

BUTTERFLIES OF THE JEMEZ MOUNTAINS OF NORTHERN NEW MEXICO

RICHARD HOLLAND

1625 Roma NE, Albuquerque, New Mexico 87106, USA

AND

STEVEN J. CARY

4 Encantado Court, Santa Fe, New Mexico 87505, USA

ABSTRACT. We present capture records for 155 species of butterflies taken in the Jemez Mountains of northern New Mexico. Emphasis is on the authors' experiences during 1983–1985, and on the old Woodgate collection assembled during 1912–1913.

Additional key words: John Woodgate, faunal survey, checklist.

This paper is the fifth in a series treating the butterfly faunas of the major mountain ranges in New Mexico except the San Juans and Sangre de Cristos, which are unbroken extensions of the Colorado Rockies. The first (Holland 1974) dealt with the six ranges in the central part of the state. The second (Ferris 1976, 1977) reported on the Grant-Catron County area, including the extensive Gila Mountains complex. The third (Holland 1984) was devoted to the Zuni and Chuska Mountains of northwestern New Mexico and northeastern Arizona. The fourth (Cary 1994) reported on the Animas mountains in the extreme southwestern corner of New Mexico. The Animas Mountains are almost entirely on the Gray Ranch, the preservation and study of which is a major project of the Nature Conservancy and the Animas Foundation. Surveys of the butterflies of the Sacramento, Capitan, Organ, Guadalupe, and Franklin Mountains in south-central New Mexico and west Texas also have been completed, and these findings will be published in the future. There are several outlying ranges of the Gila Mountains complex which also are being investigated. These include the Gallo/Mangas, Black Range, and Datil Mountains.

Eight other limited regional lists of the New Mexican butterfly fauna also have appeared, including Williams (1914), Toliver (1971), Snow (1883, 1885), Cockerell (1899), and Hubbard (1965, 1977a, 1977b). Toliver (unpubl. 1978 manuscript) compiled records of every butterfly specimen taken in New Mexico prior to 1978; this work recently has been updated, and now is generally available (Toliver, Holland & Cary 1994). Also, a condensed version of this state-wide atlas, with species occurrence broken down by counties, is now in the literature (Cary & Holland 1994).

The present paper documents surveys of the Jemez Mountains, a range situated in north-central New Mexico and closely linked to the

San Juan Mountains of Colorado and bordering northern New Mexico (see Fig. 1–2), focusing on work conducted primarily from 1983 to 1985. An entire article is devoted to this single range because of the vastness and complexity of the Jemez compared to other New Mexico ranges: it hosts more species ($n=155$) than any other New Mexican mountain complex except the Gila ($n=165$).

CHARACTERISTICS OF THE JEMEZ MOUNTAINS

The Jemez Mountains are nearly entirely volcanic, although there are a few Triassic red Chinle sandstone outcroppings to the northeast around Abiquiu and to the southwest around Jemez Pueblo. The entire range surrounds a vast caldera, Valle Grande. The highest point, Chicoma Mountain (3540 m), has a false treeline and a huge fire climax meadow on the south face, with Douglas fir (*Pseudotsuga taxifolia*) flourishing to the crest on the north slope. There are no Lower Sonoran or Arctic-Alpine areas in the Jemez. May is the driest month, August is the wettest, and precipitation is largely dependent on altitude, ranging from 0.2 to 0.8 m annually. The Jemez flora includes ponderosa pine (*Pinus ponderosa*), Gambel oak (*Quercus gambelii*), grey oak (*Quercus grisea*), several species of *Juniperus* and *Yucca*, *Ceanothus fendleri*, several columbines (*Aquilegia* spp.), several *Penstemon* spp. and paintbrushes (*Castilleja* spp.), and a great assortment of *Eriogonum*. Additionally present are locust (*Robinia* spp.), kinnickinnick (*Arctostaphylos uva-ursi*), a diversity of violets (*Viola* spp.), aspen (*Populus tremuloides*), cottonwood (*Populus fremontii*), and willow (*Salix* spp.). Missing flora include Upper Sonora walnut (*Juglans* sp.), *Agave*, and mesquite (*Prosopis* spp.).

Generally speaking, butterfly endemism at the species level is rare in the New Mexican mountains, and the Jemez are typical in this regard. With the possible exception of *Speyeria atlantis nikias* (Ehrmann), the Jemez Mountains lack endemics. Dispersal barriers, especially from the boreal habitats of the Colorado Rockies, are weak and probably no more than 10,000 years old. Boreal species from the north, lower desert species from along the Rio Grande to the south, and Great Basin species from the west all penetrate the Jemez (in the case of boreal species, it is not always clear which species are Pleistocene relicts and which are subsequent colonizers). Even a few Great Plains species, most notably *Atrytonopsis hianna turneri* Freeman, have isolated colonies in the Jemez (these are all in tiny 165 sq. mi. Los Alamos County, where most of the habitats, for military reasons, have never been disturbed).

HISTORICAL NOTES ON JEMEZ MOUNTAINS COLLECTORS

In 1912–1913, John Woodgate collected extensively in the Jemez Mountains. A partial list (96 species) of the Woodgate material was

documented subsequently by Williams (1914), and from this material he described *Hesperia woodgatei* (Williams). All the Woodgate records are simply recorded as "Jemez Mountains, 6400–7000 feet" in the Williams list. However, some of the listed species (e.g., *Oeneis chryxus* (Doubleday & Hew.)) indicate that Woodgate collected at times well above 7,000 feet. Woodgate was a fence rider for the ranchers in the area rather than a tourist, and his wanderings may have been truly extensive. How widely he traveled from the Indian Pueblo of Jemez or the hot springs resort at Jemez Springs can not be determined.

Not all of Woodgate's Jemez material was deposited in the Williams collection (which is now at the Carnegie Museum). We base this on the discovery of a Woodgate specimen of *Occidryas anicia alena* (Barnes & Benjamin) in the American Museum of Natural History (AMNH). The specimen, taken on 5 May 1913 in the Jemez, represents a taxon not on Williams' 1914 list (it does appear that all the species found by Woodgate in the Jemez during 1912–1913 are represented in recent collections; however, *Incisalia fotis* (Strecker), which he took in 1916, has not been recaptured).

Holland (1984) wrote that Woodgate gave up collecting and fence riding around 1913 due to failing eyesight, but that as recently as 1970 some of his material was under glass in a bar in Jemez Springs. We are pleased to report here that the specimens are at present still at the bar, and as of at least 1935, Woodgate was still collecting (it also has come to our attention that Woodgate collected in the Jemez Mountains at least as late as 1916). In 1935, in Louisiana, he took the type series of *Basilarchia archippus watsoni* (dos Passos 1938).

Skinner (1913) described *Pamphila margarita* from the Woodgate material taken near Jemez Springs. This name is now treated as an infrasubspecific form of *Atrytonopsis python* (W. H. Edwards). Also, the oldest *Hesperia woodgatei* specimens were taken not by Woodgate at the type locality in 1912–1913, but in 1899 by Townsend at Colonia Juarez, Chihuahua, Mexico (Clench 1965). These specimens were sent to W. J. Holland at the Carnegie Museum, who did not discern anything unique about a *Hesperia* with antennae nearly as long as the forewing, although he did name an accompanying bright blue *Speyeria* from the same Chihuahua site (*S. nokomis coerulescens* (W. J. Holland)). Thus, *H. woodgatei* remained undescribed for fourteen additional years.

LOCALITIES

Specific collecting sites and their alphanumeric codes are given below. The locality symbols appear on the maps in Figures 1 and 2. The style of data presentation follows Ferris (1976).

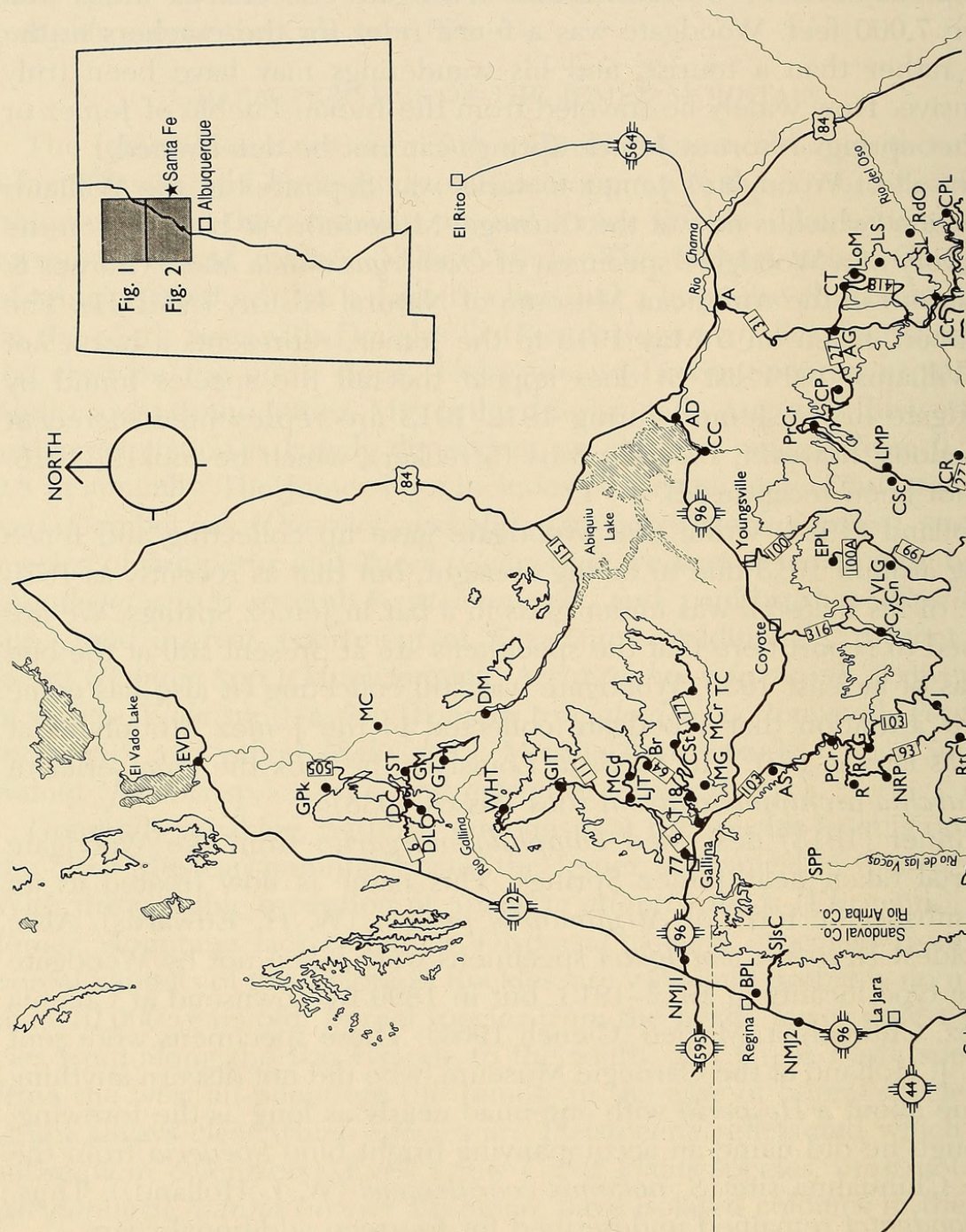
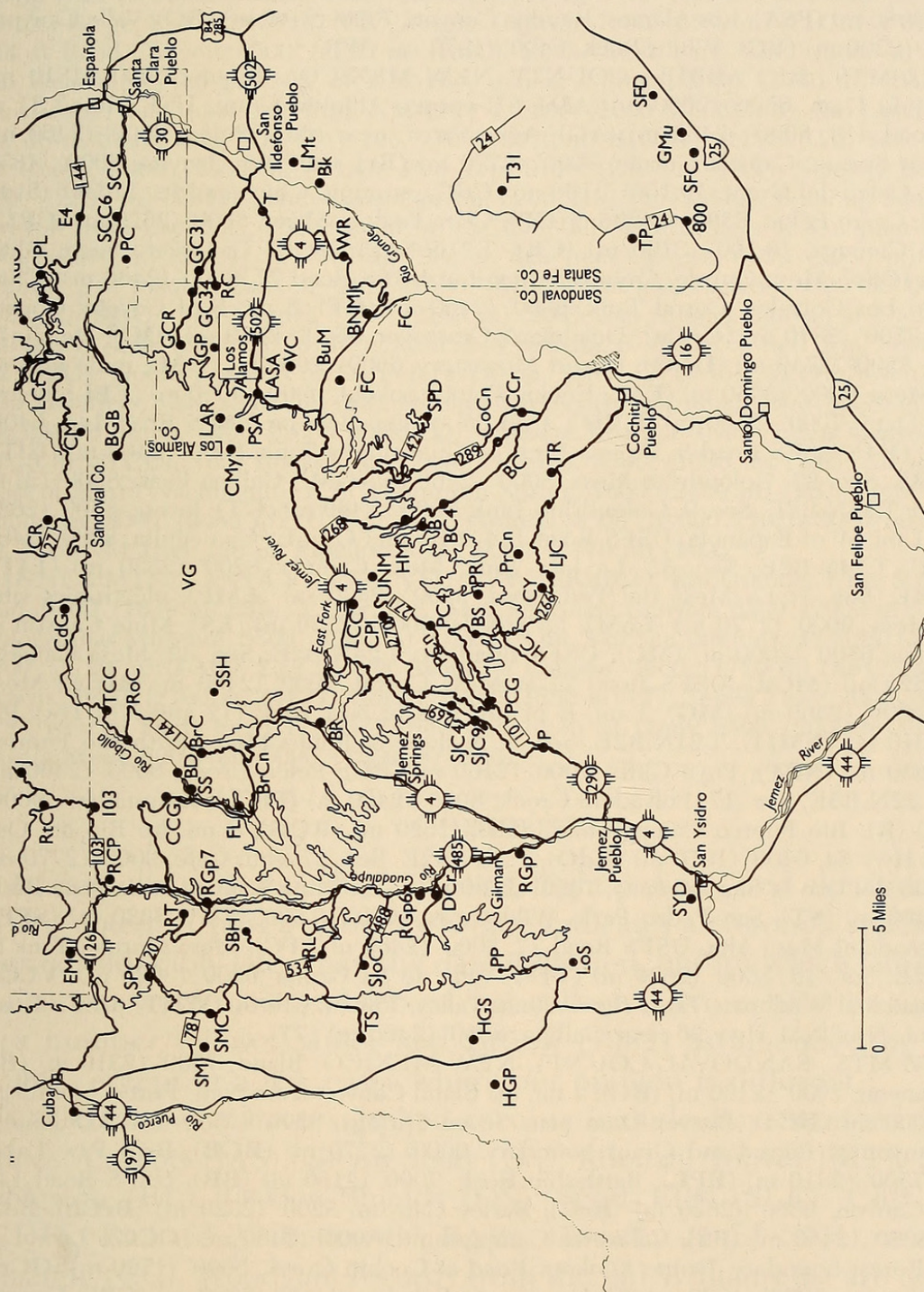


