

BUTTERFLIES OF TWO NORTHWEST NEW MEXICO MOUNTAINS

RICHARD HOLLAND

1625 Roma NE, Albuquerque, New Mexico 87106

ABSTRACT. This article tabulates butterflies taken in the Chuska and Zuni Mts. of northwest New Mexico and extreme northeast Arizona. Emphasis is on the author's own experience during the period 1971-1978.

This paper is the third in a series which eventually will treat the butterfly fauna of all the major mountain ranges in New Mexico, except those which are unbroken extensions of the Colorado Rockies. The first, published by Holland (1974) dealt with six ranges in the central part of the state. The second, published by Ferris (1976) reported on the Grant-Catron County area, including the extensive Gila Mts. The present work is devoted to the Zuni and Chuska Mts. of northwestern New Mexico (see Figs. 1-3). Surveys of the butterflies of the Sacramento, Capitan, and Organ Mts. in southcentral New Mexico have also been completed, but publication of this work is being delayed until the Guadalupe Ridge has been investigated as well. Additionally, a survey of the Jemez Mts. in northcentral New Mexico is now completed and will be published soon. Besides the Guadalupe Ridge, studies of several ranges outlying the Gila are planned. These ranges include the Black, Animas and Datil Mts.

About four quite limited regional lists of the New Mexico fauna have also appeared; these lists are catalogued in the above-mentioned Holland and Ferris articles. Additionally, there is an unpublished dissertation by Toliver (1978) which tabulates every butterfly specimen taken in New Mexico prior to 1978.

The Chuska Mts. fall across the Arizona-New Mexico state line, but this survey considers equally the fauna on both sides of the line; natural rather than political boundaries delineate the study areas. The Carrizo Mts. (see Fig. 1), however, are not included in the present study, as they lie entirely in Arizona and are isolated from the main part of the Chuskas by a considerable expanse of very arid low desert.

The present article reports my studies for the years 1971-1978, during which I systematically surveyed the Zuni and Chuska Mts. While a third range, Mt. Taylor, also lies in this area (see Fig. 1), its fauna has already been reported by Holland (1974) and will not be redocumented here.

Endemism of butterfly species is rare in the New Mexico mountains. In this respect, the northwest part is typical of the state as a whole. Mt. Taylor and the Zuni Mts. support no endemics at any taxonomic

