Valley National Park Compiled by David A. Ek of the National Park Service, updated 06/21/2007" (41 pages) is found a listing of "***Satyrrium fuliginosum*** (*S. fuliginosum obsolescens*" Emmel, Emmel, & Mattoon, 1998h) Sooty Hairstreak" found at Hunter Mountain. There is no such subspecies which has been described for the Sooty Hairstreak. But the name *obsolescens* and the Hunter Mountain locality do fit with *Lycaena xanthoides obsolescens* Mattoon & Austin, 1998.

Barry's Hairstreak-- *Callophrys barryi* (K. Johnson, 1976).

This was listed in a checklist for butterflies of California by J. Emmel, T. Emmel and Mattoon in 1998. That name had been applied to populations found in the Kennedy Meadows area in Tulare County and in the San Bernardino Mountains using *Juniperus occidentalis* Hooker as the larval host. The name *barryi* is invalid as explained by Andrew Warren in his publication covering Oregon butterflies (2005). Warren recommended treating those two populations as *Callophrys gryneus chalcosiva* until their true status is resolved.

Annette's Brown Elfin--*Callophrys augustinus annetteae* (dos Passos, 1943).

So far as I know, no one has records for this subspecies in the Providence Mountains though Emmel & Emmel (1973) reported this subspecies as occurring in the Providence Mountains. It may occur in California as this butterfly was common in the nearby Hualapai Mountains in Mojave County, Arizona March 24, 1990 and others June 4, 1989 (Ken Davenport).

Sky Blue Groundstreak--*Kisutam syllis* (Godman & Salvin, 1887).

This species had a record published in the 2010 Season Summary under the name of *Ziegleria syllis*. An article appeared in the News of the Lepidopterists' Society (Rickard & Pasko, summer 2011). John Pasko collected the specimen just south of Point Mugu State Park April 17, 2005 near the coast in the Santa Monica Mountains in Ventura County. The individual was likely an accidental import from a passing boat. That is the only record for the state.

Xami Hairstreak--*Xamia xami* (Reakirt, (1867).

Paul Opler reported a possible record for this species in California given in Emmel & Emmel, 1973. A single female specimen in the American Museum of Natural History is labeled as being from the Providence Mountains, San Bernardino County with the date April 5, 1934 by G. H. and J. L. Sperry. Since the Sperry's had also collected in Arizona that April, mislabeling is suspected.

Arizona Hairstreak--*Erora quaderna* (Hewitson, 1868).

Emmel & Emmel (1973) reported: “there is a specimen of this species in the Natural History Museum of Los Angeles County bearing the label: III-22-40, Providence Mountains, San Bernardino County, California, T. B. Blevins, collector. The habitat in the Providence Mountains seems too dry to support this species or *X. xami*.”

Shasta Blue--*Icaricia shasta shasta* (W. H. Edwards).

There is a reported record from the Tehachapi Mountains Aug 22, 1937 (W. A. Evans) in Kern County. Perhaps it may have occurred there years ago, but long-term drought and climate warming make it unlikely to survive there. John Emmel and I checked out a possible site on top of Tehachapi Mountain in 1998. There was “cushion plant” habitat.

NYMPHALIDAE.

Mexican Silverspot--*Dione moneta poeyi* Butler, 1873.

Larry Orsak reported a fresh individual of this species from Orange County was collected at Fullerton, July 20, 1929 by Erich Walter.

Mexican Fritillary--*Euptoieta hegesia meridiana* Stichel, 1938.

The Mexican Fritillary has a worn specimen in the LACM labeled Pasadena, Calif., 1900. Ray Stanford (in litt.) states that there are several records of strays along the Colorado River and in the Imperial Valley.

Blackened Bluewing--*Myscelia cyananthe* (C. & R. Felder, 1867).

Emmel, Emmel & Mattoon include this species on their 1998 state list for California. The record is not published but Kilian Roever has a record from near Mexicali in Imperial County, the date is unknown.

White Peacock--*Anartia jatrophae luteipicta* Frühstorfer, 1907.

Emmel, Emmel and Mattoon include this species on their 1998 list for California based on one specific record for California. The record apparently has not been published.

Mead’s Wood-Nymph--*Cercyonis meadii* (W.H. Edwards, 1872).

There is a specimen labeled “Idyllwild, Riverside County June 28, 1985 (S. S. McKown)” It could be valid or it could be mislabeled. This species occurs in the Hualapai Mountains south of Kingman, Arizona about 40 air miles from the California state line.

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*deceased.