FIG. 1. Jemez Mountains, New Mexico, collecting sites (northern portion) and 8000' elevation contour. Same scale as Fig. 2.



JEMEZ MTS., LOS ALAMOS COUNTY, NEW MEXICO. Bandelier National Monument Junction, 6800' (2090 m) (**BNMJ**); Burnt Mesa, ca. 7300' (2250 m) (**BuM**); Camp May, 9800' (3020 m) (**CMY**); T.20N.R6E, Sec. 34, Guaje Canyon, 7000' (2160 m) (**GC34**); road end, Guaje Canyon Reservoir, 8000' (2460 m) (**GCR**); Los Alamos, Guaje Pines Cemetery, 7200' (2220 m) (**GP**); Los Alamos Reservoir, 8000' (2460 m) (**LAR**); 3 mi. below Los Alamos Ski Area, 8000' (2460 m) (**LASA**); Los Alamos (Pajarito) Ski Area, 10,000' (3080 m) (**PSA**); Los Alamos, Rendija Canyon, 7000' (2160 m) (**RC**); Valle Canyon, ca. 7500' (2300 m) (**VC**); White Rock, 6400' (1970 m) (**WR**).

JEMEZ MTS., RIO ARriba COUNTY, NEW MEXICO. Abiquiu, 5900' (1810 m) (**A**); Abiquiu Dam, 6500' (2000 m) (**AD**); SE corner, Abiquiu Grant, USFS Road 31 at USFS Road 418, 8000' (2460 m) (**AG**); Agua Sarca, near Mesa Puleo, 8000' (2460 m) (**AS**); Bear Spring, Cañada Gurule, 9000' (2770 m) (**Br**); Cañones Canyon, 6000' (1850 m) (**CC**); Cerro del Grant, 10,100' (3100 m) (**CdG**); summit, Chicoma Mt., 11,500' (3540 m) (**CM**); Cerro Pelon, 8500' (2620 m) (**CP**); Clara Peak Lookout, 8500' (2620 m) (**CPL**); Redondo Cienega, 10,100' (3100 m) (**CR**); T.21N.R4E, Sec. 2, Cañoncito Seco, 9000' (2770 m) (**CSc**); Mesa Gurule, Cañada Schmidt at USFS Road 77, 8000' (2460 m) (**CSt**); Cañon de Los Corrales, Corral Tank, 8000' (2460 m) (**CT**); 5 mi. S of Coyote, Coyote Canyon, 7700' (2370 m) (**CyCn**); Deadman's Crossover, 8500' (2620 m) (**DC**); Deadman Lookout, 8800' (2710 m) (**DLO**); Desert Monastery, 6500' (2000 m) (**DM**); radio towers, Eureka Mesa, 9900' (3050 m) (**EM**); Encino Point Lookout, 9900' (3050 m) (**EPL**); below El Vado Dam, 7000' (2160 m) (**EVD**); 4 mi. W of Española on USFS Road 144, 6400' (1970 m) (**E4**); USFS Road 8, French Mesa at Guadalupita Tank, 8000' (2460 m) (**Git**); T.25N.R2E, Sec. 23, Golondrino Mesa, 8000' (2460 m) (**GM**); Gallina Peak, 8900' (2740 m) (**GPK**); T.25N.R2E, Sec. 9, Golondrino Tank, 8000' (2460 m) (**GT**); Jarosa, 8500' (2620 m) (**J**); 21 mi. W of Espanola, USFS Road 144 at Rio del Oso, La Cieneguita, 8000' (2460 m) (**Lct**); T.24N.R2E, Sec. 32, La Jara Tank, Mesa Cañada, 8200' (2530 m) (**LJT**); T.22N.R4E, Sec. 1, La Mesa del Pedregosa, 9200' (2830 m) (**LMP**); electronics site, Lobato Mesa, 9000' (2770 m) (**LoM**); La Sotella, 9000' (2770 m) (**LS**); Mine Canyon at Rio Chama, 6500' (2000 m) (**MC**); USFS Road 64, T.24N.R2E, Sec. 32, Mesa Cañada, 8500' (2620 m) (**MCd**); USFS Road 77 at Mesa Corral, 8000' (2460 m) (**MCr**); Mesa Gurule, 8000' (2460 m) (**MG**); 1 mi. E of Junction of NM Hwy 112 and NM Hwy 96, 7500' (2310 m) (**NMJ1**); T.21N.R2E, Sec. 5, N slope of Jemez Mts., North Rio Puerco, 9200' (2830 m) (**NRP**); Puye Cliffs, 7000' (2160 m) (**PC**); Poleo Creek, 8000' (2460 m) (**PCr**); T.22N.R5E, Sec. 17, Polvadera Creek, 8000' (2460 m) (**PrCr**); Resumidero, 9000' (2770 m) (**R**); Rio Puerco Campground, 8500' (2620 m) (**RCG**); 8 mi. up Rio del Oso from US Hwy 84, 6400' (1970 m) (**RdO**); T.21N.R2E, Sec. 27, Rito Cafe, 9000' (2770 m) (**RtC**); Rio del Oso at San Lorenzo, 7400' (2280 m) (**SL**); Mine Canyon at Sargent Tank, 8000' (2460 m) (**ST**); San Pedro Parks Wilderness, 9000'-10,500' (2770-3230 m) (**SPP**); Tusas Cañada at Mesa Alta, USFS Road 77, 8000' (2460 m) (**TC**); Mesa Gurule, Tank in T.28N.R2E, Sec. 18, 8500' (2620 m) (**T18**); Valle de La Grulla, 9800' (3020 m) (**VLG**); USFS Road 8 at Wildhorse Tank, Rio Gallinas Valley, 7500' (2310 m) (**WHT**); USFS Road 77, 0.5 mi. N of NM Hwy 96 near Gallina, 8000' (2460 m) (**77**).

JEMEZ MTS., SANDOVAL COUNTY, NEW MEXICO. Bland, 7500' (2310 m) (**B**); Bland Canyon, 7000' (2160 m) (**BC**); 4 mi. up Bland Canyon from Natl. Forest boundary, 6500' (2000 m) (**BC4**); Beaver Dam near Seven Springs, 8200' (2530 m) (**BD**); Santa Clara Canyon at Baca Land Grant boundary, 9000' (2770 m) (**BGB**); Bear Paw Lake, Regina, 7500' (2310 m) (**BPL**); Battleship Rock, 7000' (2160 m) (**BR**); USFS Road 144 at Bear Canyon, 8500' (2620 m) (**BrC**); Barley Canyon, 8200' (2520 m) (**BrCn**); Bear Spring, 8000' (2460 m) (**BS**); Calaveras Campground, 8000' (2460 m) (**CCG**); 1.5 mi. S of Natl. Forest boundary, Dome Lookout Road at Cochiti Creek, 5600' (1720 m) (**CCr**); Cochiti Canyon, 5900' (1820 m) (**CoCn**); Cerro Pelado, 10,000' (3080 m) (**CPI**); Cerrito Yelo, 7500' (2310 m) (**CY**); Guadalupe River at Deer Creek, 6800' (2090 m) (**DCr**); Frijoles Canyon, Bandelier Natl. Monument, 6000' (1850 m) (**FC**); Fenton Lake, 7800' (2400 m) (**FL**); T.17N.R4E, Sec. 18, Hondo Canyon, 8000' (2460 m) (**HC**); Holy Ghost Pond, 6400' (1970 m) (**HGP**); Holy Ghost Springs, 6600' (2030 m) (**HGS**); Horn Mesa, 1 mi. N of Bland, 7500' (2310 m) (**HM**); Los Conchas Campground, 8400' (2590 m) (**LCC**); ca. 13 mi. NW of Cochiti Pueblo, La Jara Corral and La Jara Creek (but not La