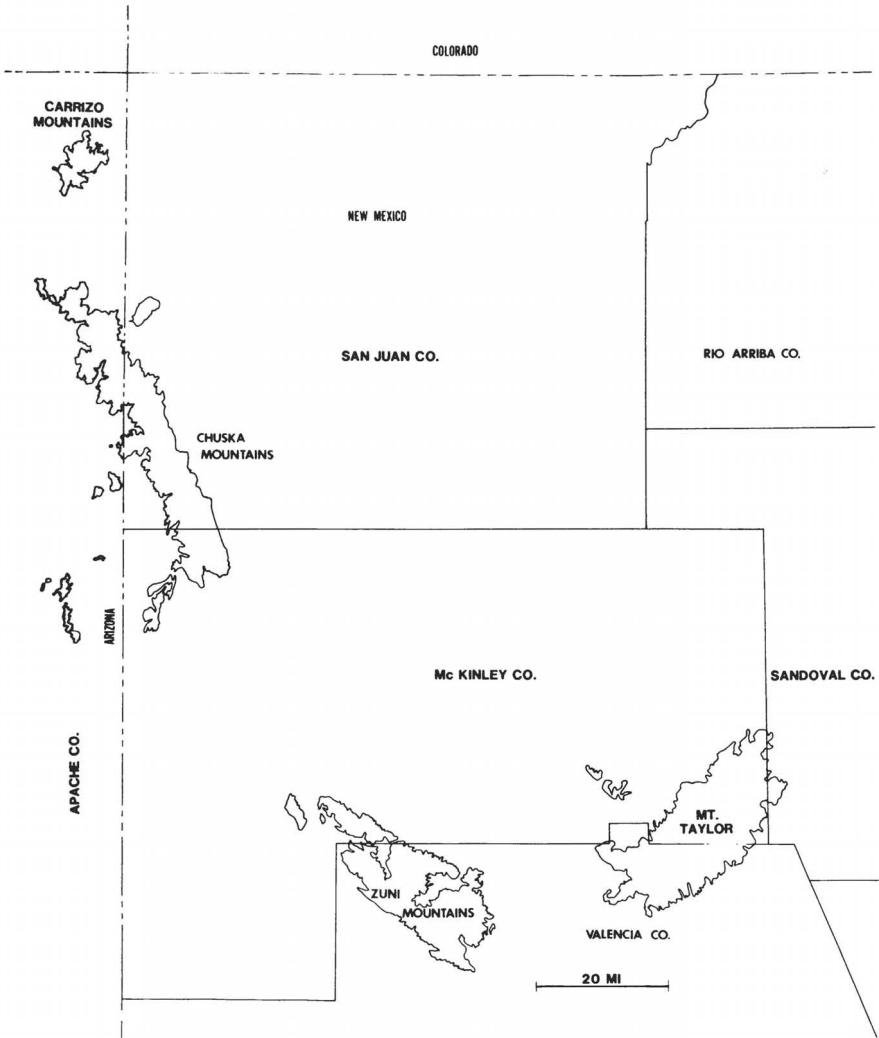


FIG. 1. Map of the mountains of northwestern New Mexico, showing the 8000' elevation contours.

level. The Chuskas have a single subspecific endemic, *Occidryas anicia chuskae* Ferris & R. Holland. This near-total absence of endemism indicates that the desertification of the New Mexico lowlands is extremely recent, geologically speaking, in comparison with, for instance, the Mojave. I believe New Mexico mountains have been isolated for less than 4000 years. The one endemic taxon seems more likely to be a relict than something which actually evolved on the Chuskas.

The format of my earlier article was different from that of Ferris; Ferris gave more precise and detailed data which permitted cross-referencing to counties as well as mountain ranges. In this article, Ferris' format will be used.

Localities

The Chuska Mts. are sedimentary (red sandstone and limestone). The Chuska Mts. mainly consist of a vast plateau with sharp escarpments on all sides. Scenically, the red sandstone cliffs and canyons are very dramatic. The plateau has numerous subsidences where natural lakes have formed, some of which cover hundreds of acres. Much of the plateau top is forested with aspen (*Populus tremuloides* Michx.) and Douglas fir (*Pseudotsuga taxifolia* Mayr). There are also large open meadows. The southern end of the Chuska plateau is somewhat drier and lower, and ponderosa pine (*Pinus ponderosa* Laws.) is dominant. Collecting is generally not good on the plateau itself; the canyons running off the plateau tend to have a much richer fauna. Flora which significantly affects the butterfly diversity includes several willows (*Salix* spp.), Gamble oak (*Quercus gambelii* Nutt.), several species of juniper, several *Yucca* spp., *Ceanothis fendleri* Gray, *Rumex* sp. (possibly introduced), several columbines (*Aquilegia* spp.), several *Penstemon* spp. and paintbrushes (*Castilleja* sp.), cliffrose (*Cowania mexicana* D. Don.), and at least five species of *Eriogonum*. Lower elevations have considerable stands of saltbush (*Atriplex* sp.) and sage (*Artemisia* sp.). The fauna is undoubtedly affected by the absence of some plants as well. Missing flora include locust (*Robinia* sp.), hackberry (*Celtis* sp.), walnut (*Juglans* sp.), *Agave* sp., and mesquite (*Prosopis* sp.).