Jara Tank, which is in Rio Arriba Co.), 7000' (2160 m) (**LJC**); road up Pajarito Peak, Log Spring, 8000' (2460 m) (**LoS**); 7 mi. N of junction with NM Hwy 44 on NM Hwy 96, 7600' (2340 m) (**NMJ2**); Ponderosa, 6000' (1850 m) (**P**); Paliza Campground, 7200' (2220 m) (**PCG**); Paliza Canyon, 7800' (2400 m) (**PCn**); 4 mi. N of Paliza Campground in Paliza Canyon, 7800' (2400 m) (**PC4**); Pajarito Peak, 9000' (2770 m) (**PP**); 4 mi. from NM Hwy 44 up road to Pajarito Peak, 8000' (2460 m) (**PP4**); 6 mi. NE of Paliza Campground at Peralta Ridge, 8800' (2460 m) (**PR**); Peralta Canyon, 7000' (2160 m) (**PrCn**); USFS Road 144 at Road Canyon, 8500' (2620 m) (**RoC**); Rock Creek Park, 9300' (2860 m) (**RCP**); Rio Guadalupe, 0.5 mi. NW of NM Hwy 4 near Gilman, 5800' (1790 m) (**RGp**); Rio Guadalupe, 6 mi. upstream from NM Hwy 4, 6500' (2000 m) (**RGp6**); Rio Guadalupe, 7 mi. downstream from NM Hwy 126, 7700' (2370 m) (**RGp7**); T.19N.R1E, Sec. 33, Rito La Cueva, 8400' (2590 m) (**RLC**); Red Top, 9100' (2800 m) (**RT**); Smokey Bear Hill, 8400' (2590 m) (**SBH**); Santa Clara Canyon, 6200' (1910 m) (**SCC**); 6 mi. up Santa Clara Canyon from Española, 6800' (2090 m) (**SCC6**); T.17N.R3E, Sec. 4, San Juan Canyon, 6800' (2090 m) (**SJC4**); T.17N.R3E, Sec. 9, San Juan Canyon, 6600' (2030 m) (**SJC9**); summit, San Joaquin Canyon, 8400' (2590) (**SJoC**); San Jose Canyon, 8000'-8500' (2460-2620 m) (**SJsC**); San Miguel, 7000' (2160 m) (**SM**); San Miguel Canyon at Natl. Forest boundary, 7200' (2220 m) (**SMC**); San Pablo Canyon, 5 mi. W of Red Top, 8000' (2460 m) (**SPC**); Dome Lookout at St. Peter's Dome, 8800' (2710 m) (**SPD**); Seven Springs Fish Hatchery, 8000' (2460 m) (**SS**); Sulphur Springs Hotel (ruins), 8800' (2710 m) (**SSH**); San Ysidro dump, 5400' (1660 m) (**SYD**); Pipeline Road at Twin Cabins Canyon, 8500' (2620 m) (**TCC**); Tent Rocks near Cochiti Pueblo, 5500' (1690 m) (**TR**); 2.5 mi. W of crest of Sierra Nacimiento, E of Thompson Spring, 7800' (2400 m) (**TS**); UNM Biology Cabin, ca. 8000' (2460 m) (**UNM**); Valle Grande, 8500'-10,000' (2620-3080 m) (**VG**), 5 mi. E of NM Hwy 126 on Pipeline Road, 9000' (2770 m) (**103**).

JEMEZ MTS., SANTA FE COUNTY, NEW MEXICO. Rio Grande, 1 mi. S of Buckman, 5300' (1630 m) (**Bk**); T.20N.R7E, Sec. 31, Guaje Canyon, 6500' (2000 m) (**GC31**); Golondrinas Museum, 5800' (1790 m) (**GMu**); 3 mi. S of San Ildefonso Pueblo, La Mesita, 5600' (1720 m) (**LMt**); La Cienega, Santa Fe Canyon, 5600' (1720 m) (**SFC**); Santa Fe Downs, 7000' (2160 m) (**SFD**); Totavi, 6000' (1850 m) (**T**); Tetilla Peak, 7000' (2160 m) (**TP**); west of Santa Fe, T.17N.R7E, Sec. 3, Tank in 31 Draw, 6500' (2000 m) (**T31**); La Bajada Mesa, 800 Well, 6000' (1850 m) (**800**).

CHECKLIST

In the following checklist, counties, flight periods, and elevation ranges are noted. A plus (+) before a date indicates a common species that flies considerably later than the date indicated, but for which late-season specimens were merely observed, not collected. Nomenclature and species number follows Miller and Brown (1981) as amended by Ferris (1989), except in a few cases where our opinion is different.

Collectors who have supplied records include Ray Stanford (RES), James A. Scott (JAS), Glenn Scott (GS), Michael Toliver (MT), Robert Langston (RL), Oakley Shields (OS), Scott Ellis (SLE), Cliff Ferris (CDF), Richard A. Bailowitz (RAB), Dorothy Hurd (DH), and Carl Cushing (CC). Woodgate records from the old Williams list are denoted by (W). Other Woodgate records are indicated by (JW). Most of the Williams collection is currently at the Carnegie Museum, although some specimens may be at the American Museum of Natural History. In general, Woodgate's other Jemez Mountains material may be found at major museums throughout the country. We have not checked Euro-

pean museums, but we would not be surprised to find Jemez Mountains specimens collected by Woodgate there.

We are aware of some reports (mostly old) of species from the Jemez that we do not believe to be correct or possible. These reports, which have been purged from our list, include *Papilio indra* Reakirt, *Epidemia nivalis browni* (dos Passos), *Thorybes bathyllus* (J. E. Smith), *Erynnis martialis* (Scudder), *Amblyscirtes fimbriata* (Plotz), *Cyllopsis henshawi* (W. H. Edwards), *Charidryas palla calydon* (Holland), and *Apodemia mormo mejicana* (Behr). The last of these taxa may be possible from the eastern edge of the Jemez, although all Jemez *A. mormo* (C. & R. Felder) we have seen labeled *mejicana* are actually misdeterminations of typical *A. m. mormo* from the western portion of the Jemez.

HESPERIIDAE

- 7a. *Epargyreus clarus clarus* (Cramer). May 11 (W) to July 31, 6500' to 10,000'. **Los Alamos Co.:** LASA, VC(CC), BuM(SJC), CMY(SJC). **Rio Arriba Co.:** RCG(CC). **Sandoval Co.:** SPC, RLC, SSH, Guadalupe Canyon 1 mi. N of tunnels, 3 mi. up road to PP, (W, as *Eudamus tityrus* (Fabr.)).
20. *Zestusa dorus* (W. H. Edwards). April 16 to May 9, 6500' to 8500'. **Rio Arriba Co.:** 4 mi. N of El Rito (JAS). **Sandoval Co.:** SPD, BC4, BC(CC), (W).
48. *Thorybes pylades* (Scudder). May 7 to +June 30, 6500' to 10,000'. **Los Alamos Co.:** BuM(SJC). **Rio Arriba Co.:** 3 mi. E of CM, DLO, GMu. **Sandoval Co.:** BC4, SBH, 4 mi. E of Regina in SJsC, HC, (W).
50. *Thorybes mexicanus* (Herrich-Schaffer) complex. April 26 to July 31, 7800' to 10,000'. **Los Alamos Co.:** PSA, VC(CC), CMY(SJC), BuM(SJC). **Rio Arriba Co.:** LCt, 3 mi. E of CM, MCd. **Sandoval Co.:** RT, SBH, SSH, 10 mi. N of PCG, BGB, CPL, (W).
83. *Erynnis icelus* (Scudder & Burgess). May 6 to July 7, 6500' to 8400'. **Los Alamos Co.:** GCR, VC(CC). **Rio Arriba Co.:** EM(JAS). **Sandoval Co.:** BC4, SBH, PC4, (W).
- 84c. *Erynnis brizo burgessi* (Skinner). April 27(W) to July 3, 6200' to 8500'. **Los Alamos Co.:** VC(CC). **Rio Arriba Co.:** MCd, GPK(JAS). **Sandoval Co.:** SPD, CY, 5 mi. S of Jemez Springs, (W).
86. *Erynnis telemachus* Burns. April 20(W) to July 22, 6400' to 9000'. **Los Alamos Co.:** VC(CC). **Rio Arriba Co.:** CyCn, PrCr, RdO, MCd, 77, NM Hwy 112 at DLO turnoff. **Sandoval Co.:** 1 mi. up BC from BC4, PP4, DCr, PP, (W, as *Thanaos propertius* (Scudder & Burgess)).
88. *Erynnis meridianus* Bell. **Sandoval Co.:** Jemez Springs (Burns, 1964, specimen possibly mislabelled).
90. *Erynnis horatius* (Scudder & Burgess). April 22 to Aug. 26. **Rio Arriba Co.:** Arroyo de los Frijoles near A(SJC), Cañon de la Presa near Rio Chama (SJC). **Sandoval Co.:** FC(CC), (W).
- 93a. *Erynnis pacuvius pacuvius* (Lintner). April 22 to July 25, 7500' to 9200'. **Los Alamos Co.:** VC(CC), GC(CC). **Rio Arriba Co.:** GPK(SJC), EM(JAS). **Sandoval Co.:** PP, RT, 4 mi. E of Regina in SJsC, SPD, 2.5 mi. up road to PP, (W).
95. *Erynnis funeralis* (Scudder & Burgess). June 13 to Aug. 30, 6800' to 7800'. **Los Alamos Co.:** GC34(CC). **Sandoval Co.:** PC4, SJC4, FC(CC).
- 98-99. *Erynnis afranius* (Lintner) and *persius* (Scudder) complex. April 25(W) to Sept. 10(W), 5500' to 10,000'. Careful examination has shown *E. afranius* to exist in the Jemez Mountains in Sandoval and Sante Fe counties; similarly, we are confident that *E. persius* exists in Rio Arriba and Sandoval counties. **Los Alamos Co.:** PSA, VC(CC), BuM(SJC), CMY(SJC). **Rio Arriba Co.:** LCt, AS, 1 mi. S of EVD(MT). **Sandoval Co.:** 1 mi. up BC from BC4, CCR, RGP, PP4, 4.5 mi NW of Cochiti

- Pueblo, 4 mi. down BC from B, LoS, Jemez Springs, 5 mi. S of SPD, CY, CPL, (W). **Santa Fe Co.:** GC31.
102. *Pyrgus xanthus* W. H. Edwards. May 7 to June 26, 7800' to 9800'. **Los Alamos Co.:** VC(CC), CMY(SJC). **Rio Arriba Co.:** CT. **Sandoval Co.:** BGB, PC4, 1.5 mi. N of RLC on USFS Road 534, (W).
103. *Pyrgus scriptura* (Boisd.). July 20, 7500'. **Sandoval Co.:** "5 mi. E of La Jara" (AMNH coll.). There are several places named La Jara in the Jemez Mountains.
104. *Pyrgus communis* (Grote) and *albescens* Plotz complex.; April 20 to Oct. 10, 5500' to 10,000'. **Los Alamos Co.:** Los Alamos (CC), LAR(CC), CMY(SJC). **Rio Arriba Co.:** PrCr, 77, DM, MC. **Sandoval Co.:** 2 mi. N of B, FC, SSH, CCr, Gilman, (W, as *Pyrgus tessellata* (Scudder)). **Santa Fe Co.:** La Bajada (CC).
109. *Heliopetis ericetorum* (Boisd.). July 1, 6500'. **Rio Arriba Co.:** MC.
115. *Pholisora catullus* (Fabr.). May 19 to Aug. 19, 5600' to 7400'. **Sandoval Co.:** Rio Guadalupe at Rio de Las Vacas, (W). **Santa Fe Co.:** SFC.
- 118a. *Hesperopsis alpheus alpheus* (W. H. Edwards); May 19 to Aug. 7, 5400' to 6500'. **Rio Arriba Co.:** NMJ1(JAS). **Sandoval Co.:** SYD, HGS.
121. *Piruna pirus* (W. H. Edwards). June 9 to July 30, 7000' to 10,000'. **Los Alamos Co.:** GC34. **Rio Arriba Co.:** 1 mi. S of LCt. **Sandoval Co.:** DCr, RLC, E side of VG, PC4, (W).
145. *Oarisma garita* (Reakirt). June 9 to July 31, 7000' to 9800'. **Los Alamos Co.:** GC34, 1 mi. N of GP, VC(CC), CMY(SJC). **Rio Arriba Co.:** VLG, RtC, 1.5 mi. N of DC, MCd, LJt. **Sandoval Co.:** RGp7, CCG, east side of VG, 6 mi. W of SPD, SSH, 17 mi. W of BNMJ, PC4, (W).
146. *Oarisma edwardsii* (Barnes). May 20 to Aug. 2, 6500' to 7200'. **Los Alamos Co.:** 1 mi. N of GP, BuM(SJC). **Rio Arriba Co.:** 4 mi. NE of Gallina (SJC). **Sandoval Co.:** FC(CC), (W). **Santa Fe Co.:** GC31.
152. *Polites rhesus* (W. H. Edwards); May 20 to May 28, 6400' to 8000'. **Rio Arriba Co.:** AG, RdO. **Sandoval Co.:** 1 mi. E of SMC, CT, (W).
155. *Stinga morrisoni* (W. H. Edwards). April 21 to June 30(W), 8000' to 10,000'. **Los Alamos Co.:** Los Alamos (CC), VC(CC), BuM(SJC). **Rio Arriba Co.:** CP, PrCr. **Sandoval Co.:** PP, BC(CC), (W).
- 156a. *Hesperia uncas uncas* W. H. Edwards. June 2 to Sept. 5, 5600' to 9000'. **Los Alamos Co.:** LAR(SJC). **Rio Arriba Co.:** 10 mi. S of AD, 3 mi. S of AD, E4, 1 mi. SE of A, LoM, MC. **Sandoval Co.:** HGS, Gilman, 20 mi. S of Cuba on NM Hwy 44, (W). **Santa Fe Co.:** 800, T31, LMt.
157. *Hesperia juba* (Scudder). May 19(W) to Aug. 31, 6500' to 9100'. **Rio Arriba Co.:** AD, 77. **Sandoval Co.:** PP4, LoS, 2 mi. NE of PCG, BPL, summit E of TS, (W).
- 158l. *Hesperia comma colorado* (Scudder). July 31 to Sept. 20(W), 7000' to 9000'. **Los Alamos Co.:** 4 mi. W of Los Alamos (SJC). **Rio Arriba Co.:** AS, 4 mi. W of DLO, DLO, 1 mi. E of NMJ1, 77, 2 mi. N of Gallina on USFS Road 8, Br. **Sandoval Co.:** BPL, 1 mi. S of Regina, SPC(RES), (W).
159. *Hesperia woodgatei* (Williams). Aug. 30 to Oct. 10. 5900' to 8400'. **Los Alamos Co.:** "North part of Los Alamos Co." (CC). **Rio Arriba Co.:** CPL (SJC). **Sandoval Co.:** 13 mi. NW of Cochiti Pueblo near BS, SPD, PCn, CoCn, (W, type series).
- 163a. *Hesperia pahaska pahaska* (Leussler). May 28 to Sept. 15, 6000' to 10,000'. **Los Alamos Co.:** GC34. **Rio Arriba Co.:** AD, CP, E4. **Sandoval Co.:** PP, 4 mi. W of CCG, SM, CY, SPD, NM Hwy 44 at road to PP, NMJ2. **Santa Fe Co.:** TP, T31.
166. *Hesperia viridis* (W. H. Edwards). May 5 to Sept. 10, 5800' to 9000'. **Los Alamos Co.:** BuM(SJC & DH). **Rio Arriba Co.:** 2 mi. S of A, AD, LS, 2 mi. S of DM. **Sandoval Co.:** RGp, LoS, 4 mi. S of Jemez Springs, DCr, SCC6, PP, SM, 1 mi. N of Jemez Pueblo, NM Hwy 44 at road to PP. **Santa Fe Co.:** GC31, TP, LMt.
173. *Hesperia nevada* (Scudder). June 17 to July 28, 8300' to 9900'. **Los Alamos Co.:** CMY(SJC). **Rio Arriba Co.:** EPL(JAS). **Sandoval Co.:** LJC(JAS); 5 mi. E of Regina in SJsC.
- 175a. *Polites sabuleti sabuleti* (Boisd.). June 6(W) and Aug. 19, 5600'. **Sandoval Co.:** (W). **Santa Fe Co.:** SFC.
177. *Polites draco* (W. H. Edwards). May 22 to July 16, 7800' to 11,500'. **Los Alamos**

- Co.** PSA(SJC), CMy(SJC). **Rio Arriba Co.:** CR, CM, CSc, MCr. **Sandoval Co.:** SBH, RLC, 2 mi. N of SSH, PC4, BGB, road up CPL, 10 mi. E of Cuba on NM Hwy 126.
179. *Polites themistocles* (Latreille). June 10 to July 31, 7700' to 10,100'. **Los Alamos Co.:** PSA, Los Alamos (CC), VC(CC), CMy(SJC). **Rio Arriba Co.:** CR, CSc, CSt, MCr. **Sandoval Co.:** RGp7, RLC, 2 mi. N of SSH, 17 mi. W of JBNM on NM Hwy 4, PC4, HC, NMJ2, (W, as *Pamphila cernes* (Boisd. & Leconte)).
- 187a. *Atalopedes campestris campestris* (Boisd.). July 31. **Sandoval Co.:** SSH (AMNH coll.). Probable in the Jemez, and there is no reason to question this record; if anything is curious, it is that this is the only record.
- 192c. *Ochlodes sylvanoides napa* (Boisd.). Aug. 12 to Sept. 1, 6800' to 9000'. **Rio Arriba Co.:** AS, 2 mi. N of Gallina on USFS Road 8, CSt, Br. **Sandoval Co.:** 1 mi. N of Regina.
194. *Paratrytone snowi* (W. H. Edwards). July 21 to Aug. 29, 7200' to 8000'. **Los Alamos Co.:** 4 mi. W of Los Alamos (SJC). **Sandoval Co.:** PC4, 3 mi. N of PCG, above SJC4 in Section 33.
199. *Poanes taxiles* (W. H. Edwards). June 16 to Aug. 13, 6200' to 10,000'. **Los Alamos Co.:** LASA, VC(CC), Los Alamos (CC), BuM(SJC). **Rio Arriba Co.:** DC, MC, 1 mi. S of EVD(MT). **Sandoval Co.:** 4 mi. down BC from B, PC4, Jemez Springs, (W).
- 217b. *Euphyes vestris kiowah* (Reakirt). May 24 to Aug. 22, 6000' to 8200'. **Los Alamos Co.:** GCR, VC(CC), BuM(SJC). **Rio Arriba Co.:** 10 mi. S of AD, PrCr, 1 mi. S of LCt, AS, GMu, 2 mi. below ST, near MC, 2 mi. S of DM. **Sandoval Co.:** 4 mi. down BC from B, 3 mi. N of PCG, RGp6, DCr, 2 mi. W of SPD, PC4, SM, (W). **Santa Fe Co.:** GC31.
- 219b. *Atrytonopsis hianna turneri* Freeman. May 30 to June 11, 7000' to 7600'. **Los Alamos Co.:** GC34, 1 mi. N of GP, BuM(SJC). **Sandoval Co.:** FC(CC).
222. *Atrytonopsis vierecki* (Skinner). May 13 to June 26(W), 5800' to 7200'. **Los Alamos Co.:** GC34, RoC, BuM(SJC). **Rio Arriba Co.:** AD. **Sandoval Co.:** SCC6, RGp, 2 mi. up road to PP, NM Hwy 44 at road to PP, (W). **Santa Fe Co.:** TP.
225. *Atrytonopsis python* (W. H. Edwards). May 15 to June 9(W), 5800' to 9200'. **Los Alamos Co.:** RoC. **Rio Arriba Co.:** 6 mi. E of CM, AD. **Sandoval Co.:** RGp, (W, as *Pamphila python* and as *Pamphila margarita* Skinner (the type series of *margarita*)).
228. *Amblyscirtes simius* W. H. Edwards. June 18 and July 30, 6300' to 6500'. **Los Alamos Co.:** GC34(CC). **Rio Arriba Co.:** E4. **Sandoval Co.:** 20 mi. S of Cuba on NM Hwy 44.
230. *Amblyscirtes cassus* W. H. Edwards. May 30(W) and June 17 to July 15, 7200' to 8000'. **Los Alamos Co.:** 1 mi. N of GP. **Rio Arriba Co.:** 1 mi. S of LCt. **Sandoval Co.:** PC4, (W).
231. *Amblyscirtes aenus* W. H. Edwards. May 17 to June 29, 6500' to 9200'. **Rio Arriba Co.:** 6 mi. E of CM. **Santa Fe Co.:** GC31. **Sandoval Co.:** FC(CC), (W).
233. *Amblyscirtes osleri* (Skinner). May 15 to July 27, 5800' to 7600'. **Los Alamos Co.:** 1 mi. N of GP, Los Alamos (CC). **Rio Arriba Co.:** 1 mi. S of EVD(MT). **Sandoval Co.:** RGp, SCC6, Gilman, BC(CC), FC(CC). **Santa Fe Co.:** GC31.
244. *Amblyscirtes eos* (W. H. Edwards). June 20 and July 30, 5200' to 5600'. **Sandoval Co.:** Gilman, SYD, Jemez Springs (JW, specimen in AMNH; this species is not on Williams' 1914 list).
245. *Amblyscirtes vialis* (W. H. Edwards). May 13(W) to June 23, 7800' to 9000'. **Los Alamos Co.:** VC(CC). **Rio Arriba Co.:** 4 mi. NE of Gallina (SJC). **Sandoval Co.:** SBH, RLC, PC4, 103, (W).
249. *Amblyscirtes phylace* (W. H. Edwards). May 19 to July 4, 6400' to 8000'. **Los Alamos Co.:** VC(CC), BuM(SJC). **Rio Arriba Co.:** LCt, 2 mi. E of PC, MC. **Sandoval Co.:** 3 mi. E of Regina in SJsC, (W).

MEGATHYMIDAE

- 286a. *Megathymus coloradensis navajo* Skinner. April 12 to June 4(W), 6400' to 8000'. **Los Alamos Co.:** Los Alamos Canyon (CC). **Rio Arriba Co.:** RdO. **Sandoval Co.:** PP4, (W). **Santa Fe Co.:** SFD, GC31(SJC).

- 289a. *Megathymus streckeri streckeri* (Skinner). June 2-14, 6450' to 7000'. **Rio Arriba Co.:** 2 mi. E of PC, Rio Chama below DM(SJC).