The Chuska Mts. lie entirely on the Navajo Indian Reservation. At present, the tribal authorities are not hostile to outsiders, and nearly the entire reservation is open to the general public without written or oral permission. This pleasant situation will probably change. On the negative side, sheep and goats have been allowed to devastate most of the Chuskas. It is unlikely that any Lepidoptera have actually been exterminated, but many species tend to be scarce and local because of the land abuse. Also, poorly regulated lumbering has been permitted over wide areas without even the minimal erosion-control and understory protection efforts one usually sees in national forests. Additionally, roads are terrible, and getting into the canyons where collecting is good tends to be very challenging. Regrettably, there is an element of suspicion that false Lepidoptera records have been claimed for the Chuskas, and to a lesser extent, the Zunis.

The Zuni Mts. are more rolling with few dramatic canyons or es-

carpments. In contrast to the Chuskas, the Zunis are principally volcanic. The flora is surprisingly similar to the Chuskas, considering the geological differences. The greatest disparity is that oak and ponderosa pine are more prevalent, with aspen and Douglas fir correspondingly restricted. Good collecting in the Zunis is less limited to the lower canyons. The Zuni Mts. have also been subjected to excessive land use, although most of the grazing is cattle rather than sheep and goats, so the destruction is less radical than in the Chuska Mts. The Zuni Mts. are mostly in the Cibola National Forest. Consequently, more conservative lumbering techniques have been practiced than in the Chuska Mts. Also, secondary roads are better maintained in the Zunis. Although the Zunis have been abused less than the Chuskas, it appears *Speyeria nokomis* (W. H. Edwards) has suffered extinction in the Zunis.

This land is subject to extreme temperatures, especially in winter. Summer temperatures reach 38°C; winter lows colder than -50°C have been recorded at the reservation town of Zuni. I have no idea how cold it gets in Roof Butte and Mt. Sedgwick. Precipitation occurs mainly in December-March and July-September. May is the driest month. Annual precipitation varies from 0.2 m in the rain shadow on the New Mexico side of the Chuskas, to around 0.8 m on Roof Butte.

Specific collecting sites and their alphanumeric codes are given below. The locality code symbols appear on maps in Figs. 2 and 3. As stated previously, this style of data presentation is copied from Ferris (1976).

ZUNI MTS., MCKINLEY COUNTY, NEW MEXICO. Clo-Chen-Toh Ranch (CCT) 7100'; Cottonwood Gulch (CG) 7500'; Ft. Wingate (FW) 6800'; Gallup (G) 6700'; Grasshopper Canyon (GC) 7500'-7700'; Grasshopper Spring (GS) 7500'; McGaffey (M) 7500'; McGaffey Lake (ML) 7500'; Milk Ranch Canyon (MRC) 7600'; Nutria Diversion Reservoir (NDR) 7300'; NM Rt. 53 at Jct. to NM Rt. 32 (NMJ) 6600'; NM Rt. 53 at Jct. to Nutria (NJ) 7000'; Prewitt Tank (PT) 7800'; Ramah (R) 7000'; Ramah Lake (RL) 7000'; Stinking Spring (SS) 7500'; Wingate Tank (WT) 7600'; NM Rt. 400 at Jct. to Interstate 40 (400) 6900'; NM Rt. 412 at Jct. to Interstate 40 (412) 7200'.

ZUNI MTS., VALENCIA COUNTY, NEW MEXICO (now in CIBOLA COUNTY by action of the New Mexico legislature after this study was completed). Lower Bluewater Canyon (IBC) 7000'-7300' (below Bluewater Dam); upper Bluewater Canyon (uBC) 7300'-7500' (above Bluewater Dam); Bluewater Dam (BD) 7300'; Bluewater Village (BV) 6500'; Cebolla Canyon (CC) 7000'; Diener Canyon (DC) 8000'-9000'; El Morro National Monument (EMNM) 7000'; Kettner Canyon (KC) 8000'; Log Cabin Canyon (LCC) 7500'-8000'; Manga Canyon (MC) 7000'; Mt. Sedgwick (MS) 9300'; Ojo Redondo (OjR) 8000'; Oso Ridge (OsR) 8900'; Pink Rose Canyon (PRC) 7000'; Pole Canyon (PoC) 8000'-8500'; Prop Canyon (PrC) 8000'; Sawyer (S) 8000'; San Rafael (SR) 6700'; Tusas Mesa (TM) 8000'; lower Zuni Canyon (IZC) 7000'-7500'; upper Zuni Canyon (uZC) 8000'-8200'.