PAPILIONIDAE

- 303a. *Papilio polyxenes asterius* Stoll. June 17 to Sept. 13(W), 9800' to 8900'. **Los Alamos Co.:** Los Alamos (CC), PSA(SJC), BuM(SJC). **Sandoval Co.:** SPD, 3 mi. up CPL spur road (USFS Road 270), near Clear Creek Campground (GS), 1 mi. S of Cochiti Dam (JAS), (W, as *Papilio polyxenes curvifascia* Skinner).
308. *Papilio bairdii* W. H. Edwards. May 19 to Aug. 28, 7600' to 10,000'. **Los Alamos Co.:** 1 mi. N of GP, Los Alamos (CC). **Rio Arriba Co.:** CP, CyCn, 3 mi. E of CM, CPL, 3 mi. S of A, PCr. **Sandoval Co.:** SPD, PP, FC(CC), (W). **Santa Fe Co.:** T(CC).
- 311a. *Papilio zelicaon zelicaon* Lucas. May 1(W) to July 9, 6200' to 10,000'. **Los Alamos Co.:** PSA(SJC). **Rio Arriba Co.:** 3 mi. E of CM, EM. **Sandoval Co.:** SPD, PP, RT, SPC, 4 mi. down BC from B, LJC, (W).
- 311b. *Papilio zelicaon* form "nitra" W. H. Edwards. May 2 to June 9, 7700' to 10,000'. **Rio Arriba Co.:** 3 mi. E of CM, CPL, CP, LS, 1 mi. N of GPk. **Sandoval Co.:** SPD.
- 321a. *Pterourus rutulus rutulus* Lucas. May 13(W) to Aug. 20, 6600' to 9800'. **Los Alamos Co.:** Los Alamos (CC), GC34(CC), CMy(SJC), BuM(SJC), VC(SJC). **Rio Arriba Co.:** RdO near SL, MG. **Sandoval Co.:** SCC6, SPC, PC4, HC, (W).
322. *Pterourus multicaudatus* (Kirby). May 6 to Sept. 19, 6200' to 9800'. **Los Alamos Co.:** Los Alamos (CC), WR(CC), VC(CC), BuM(SJC). **Rio Arriba Co.:** Rio Chama below DM(SJC). **Sandoval Co.:** 2 mi. up road to PP, SCC6, 4 mi. S of Jemez Springs, (W, as *Papilio daunus* Boisd.). **Santa Fe Co.:** Bk(CC), T(CC).
323. *Pterourus eurymedon* (Lucas). May 26(W) to July 7, 7200' to 10,000'. **Los Alamos Co.:** 1 mi. N of GP, Los Alamos (CC), PSA(SJC). **Rio Arriba Co.:** AS, PCr, 1.5 mi. N of DC, DLO, GPk(SJC). **Sandoval Co.:** USFS Road 652 near DCr, PP, 3 mi. N of PCG, (W).

PIERIDAE

- 329a. *Neophasia menapia menapia* (C. & R. Felder). July 17(W) to Aug. 22, 6600' to 9000'. **Los Alamos Co.:** VC(CC), GC34(CC). **Rio Arriba Co.:** AS. **Sandoval Co.:** 3 mi. N of PCG, SPD, SJC9, PP, (W).
- 333c. *Pontia sisymbrii elivata* (Barnes & Benj.). April 13 to June 4, 6500' to 9200'. **Los Alamos Co.:** Los Alamos (CC). **Rio Arriba Co.:** 4 mi. NE of Gallina, 4 mi. N of El Rito. **Sandoval Co.:** SPD, BC4, PP, PC4, (W). **Santa Fe Co.:** GC31(SJC).
334. *Pontia protodice* (Boisd. & Leconte). April 15(W) to Sept. 16, 5500' to 9000'. **Los Alamos Co.:** VC(CC), Los Alamos (CC), BuM(SJC). **Rio Arriba Co.:** J, LS, GMu, MC, EVD. **Sandoval Co.:** 1 mi. up BC from BC4, FC, SBH, SSH, 6 mi. NW of SPD, CCr, road up CPL, 2.5 mi. up road to PP (W, as *Pieris occidentalis* Reakirt and *Pieris occidentalis calyce* W. H. Edwards). **Santa Fe Co.:** Bk(CC).
- 336h. *Pieris napi mcdunnoughi* Remington. May 10(W) to July 9 and July 31 to Aug. 26, 6200' to 9300'. **Los Alamos Co.:** LAR, VC(CC). **Rio Arriba Co.:** SPP(SJC). **Sandoval Co.:** SPC, CCG, 3 mi. N of PCG, 10 mi. N of PCG, 4 mi. S of B in BC, RCP, 5 mi. E of Regina in SjsC, 1.5 mi. N of RLC on USFS Road 534, SS, (W, as *Pieris napi pallida* Scudder).
338. *Pieris rapae* (L.). June 11 to Sept. 16, 5700' to 7200'. **Los Alamos Co.:** Los Alamos, VC(SJC). **Rio Arriba Co.:** 1 mi. SE of A. **Sandoval Co.:** Jemez Springs, Cuba.
- 343c. *Euchloe hyantis lotta* Beut. May 12 to June 4, 7000' to 9200'. **Rio Arriba Co.:** EVD, 3 mi. W of Gallina (JAS). **Sandoval Co.:** PP.
- 348b. *Anthocharis sara inghami* Gunder. April 10(W) to June 11, 5500' to 8500'. **Los Alamos Co.:** VC(CC), GC34(CC). **Rio Arriba Co.:** PCr, 3 mi. W of Gallina (JAS). **Sandoval Co.:** BC4, PC4, FC, 4 mi. E of Regina in SjcC, CCr, LJC, (W, as *Anthocharis sara reakirti* (W. H. Edwards)). **Santa Fe Co.:** SFD.

- 351c. *Colias philodice eriphyle* W. H. Edwards. May 30 to +July 15, 6200' to 9200'. **Los Alamos Co.:** VC(CC), CMY(SJC). **Rio Arriba Co.:** 1 mi. S of LCt, 6 mi. E of CM, GPK. **Sandoval Co.:** 4 mi. below B in BC, 2 mi. N of SSH, PC4, SCC6.
352. *Colias eurytheme* Boisd. May 6 to Oct. 27, 5500' to 9000'. **Los Alamos Co.:** VC(CC), GC34(CC), WR(CC), BuM(SJC), CMY(SJC). **Rio Arriba Co.:** DLO, 2 mi. S of DM, 1 mi. S of EVD(MT). **Sandoval Co.:** 1 mi. N of BC4, FC, 2 mi. N of SSH, CCR, 2.5 mi. up road to PP, 1 mi. N of PCG in PCn, (W, as *C. e. ariadne* W. H. Edwards, *C. e. keewaydin* W. H. Edwards, and *C. e. pallida* Cockerell).
- 355a. *Colias alexandra alexandra* W. H. Edwards. June 3 to July 31, 7200' to 9800'. **Los Alamos Co.:** GC34, VC(CC), LASA. **Rio Arriba Co.:** LCt, CPL, TC, GLT, T18, R. **Sandoval Co.:** SPD, DCR, RLC, RT.
- 368a. *Zerene cesonia cesonia* (Stoll). May 15 to Aug. 6, 5200' to 8300'. **Rio Arriba Co.:** MC, Rio Chama below DM(SJC). **Sandoval Co.:** RGp, SYD, BC(CC), La Jara Creek NE of Cuba (JAS & GS), (W).
380. *Eurema mexicanum* (Boisd.). May 7 and May 13, 5500' to 6000'. **Sandoval Co.:** CCR, FC.
383. *Eurema lisa* (Boisd. & Leconte). **Sandoval Co.:** Jemez Springs (JW(?), det. CDF; specimen in the Carnegie Museum).
388. *Eurema nicippe* (Cramer). May 8 to +July 27, 6000' to 8800'. **Los Alamos Co.:** VC(CC), Los Alamos (CC). **Rio Arriba Co.:** Cerro Blanca N of Gallina (GS). **Sandoval Co.:** 2 mi. N of B, FC, 2 mi. N of SSH, (W).
389. *Nathalis iole* Boisd. May 6(W) to Oct. 13, 6500' to 9800'. **Los Alamos Co.:** VC(CC), Los Alamos (CC), PSA(SJC), BuM(SJC), CMY(SJC). **Rio Arriba Co.:** MC, 1 mi. S of EVD(MT), SPP(SJC), 6 mi. E of Gallina (GS). **Sandoval Co.:** SSH, FC(CC), PCG(CC), (W).

LYCAENIDAE

- 392d. *Tharsalea arota schellbachi* Tilden. July 3(W) to Aug. 29, 6200' to 9000'. **Los Alamos Co.:** Los Alamos (CC), LAR(SJC). **Rio Arriba Co.:** PrCr, CT. **Sandoval Co.:** 4 mi. down BC from B, PC4, TS, SJC4, PP, (W, as *Chrysophanus arota virginensis* W. H. Edwards).
- 401a. *Chalceria heteronea heteronea* (Boisd.). July 31 to Aug. 12, 7600' to 8000'. **Rio Arriba Co.:** AS. **Sandoval Co.:** 1 mi. N of Regina, BPL.
404. *Epidemia helloides* (Boisd.) complex. May 28 to Sept. 11, 6500' to 9800'. **Los Alamos Co.:** CMY(SJC), LASA(SJC). **Rio Arriba Co.:** 3 mi. N of CR, 4 mi. W of DLO, RdO 2 mi. above SL, 1 mi. E of NM Hwy 595 on NM Hwy 96, AS, 77, 1 mi. below ST towards MC, GLT. **Sandoval Co.:** PP4, SPC, 3 mi. N of PCG, CSc, RGp7, BD, PC4, BPL.
- 408a. *Hypaurotis crysalus crysalus* (W. H. Edwards). July 8 to Sept. 17, 6200' to 9800'. **Los Alamos Co.:** LAR, PSA(SJC). **Rio Arriba Co.:** AS, 1 mi. E of R. **Sandoval Co.:** 4 mi. down BC from B, 3 mi. N of PCG, RGp6, TS, (W).
- 412b. *Atlides halesus estesi* Clench. July 13–21. **Los Alamos Co.:** WR(CC).
- 417d. *Harkenclenus titus immaculosus* (Comstock). July 21 to Aug. 6, 7800'. **Sandoval Co.:** PC4, CCG(CDF).
- 418b. *Satyrium behrii crossi* (Field). May 11 to July 11(W), 6200' to 9000'. **Los Alamos Co.:** BuM(SJC & DH). **Rio Arriba Co.:** LS, MC, near A(SJC), GPK(SJC). **Sandoval Co.:** 2 mi. up road to PP, Jemez Springs, PP, RGp6, (W). **Santa Fe Co.:** GC31.
422. *Satyrium sylvinum itys* (W. H. Edwards). June 9 to Aug. 12, 5600' to 8000'. **Rio Arriba Co.:** AS, 2 mi. down Rio Chama from A. **Sandoval Co.:** Gilman, BPL, (W).
- 424c. *Satyrium calanus godarti* (Field). June 25(W) to Aug. 26, 6200' to 8900'. **Los Alamos Co.:** LAR, BuM(SJC). **Rio Arriba Co.:** AS, 1 mi. S of EVD(MT). **Sandoval Co.:** 4 mi. down BC from B, SPD, 6 mi. NW of SPD, TS, PC4, RGp6, (W).
- 430a. *Satyrium saepium saepium* (Boisd.). **Los Alamos Co.:** GC34(CC, probable mis-determination or mislabelling).
433. *Ministrymon leda* (W. H. Edwards). June 21, 6500'. **Rio Arriba Co.:** Rio Chama below DM(SJC).

- 446a. *Callophrys apama apama* (W. H. Edwards). May 14(W) to Aug. 27, 6500' to 9200'. **Los Alamos Co.:** GC34, BuM(SJC). **Rio Arriba Co.:** RdO at SL, NMJ1, GMu, 77. **Sandoval Co.:** PP, 4 mi. S of Jemez Springs, Rio Guadalupe 1 mi. N of tunnels, 6 mi. NW of SPD, CY, 3 mi. NE of PCG, (W).
452. *Mitoura spinetorum* (Hew.). April 20(W) to July 16, 6500' to 9500'. **Los Alamos Co.:** VC(CC), GC34(CC), Los Alamos (CC), CMY(SJC). **Rio Arriba Co.:** 3 mi. N of CR, 1 mi. down Mine Canyon from ST. **Sandoval Co.:** 2.5 mi. up road to PP, 2 mi. N of Jemez Springs, 3 mi. NE of PCG, LJC, (W).
- 458a. *Mitoura siva siva* (W. H. Edwards). May 2 to Aug. 20, 5500' to 8000'. **Los Alamos Co.:** WR, Los Alamos (CC). **Rio Arriba Co.:** E4, GMu, MC, MCd, 1 mi. S of EVD(MT). **Sandoval Co.:** CCr, FC, 2.5 mi. up road to PP, SJC9, 6 mi. NW of Cochiti Pueblo, RGp, (W, as *Thecla castalis* W. H. Edwards).
463. *Sandia mcfarlandi* Ehrlich & Clench. June 7, 7000'. **Sandoval Co.:** PrCn. Two *S. mcfarlandi* were taken by RH in 1980 during a Mountain Club outing. The foodplant, *Nolina texana*, is not found many places in the Jemez. Repeated whacking of the foodplant around Jemez Springs in 1983–1985 failed to flush any additional adults.
- 464d. *Incisalia augustinus iroides* (Boisd.). May 12–14(W), also May 20, 8000'. **Sandoval Co.:** 1 mi. N of FL(SJC), (W, as *augustus* (Kirby)).
465. *Incisalia fotis* (Strecker). April 22, 1916. **Sandoval Co.:** Jemez Springs (JW, specimen in Allyn Museum of Entomology). This species was recorded by Woodgate but has never been taken again in the Jemez.
- 466b. *Incisalia polia obscura* Ferris & Fisher. April 16 to June 19, 8000' to 10,000'. **Los Alamos Co.:** road to CMY at 8000'(SJC & DH). **Rio Arriba Co.:** LMP, 1 mi. N of CR. **Sandoval Co.:** FL(RAB), FL(SJC), CCG(CDF), Jemez Springs (JW, specimen in Carnegie Museum, but not on Williams' 1914 list).
- 471a. *Incisalia eryphon eryphon* (Boisd.). April 13 to July 3, 6500' to 8500'. **Los Alamos Co.:** GC34, VC(CC), CMY(SJC). **Rio Arriba Co.:** LCt, RCG, RdO 1 mi. above SL. **Sandoval Co.:** RGp6, 4 mi. E of Regina in SJsC, PP4, (W).
- 478c. *Strymon melinus franki* Field. April 23 to Sept. 17, 5500' to 9000'. **Los Alamos Co.:** GC34, RC(CC), BuM(SJC), VC(SJC). **Rio Arriba Co.:** E4, LS, 1 mi. S of EVD(MT). **Sandoval Co.:** 4.5 mi. NW of Cochiti Pueblo, TR, RGp6, CY, NM Hwy 44 at road to PP, (W).
495. *Brephidium exile* (Boisd.). June 16 to Nov. 9, 5200' to 6500'. **Los Alamos Co.:** Los Alamos (CC). **Rio Arriba Co.:** 1 mi. S of EVD(MT). **Sandoval Co.:** HGP, Jemez Springs, SYD.
- 497b. *Leptotes cassius striata* (W. H. Edwards). Aug. 1, 6800'. **Rio Arriba Co.:** 1 mi. S of EVD (MT, very surprising record, possibly *marina* (Reakirt) aberration). RH has seen the specimen, and is uncertain as to its affinity; the data are certain.
498. *Leptotes marina* (Reakirt). April 20(W) to Oct. 7, 5600' to 8600'. **Los Alamos Co.:** GC34(CC), BuM(SJC), VC(SJC). **Rio Arriba Co.:** PrCr, LCt, Jct. of US Hwy 285 and NM Hwy 96 (JAS). **Sandoval Co.:** LoS, 3 mi. N of PCG, RLC, HC, SPD, Gilman, (W). **Santa Fe Co.:** SFC, CG31.
- 502a. *Hemiargus isola alce* (W. H. Edwards). April 7 to Oct. 14(W), 6000' to 9800'. **Los Alamos Co.:** Los Alamos (CC), GC34(CC), BuM(SJC), VC(SJC), CMY(SJC). **Rio Arriba Co.:** LCt, 77, 1 mi. S of EVD(MT). **Sandoval Co.:** PP, 2 mi. N of SSH, 4 mi. E of Regina in SJsC, FC(SJC), (W).
504. *Everes amyntula* (Boisd.). April 7 to Aug. 26, 6000' to 9800'. **Los Alamos Co.:** Los Alamos (CC), BuM(SJC), PSA(SJC), CMY(SJC). **Rio Arriba Co.:** MC, 1 mi. S of EVD(MT). **Sandoval Co.:** 1 mi. N of BC4 in BC, SBH, CY, BC4, road up CPL, SMC, PP4, (W). **Santa Fe Co.:** GC31.
- 505h. *Celastrina argiolus cinerea* (W. H. Edwards). May 6 to Sept. 6, 6500' to 9600'. **Los Alamos Co.:** BuM(SJC). **Rio Arriba Co.:** CT, EM(JAS & GS). **Sandoval Co.:** B, BC4, PP4, 4 mi. E of Regina in SJsC, PC4, (W, as *Lycaena ladon cinerea* W. H. Edwards and *Lycaena ladon arizonensis* W. H. Edwards).
- 508a. *Euphilotes battoides centralis* (Barnes & McD.). July 11 to Aug. 18, 6000' to 8400'. **Rio Arriba Co.:** 1 mi. S of EVD(MT). **Sandoval Co.:** 1.5 mi. below crest near TS,

- 3.5 mi. up road to PP, 20 mi. S of Cuba on NM Hwy 44, FC(OS & SLE), Jemez Springs (JW(?), Carnegie Museum coll.). **Santa Fe Co.:** GC31.
- 509a. *Euphilotes enoptes ancilla* (Barnes & McD.). No date, 8000'. **Sandoval Co.:** Jemez Springs (AMNH, probable misdetermination).
- 511a. *Euphilotes rita rita* (Barnes & McD.). July 30 to Sept. 17, 5500' to 6700'. **Sandoval Co.:** 4.5 mi. NW of Cochiti Pueblo, TR, HGS, NM Hwy 197 8 mi. S of junction with NM Hwy 44 (OS & SLE), FC(SJC).
- 511c. *Euphilotes spaldingi* (Barnes & McD.). July 12 to Aug. 3, 8000'. **Rio Arriba Co.:** AS, LCt (hundreds), 1 mi. S of EVD(MT). The swarming of this usually rare butterfly at LCt has no precedent in our experience.
- 513d. *Glaucopsyche piasus daunia* (W. H. Edwards). No date or elevation. **Sandoval Co.:** Jemez Pueblo (Carnegie Museum coll.; this may be a Woodgate specimen; if so, it would be a second species recorded by Woodgate, but not observed since then.).
- 514f. *Glaucopsyche lygdamus oro* (Scudder). May 7 to June 24, 6000' to 10,000'. **Los Alamos Co.:** Los Alamos (CC), CMY(SJC), BuM(SJC). **Rio Arriba Co.:** 1 mi. N of CR, CT, CyCn, Rio Chama below DM(SJC). **Sandoval Co.:** 1 mi. up BC from BC4, SPC, 4 mi. E of Regina in SJsC, USFS Road 534 1.5 mi. N of RLC, 2 mi. N of NM Hwy 44 on NM Hwy 96 (W, as *Lycaena behri* W. H. Edwards; see Brown 1970 for explanation).
- 517b. *Lycaeides melissa melissa* (W. H. Edwards). May 13(W) to Aug. 29, 5600' to 8700'. **Los Alamos Co.:** GC34(CC), VC(CC), BuM(SJC), CMY(SJC). **Rio Arriba Co.:** AD, 77, 2 mi. N of Gallina, 1 mi. down Mine Canyon from ST, AS, 1 mi. S of EVD(MT), Rio Chama below DM(SJC). **Sandoval Co.:** 2 mi. up road to PP, 2 mi. N of Jemez Springs, PP, RGp, FC(CC), BC(CC), NM Hwy 197 8 mi. SW of junction with NM Hwy 44 (OS & SLE), (W).
- 518b. *Plebejus saepiolus whitmeri* F. M. Brown. June 14 to July 26, 7800' to 11,000'. **Los Alamos Co.:** PSA, VC(CC), Los Alamos (CC), CMY(SJC). **Rio Arriba Co.:** CSc, CM. **Sandoval Co.:** BD, E side of VG, 2 mi. N of SSH, LCC, 17 mi. W of BNMJ on NM Hwy 4, BGB, PC4.
- 520b. *Icaricia icarioides lycea* (W. H. Edwards). May 27 to July 28, 7000' to 9800'. **Los Alamos Co.:** LASA(SJC), BuM(SJC), CMY(SJC). **Rio Arriba Co.:** 4 mi. W of Regina in SJsC, 13 mi. W of Española on USFS Road 144, AS, 2 mi. E of PC, CT, DC, GPK, ST, GT. **Sandoval Co.:** PP4, Señorito Canyon (JAS & GS), (W, as *Lycaena fulla* W. H. Edwards).
- 522b. *Icaricia acmon texana* Goodpasture. April 12 to Sept. 17, 5500' to 8000'. **Los Alamos Co.:** VC(CC), GC34(CC), BuM(SJC), CMY(SJC). **Rio Arriba Co.:** LCt, 1 mi. S of EVD(MT), Rio Chama below DM(SJC). **Sandoval Co.:** FC, TR, 4.5 mi. NW of Cochiti Pueblo, HGS, Jemez Springs, PP4, (W). **Santa Fe Co.:** SFD.
- 526e. *Agriades rusticus rusticus* (W. H. Edwards). May 28 to July 26, 7400' to 11,500'. **Los Alamos Co.:** GC34, LASA, VC(CC), CMY(SJC). **Rio Arriba Co.:** CM, RdO 2 mi. W of SL, 1.5 mi. N of DC, CSt, T18. **Sandoval Co.:** SBH, RLC, 2 mi. N of SSH, 1.5 mi. S of NM Hwy 4 near SPD, PP, 4 mi. E of Regina in SJsC, PC4, (W, as *Lycaena podarce* C. & R. Felder).

RIODINIDAE

- 544e. *Apodemia mormo mormo* (C. & R. Felder). Aug. 6 to Sept. 9, 6000' to 7500'. **Rio Arriba Co.:** 1 mi. E of NMJ1, Rio Chama below DM(SJC). **Sandoval Co.:** HGS, BPL, Regina, 8 mi. NW of San Ysidro (OS & SLE, as *cythera* (W. H. Edwards)).
550. *Apodemia nais* (W. H. Edwards). June 17 to Aug. 25, 6200' to 9000'. **Los Alamos Co.:** VC(CC), GC34(CC), BuM(SJC). **Rio Arriba Co.:** GMu, vic. GPK(SJC). **Sandoval Co.:** BC 4 mi. below B, 6 mi. NW of SPD, TS, BC4, PP, (W).

LIBYTHEIDAE

- 552a. *Libytheana bachmanii larvata* (Strecker). Aug. 26, 5400'. **Sandoval Co.:** 3.5 mi. NW of Cochiti Pueblo.