CHUSKA MTS., MCKINLEY COUNTY, NEW MEXICO. Chuska Peak (CP) 8700'; Navajo (N) 6800'; Tohatchi (Toh) 6000'-7500'; Tohatchi Lookout (TL) 8300'; Whiskey Lake (WsL) 8000'.

CHUSKA MTS., SAN JUAN COUNTY, NEW MEXICO. Big Gap Reservoir (BGR) 5000'; Beautiful Mountain (BM) 8000'; Cox Canyon (CC) 6200'; *Occidryas anicia chuskae* Type Locality (OacTL) 7700'; FAA Installation (FAA) 9000'; Owl Springs (OS) 7500';

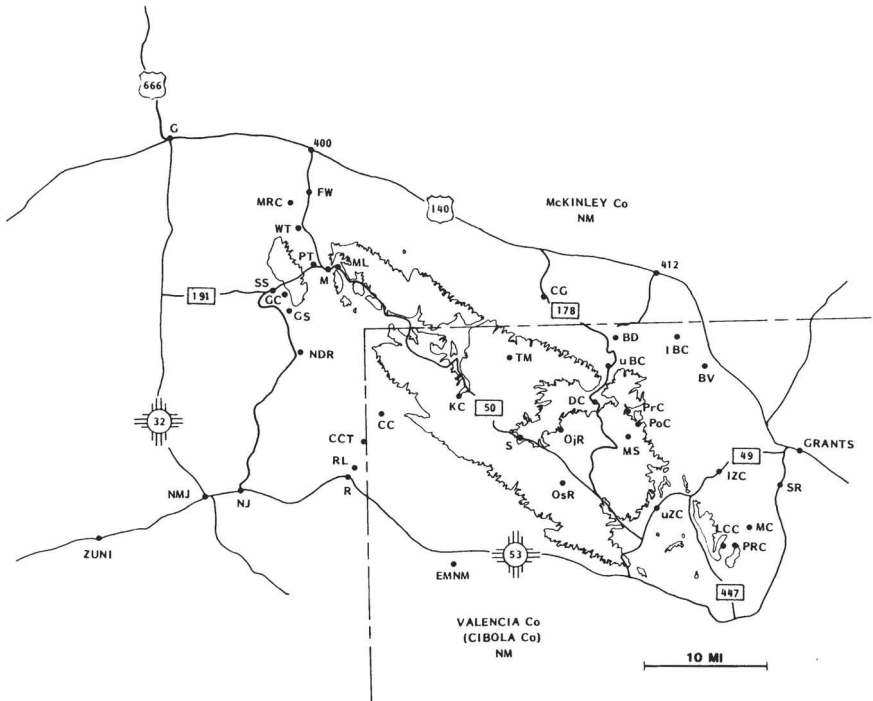


FIG. 2. Detail of the Chuska Mts., showing the 8000' elevation contours and collecting localities.

Sanostee (**Sn**) 5500'; Shiprock Mt. (**SM**) 5500'; Toadlena (**Toa**) 6500'; Wheatfields Creek (**WfC**) 7400'–8200'; Whiskey Creek (**WhC**) 7700'; Washington Pass (**WP**) 8000'.

CHUSKA MTS., APACHE COUNTY, ARIZONA. Buffalo Gap (**BG**) 7800'; Chinle (**Ch**) 5500'; Cove (**Co**) 7000'–8000'; Ganado (**G**) 6500'; Hunters Point (**HP**) 7000'; Lukachukai (**L**) 7000'; Luka Peak (**LP**) 9200'; Roof Butte (**RB**) 8500'–9600'; Red Lake (**RL**) 6000'; Red Rock (**ReR**) 6000'–7000'; Round Rock (**RoR**) 5500'; Sawmill (**Sw**) 7800'; Spider Rock (**SR**) 7500'; Tsale Creek (**TC**) 7500'–8500'; Wheatfields Lake (**WfL**) 7000'; Wagon Wheel Campground (**WWC**) (Lukachukai Creek) 7500'; AZ Rt. 264 at Jct. to Sawmill, AZ (**264**) 7800'; 8 mi. north of Wheatfields Lake on Tsale Cr. (**8MNWfL**) 7500'.