NYMPHALIDAE

562. *Euptoieta claudia* (Cramer). April 29 to Sept. 19, 6500' to 9800'. **Los Alamos Co.:** LAR(SJC), PSA(SJC), BuM(SJC), VC(SJC). **Rio Arriba Co.:** MC, 1 mi. S of EVD(MT), SPP(SJC), EM(SJC). **Sandoval Co.:** 6 mi. W of San Ysidro on NM Hwy 44 (MT), FC(SJC), Señorito 5 mi. SE of Cuba (SJC), LJC(SJC), (W).
- 565e. *Speyeria cybele carpenterii* (W. H. Edwards). July 9 to Aug. 26, 6500' to 8900'. **Los Alamos Co.:** LAR. **Sandoval Co.:** 3 mi. N of PCG, 4 mi. down BC from B, SPD, 1 mi. above SJC4, Jemez Springs (W. H. Howe), LCC(W. H. Howe).
- 568g. *Speyeria aphrodite ethne* (Heming). July 31, 8500'. **Los Alamos Co.:** LAR(SJC). This and the next record are surprising but almost certainly valid.
569. *Speyeria edwardsii* (Reakirt). June 13 to June 17, 8200'. **Rio Arriba Co.:** BrCn (leg. L. H. Martinez; ex. UNM coll.; data certified by C. Crawford, Univ. New Mexico Biology Dept.), vic. GPk(SJC).
- 574e. *Speyeria atlantis nikias* (Ehrmann). June 9 to Sept. 20(W), 6200' to 10,500'. **Los Alamos Co.:** 1 mi. W of GC34, LAR(SJC), PSA(SJC), VC(SJC). **Rio Arriba Co.:** 1 mi. S of EPL, 1 mi. N of CM, 1 mi. S of LCt, AS, CSt, 1.5 mi. N of DC, EM. **Sandoval Co.:** 4 mi. down BC from B, SPD, 10 mi. N of PCG, 1 mi. N of RoC, TS, .5 mi. N of NM Hwy 126 on USFS Road 144, 1 mi. above SJC4, (W, as *Argynnis bremnerii* W. H. Edwards, the type series of *Argynnis nikias* Ehrmann).
- 576i. *Speyeria mormonia eurynome* (W. H. Edwards). July 7 to +Aug. 1, 8000' to 10,100'. **Los Alamos Co.:** PSA. **Rio Arriba Co.:** 1 mi. S of EPL, CR, VLG, R. **Sandoval Co.:** E side of VG, 1.5 mi. SW of NM Hwy 4 on road to SPD, 2 mi. N of SSH, TCC, 1 mi. N of RoC, CCG, BrC.
- 579d. *Clossiana selene tollandensis* (Barnes & Benj.). July 4 to July 18, 8200' to 8500'. **Sandoval Co.:** BD, TCC, Cebolla Creek (AMNH coll.).
- 589f. *Clossiana titania helena* (W. H. Edwards). July 15 to Aug. 31, 8500' to 10,500'. **Los Alamos Co.:** PSR, PSA(SJC). **Rio Arriba Co.:** 1 mi. N of CM, CR, CSc, NRP. **Sandoval Co.:** TCC, RoC, 3-5 mi. NE of SS(SJC).
592. *Poladryas minuta arachne* (W. H. Edwards). May 20 to Sept. 8, 7000' to 9000'. **Rio Arriba Co.:** DLO, DC, 1 mi. S of EVD(MT), Rio Chama below DM(SJC). **Sandoval Co.:** PC4, 10 mi. N of Jemez Springs (AMNH coll.), FL(SJC), (W).
596. *Thessalia fulvia* (W. H. Edwards). May 25 to Sept. 16, 5300' to 8000'. **Rio Arriba Co.:** 2 mi. E of PC, AD, LS, NMJ1, 77, DM, GLT, 1 mi. S of EVD(MT). **Sandoval Co.:** 5 mi. S of SPD, PP4, BPL, HGS, NM Hwy 44 at road to PP, NMJ2, 8 mi. S of Cuba on NM Hwy 197, (W). **Santa Fe Co.:** TP, Bk.
598. *Chlosyne lacinia crocale* (W. H. Edwards). June 13 to +July 15, 7800' to 8500'. **Sandoval Co.:** CCr, 1 mi. W of Santo Domingo Pueblo.
- 605b. *Charidryas gorgone carlota* (Reakirt). May 14(W) to June 27, 8000' to 9100'. **Los Alamos Co.:** GCR(Colorado Univ. coll.). **Rio Arriba Co.:** RtC, AS, PCr. **Sandoval Co.:** RT, SBH, SPC, (W, as *Phyciodes ismeria* (Boisd. & Leconte)).
- 606b. *Charidryas nycteis drusus* (W. H. Edwards). June 13 to July 15, 7800' to 8500'. **Los Alamos Co.:** GCR, VC(SJC). **Sandoval Co.:** CCG, BD, RLC, 4 mi. N of PCG, SPC, TCC, SJoC.
609. *Charidryas acastus acastus* (W. H. Edwards). May 19 to June 18, 5400' to 9500'. **Rio Arriba Co.:** SPP(SJC), Gallina(GS). **Sandoval Co.:** NMJ2, SYD, Mahan Canyon 3 mi. E of Regina (GS), near Cuba (RAB), (W).
- 623b. *Phyciodes tharos* (Drury), Type A. Sept. 3 to Sept. 19, 5000' to 6000'. **Sandoval Co.:** 1 mi. W of Santo Domingo Pueblo, 3 mi. N of San Felipe Pueblo, FC(SJC).
- 623d. *Phyciodes tharos* (Drury), Type B. May 20(W) to Aug. 5, 6500' to 8500'. **Los Alamos Co.:** LASA, LAR(SJC), VC(SJC). **Rio Arriba Co.:** AS, MC, DC, LJT, T18, 4 mi. N of Gallina (SJC), vic. GPk(SJC), Rio Chama below DM(SJC). **Sandoval Co.:** HM, PC4, SPC, 10 mi. N of Jemez Springs (AMNH coll.), 1 mi. S of SSH(SJC), Mahan Canyon (SJC), (W, presumed Type B).
- 625c. *Phyciodes pratensis camillus* W. H. Edwards. May 8 to Sept. 9, 5400' to 9800'. **Los Alamos Co.:** LAR(SJC), BuM(SJC), CMY(SJC), VC(SJC). **Rio Arriba Co.:** VLG, PrCr, CyCn, 4 mi. W of DLO, WHT, 1 mi. S of EVD (MT). **Sandoval Co.:** BC4,

- RT, HGS, SCC6, 4 mi. E of Regina in SJsC, BR, BPL, SYD, 77, 17 mi. W of BNMJ on NM Hwy 4 (MT), (W).
- 626a. *Phyciodes pictus pictus* W. H. Edwards. May 19 to Aug. 28, 5400' to 6500'. **Rio Arriba Co.:** AD, junction of US Hwy 84 and US Hwy 285 near Española, 1 mi. N of Youngsville (JAS & GS). **Sandoval Co.:** HGS, 4 mi. S of Jemez Springs, SYD, (W).
- 629b. *Phyciodes mylitta arizonensis* Bauer. May 2 to Aug. 31, 6000' to 9000'. **Los Alamos Co.:** GC34, BuM(SJC). **Rio Arriba Co.:** Br, Rio Gallina at edge of SPP(JAS & GS). **Sandoval Co.:** 1 mi. up BC from BC4, FC, PC4, SPC, 5 mi. E of Regina in SJsC, LJC, (W).
- 631a. *Occidryas anicia alena* (Barnes & Benj.). May 5 to June 17, 6500' to c. 8000'. **Rio Arriba Co.:** Gallina (JAS & GS), vic. GPk(SJC), Cerro Blanca N of Gallina (JAS & GS), Rio Chama below DM(SJC). **Sandoval Co.:** AMNH has a specimen from the Jemez dated 5 May 1913. There is no mention of this specimen (or this species) in Williams (1914), although it is hard to imagine another collector in the Jemez on this date. The record is definitely plausible and indicates that Woodgate did not dispose of his Jemez material from 1912–1913 exclusively to Williams.
- 638a. *Polygonia satyrus satyrus* (W. H. Edwards). May 6 to May 23 and July 3 to +July 17, 6000' to 9800'. **Los Alamos Co.:** PSA(SJC), VC(SJC). **Sandoval Co.:** 2 mi. N of B, FC, HM, 1 mi. N of PCG in PCn. **Rio Arriba Co.:** PrCr, LJT.
- 639e. *Polygonia faunus hylas* (W. H. Edwards). April 7 to June 19 and Aug. 5 to Nov. 10(W), 6500' to 9500'. **Los Alamos Co.:** LAR, CMY(SJC). **Rio Arriba Co.:** CSc, 4 mi. E of Regina in SJsC, SPP(SJC). **Sandoval Co.:** BGB, RCP, 1 mi. N of RLC on USFS Road 534, SS, BPL, 1 mi. N of PCG in PCn, (W). **Santa Fe Co.:** GC31.
642. *Polygonia zephyrus* (W. H. Edwards). April 7 to July 31(W) and Sept. 8 to Oct. 6, 7000' to 10,000'. **Los Alamos Co.:** PSA, LAR(SJC), VC(SJC). **Rio Arriba Co.:** VLG, J, 4 mi. W of DLO, CT, WHT, MG. **Sandoval Co.:** 2 mi. N of B, HM, SS, 4 mi. above CCr on road to SPD, (W, as *Grapta silvius* W. H. Edwards). **Santa Fe Co.:** Caja del Rio Plateau (SJC).
- 647a. *Nymphalis californica californica* (Boisd.). May 2 to July 7, 6500' to 10,100'. **Los Alamos Co.:** PSA. **Rio Arriba Co.:** CdG, 4 mi. NE of Gallina (SJC), GPk(SJC). **Sandoval Co.:** SPD, BC4, HM, LJC.
- 648a. *Nymphalis antiopa antiopa* (L.). April 12 to Sept. 17(W), 6000' to 9800'. **Los Alamos Co.:** LAR(SJC), PSA(SJC), CMY(SJC), VC(SJC). **Rio Arriba Co.:** SPP(SJC), near A(SJC), 4 mi. NE of Gallina (SJC). **Sandoval Co.:** SSH, FC(SJC), (W).
- 649b. *Aglaia milberti milberti* (Godart). May 6 to July 31, 7800' to 9800'. **Los Alamos Co.:** BuM(SJC), LAR(SJC), PSA(SJC). **Sandoval Co.:** 2 mi. N of B, PC4, 17 mi. W of BNMJ, (W).
650. *Vanessa virginiensis* (Drury). May 7 to +July 31, 6800' to 9800'. **Los Alamos Co.:** LAR(SJC). **Rio Arriba Co.:** GT, 1 mi. S of EVD(MT). **Sandoval Co.:** SPD, PP, SBH, LCC(RL).
651. *Vanessa cardui* (L.). April 11 to Sept. 19, 6000' to 9800'. **Los Alamos Co.:** PSA(SJC), LAR(SJC), BuM(SJC), CMY(SJC). **Rio Arriba Co.:** MC, 3 mi. W of Gallina (JAS), 1 mi. S of EVD(MT). **Sandoval Co.:** SBH, 1 mi. W of Regina (JAS), (W). **Santa Fe Co.:** Tsan Kawi Ruins, Bandelier National Monument (northern section) (RL).
652. *Vanessa annabella* (Field). May 7 to Aug. 31, 6000' to 9800'. **Los Alamos Co.:** PSA(SJC). **Sandoval Co.:** SPD, FC, SBH, BrC, LCC(RL). **Rio Arriba Co.:** Br, Rio Chama below DM(SJC).
- 653a. *Vanessa atalanta rubria* (Fruhst.). May 13 to Oct. 6, 6000' to 9800'. **Los Alamos Co.:** PSA(SJC). **Rio Arriba Co.:** SPP(SJC). **Sandoval Co.:** FC, SBH, 2 mi. N of SSH, above CCr, (W).
656. *Junonia coenia* Hubner. May 28 to Sept. 17, 5000' to 8400'. **Rio Arriba Co.:** RdO at SL. **Sandoval Co.:** TR, Jemez Springs, SPC, BPL, 3 mi. N of San Felipe Pueblo, SJoC, SJC4. **Santa Fe Co.:** GMu near SFD.
- 664a. *Limenitis archippus archippus* (Cramer). Aug. 5 to Sept. 19, 5800' to 6000'. **Rio Arriba Co.:** 2 mi. down Rio Chama from A, Rio Chama below DM(SJC). **Sandoval Co.:** P at San Juan Mesa Rd. (This is the only known *L. archippus* record from the