Checklist

In the following checklist, mountain range and localities are noted as well as the flight period. (A “+” before a date indicates a common species which flies considerably later than the date indicated but for which late-season specimens were merely observed, not collected.) Nomenclature and species number is that of Miller and Brown (1981) except in a few cases where my opinion is strongly different.

Collectors, besides myself, who have supplied records are Richard Bailowitz (RB), Robert Langston (RL), James Scott (JS), Michael Fisher

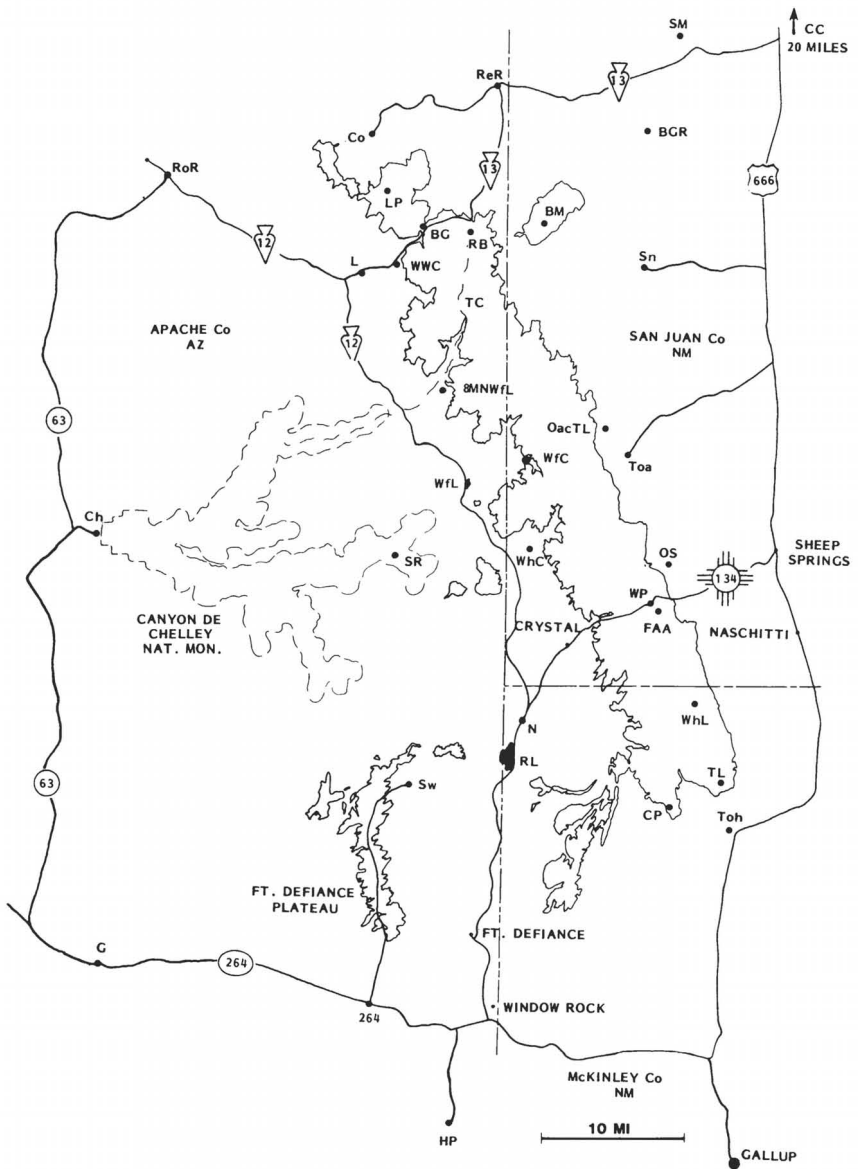


FIG. 3. Detail of the Zuni Mts., showing the 8000' elevation contours and collecting localities.