- Rio Puerco drainage.) **Santa Fe Co.:** GMu near SFD, Sunrise Spring near SFD, NM Hwy 4 near NM Hwy 30 near Rio Grande (SJC).
- 665b. *Limenitis weidemeyerii weidemeyerii* (W. H. Edwards). June 2 to Aug. 29, 6500' to 10,000'. **Los Alamos Co.:** PSA, LAR(SJC), VC(SJC). **Rio Arriba Co.:** MCd, MCr, 1 mi. S of EVD(MT). **Sandoval Co.:** RGp6, RLC, PC4, SPC, PR, HC, (W). **Santa Fe Co.:** GC31.
- 668a. *Adelpha bredowii eulalia* (Doubleday & Hew.). June 11 to Sept. 19, 6000' to 8900'. **Los Alamos Co.:** Water Canyon (SJC), VC(SJC). **Rio Arriba Co.:** 1 mi. N of Gallina (SJC), GPk(SJC), Rio Chama below DM(SJC). **Sandoval Co.:** 14 mi. NW of Cochiti Pueblo near BS, LoS, 1-4 mi. N of PCG, BC, FC(SJC).
695. *Anaea andria* Scudder. Sept. 3, 5100'. **Sandoval Co.:** 1 mi. W of Santo Domingo Pueblo, 1 mi. S of Cochiti Dam (JAS).
- 717a. *Cyllopsis pertepida dorothea* (Nabokov). June 3 to Sept. 19, 5500' to 8000'. **Los Alamos Co.:** RoC. **Rio Arriba Co.:** 2 mi. S of A, 1 mi. S of LCt, PrCr, 1 mi. S of EVD(MT). **Sandoval Co.:** TR, PC4, TS, FC(SJC), (W, as *Neonympha henshawi* (W. H. Edwards)).
- 729b. *Coenonympha ochracea ochracea* W. H. Edwards. May 28(W) to July 3, 6600' to 10,000'. **Los Alamos Co.:** BuM(SJC). **Rio Arriba Co.:** PrCr, CP, 13 mi. W of Española on USFS Road 144, LCt, 1.5 mi. N of DC, LJT, 1 mi. E of LJT, MCr, 1 mi. S of EVD(MT). **Sandoval Co.:** PP, RLC, SSH, 4 mi. N of PCG, (W).
- 732h. *Cercyonis pegala boopis* (Behr). July 1 to Aug. 29, 5300' to 8400'. **Rio Arriba Co.:** 2 mi. S of A, CC, 1 mi. SE of A, 5 mi. S of DM, MC, 1 mi. S of EVD(MT). **Sandoval Co.:** SPD, SJC9, 1.5 mi. up road to PP, FC(OS & SLE), (W, as *Satyrus alope ariane* (Boisd.)). **Santa Fe Co.:** GMu near SFD, Bk, GC31.
- 733a. *Cercyonis meadii meadii* (W. H. Edwards). Aug. 9 and Aug. 22(W), 7000'. **Sandoval Co.:** (W, 1 female). **Santa Fe Co.:** Sunrise Spring near SFD (sight, large female). This species has an erratic distribution and abundance, and its phenotype varies from range to range. We believe the reports from the Gila Mountains are also valid.
- 735a. *Cercyonis oetus charon* (W. H. Edwards). May 9 to Sept. 16, 7500' to 10,000'. **Los Alamos Co.:** LASA, LAR(SJC). **Rio Arriba Co.:** CSc, LCt, CP, AS, TC, GlT, 1 mi. S of EVD(MT). **Sandoval Co.:** HM, LS, PP, SPD, 3 mi. N of PCG, USFS Road 144 .5 mi. N of NM Hwy 126, SJoC, 77, (W, as *Satyrus silvestris* W. H. Edwards).
- 748a. *Neominois ridingsii ridingsii* (W. H. Edwards). June 30, 9000'. **Rio Arriba Co.:** LoM, LS, Rio Gallina at SPP(JAS).
- 752d. *Oeneis chryxus chryxus* (Doubleday & Hew.). May 28 to July 15, 7600' to 10,000'. **Los Alamos Co.:** PSA, CMY(SJC). **Rio Arriba Co.:** RtC. **Sandoval Co.:** BD, RLC, UNM, RoC, CPL, (W).
760. *Danaus plexippus* (L.). May 8 to Aug. 28 and Nov.(W), 6000' to 9800'. **Los Alamos Co.:** PSA(SJC). **Rio Arriba Co.:** Rio Chama below DM(SJC), Española (SJC), near A(SJC). **Sandoval Co.:** 2 mi. N of B, FC, HGP, (W).
- 761b. *Danaus gilippus strigosus* (Bates). June 24 to +July 31, 6500'. **Rio Arriba Co.:** DM, 1 mi. S of EVD(MT), Rio Chama below DM(SJC). **Sandoval Co.:** 3 mi. S of Cuba, SJsC(SJC), (W).

DISCUSSION

The Jemez Mountains of north-central New Mexico are now known to support 155 species of butterflies, including components from the Colorado Rockies, the Great Basin, the middle Rio Grande (Upper and Lower Sonoran zones) and even the Great Plains. This compares with 96 species reported from the Jemez by Williams in 1914. All species on the 1914 list were confirmed as extant in the Jemez as of 1985. It is likely that much of the Rocky Mountain element of the Jemez fauna is relictual rather than the result of post-Pleistocene invasion. With the

possible exception of *Speyeria atlantis nikias*, no taxon is endemic to the Jemez, and even *S. a. nikias* blends gradually with *S. a. hesperis* (W. H. Edwards) in the ranges to the north of the Jemez. The total of 155 species gives the Jemez the second most diverse fauna of the New Mexican mountain ranges, exceeded only by the Gila Mountains (165 species). Lower Sonoran and Arctic-Alpine zones do not occur in the Jemez, thus making the species diversity there all the more impressive.

Fifteen species—*Erynnis meridianus*, *Satyrium saepium saepium*, *Leptotes cassius striata*, *Euphilotes enoptes ancilla*, *Pyrgus scriptura*, *Atlides halesus estesi*, *Sandia mcfarlandi*, *Incisalia fotis*, *Glaucopsyche piasus daunia*, *Speyeria aphrodite ethne*, *Heliopetes ericetorum*, *Atalopedes campestris*, *Eurema lisa*, *Ministrymon leda*, and *Libytheana bachmanii larvata*—are represented here by a single report. It is conceivable that the first 4 of these records involve misdeterminations. While we have not performed any statistical analyses, having at least 11 species reported only once suggests that a comparable number of species may have been overlooked. Oddly, more resident species (the middle 6 listed above) than migrants or strays (the last 5 listed above) are reported only once. We speculate that more strays have been overlooked in our survey than rare or local resident species.

LITERATURE CITED

- BROWN, F. M. 1970. The types of lycaenid butterflies named by William Henry Edwards. Part III. Plebejinae. Trans. Am. Entomol. Soc. 96:353–433.
- BURNS, J. M. 1964. Evolution in skipper butterflies of the genus *Erynnis*. Univ. Calif. Publ. Entomol. 37:1–214.
- CARY, S. J. & R. HOLLAND. 1992 [1994]. New Mexico butterflies: checklist, distribution and conservation. J. Res. Lepid. 31:57–82.
- CARY, S. J. 1994. Gray Ranch: fire and butterflies in southwestern New Mexico. Holarctic Lepid. 1:65–68.
- CLENCH, H. K. 1965. A collection of butterflies from western Chihuahua, Mexico. Entomol. News 76:157–162.
- COCKERELL, T. D. A. 1899. Notes on some New Mexico butterflies. Can. Entomol. 31: 65–66.
- DOS PASSOS, C. F. 1938. A new race of *Basilarchia archippus* Cramer from Louisiana (Rhopalocera-Nymphalidae). Can. Entomol. 70:243–244.
- FERRIS, C. D. 1976. A checklist of the butterflies of Grant County, New Mexico and vicinity. J. Lepid. Soc. 30:38–49.
- . 1977. Supplement to: A checklist of the butterflies of Grant County, New Mexico and vicinity. J. Lepid. Soc. 31:278–279.
- . (ed.) 1989. Supplement to: a catalogue/checklist of the butterflies of North America north of Mexico. Mem. Lepid. Soc. 3:1–103.
- HOLLAND, R. 1974. Butterflies of six central New Mexico mountains, with notes on *Callophrys* (*Sandia*) *macfarlandi* (Lycaenidae). J. Lepid. Soc. 28:38–52.
- . 1984. Butterflies of two northwest New Mexico mountains. J. Lepid. Soc. 38: 220–234.
- HOLLAND, W. J. 1900. A description of a variety of *Argynnis nitocris* from Chihuahua, Mexico. Entomol. News 11:332–333.

- HUBBARD, J. P. 1965. Some butterflies of the Pinos Altos Mountains, New Mexico. *J. Lepid. Soc.* 19:231–232.
- . 1977a. A biological inventory of the Animas Mountains, Hidalgo County, New Mexico. New Mexico Dept. Game and Fish, Endangered Species Program Report. 56 pp.
- . 1977b. A biological inventory of Sierra Grande, Union County, New Mexico. New Mexico Dept. Game and Fish, Endangered Species Program Report. 24 pp.
- MILLER, L. D. & F. M. BROWN. 1981. A catalogue/checklist of the butterflies of North America north of Mexico. *Mem. Lepid. Soc.* 2:1–280.
- SKINNER, H. A new *Pamphila* from New Mexico (Lepidoptera). *Can. Entomol.* 45:426–427.
- SNOW, F. H. 1883. List of Lepidoptera and Coleoptera collected in New Mexico by the Kansas University Scientific Expedition of 1881 and 1882. *Trans. Kansas Acad. Sci.* 8:35–45.
- . 1885. List of Lepidoptera and Coleoptera collected in New Mexico by the Kansas University Scientific Expedition of 1883 and 1884. *Trans. Kansas Acad. Sci.* 9:65–69.
- TOLIVER, M. E. 1971. Preliminary notes on the butterflies of Roosevelt County, New Mexico. *J. Lepid. Soc.* 25:213–214.
- TOLIVER, M. E., R. HOLLAND, AND S. J. CARY. 1994. Distribution of butterflies in New Mexico (Lepidoptera: Hesperioidea and Papilionoidea), 2nd edition. Published by R. Holland, Albuquerque, New Mexico. 420 pp.
- WILLIAMS, R. C. 1914. One hundred butterflies from the Jamez [sic] Mountains, New Mexico (Lepid.), with notes and description of a new species. *Entomol. News* 25: 263–268.

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