(MF), Clifford D. Ferris (CDF), Michael Toliver (MT), Kilian Roever (KR), John Justice (JJ), Carl Cushing (CC), Oakley Shields (OS), Bruce Griffin (BG), and Ray E. Stanford (RES). Records from the Toliver manuscript are denoted (TM). Most of these records are very old and due to John Woodgate's collecting at Ft. Wingate; hence, if known, the year of capture is included with (TM) records. Where a date is replaced by a "p" in (TM) records, the record probably is of the period 1906–1911. The Woodgate material from Ft. Wingate is now part of the American Museum of Natural History collection except for lycaenids which apparently are mostly in the Carnegie Museum.

John Woodgate was a fence-rider who carried a butterfly net until his eyesight failed. We have records of his at Ft. Wingate, NM, from 1906 until 1911, and at Jemez Springs, NM, from 1912–1913 (Williams, 1914); after this he apparently vanished. From the diversity of his records, it is obvious that he had become a much more sophisticated collector by 1913 than when he started in 1906. As recently as 1970, some of his material was under glass in a bar in Jemez Springs.

Conditions at Ft. Wingate are very different than they were in Woodgate's day, and some species have probably disappeared from the immediate vicinity. In fact, the town itself has been moved nine miles east! The pre-1912 Ft. Wingate records presumably refer to the old site.

HESPERIIDAE-PYRGINAE

7. *Epargyreus clarus* (Cramer). **Chuska Mts.:** ? no specific data (KR). To my knowledge, the foodplant *Robinia* is absent from Chuska and Zuni Mts.
20. *Zestusa dorus* (W. H. Edwards). **Chuska Mts.:** ? no specific data (KR).
48. *Thorybes pylades* (Scudder). Found almost everywhere in study area above 7000'. May 4–July 8.
- 50c. *Thorybes mexicana dobra* Evans. **Chuska Mts.:** WP, FAA, vic. WfL, 10 mi. E WfL on WfC. May 19–July 8.
83. *Erynnis icelus* (Scudder & Burgess). **Chuska Mts.:** WWC, RB, 8 mi. N WfL on TC, 12 mi. N WfL on TC, 10 mi. E WfL on WfC. June 19–July 8.
- 84a. *Erynnis brizo burgessi* (Skinner). **Chuska Mts.:** RB, 2 mi. SW Cove, 2 mi. SE Cove, 8 mi. N WfL on TC, 12 mi. N WfL on TC, BG, WWC, 2 mi. NW Toh, CP, WP, BM. **Zuni Mts.:** NDR, SS, MS, IZC, FW (TM, 1908 & 1909). April 23–July 4.
86. *Erynnis telemachus* Burns. **Chuska Mts.:** 2 mi. NW Toh, Toa, WWC, WP, 4 mi. W WP, BG, 12 mi. S Toa, 12 mi. N WfL on TC, RB, 2 mi. SE Co, 10 mi. S SR. **Zuni Mts.:** 1BC, 4 mi. S FW, GS, IZC, RL, NMJ, FW (TM, 1908 & 1909). April 19–+June 11.
90. *Erynnis horatius* (Scudder & Burgess). **Chuska Mts.:** ? no specific data (KR).
- 93a. *Erynnis pacuvius pacuvius* (Lintner). **Chuska Mts.:** RB, 4 mi. S Co, TL, 2 mi. NW Toh, TL. **Zuni Mts.:** MS, TM, GS, PoC, DC, IZC, PrC, FW (TM, 1908 & 1909), OsR (CC). May 2–July 4.
95. *Erynnis funeralis* (Scudder & Burgess). **Chuska Mts.:** Toa, WfL. **Zuni Mts.:** WT (KR & RH). May.
98. *Erynnis afranius* (Lintner) & *persius* (Scudder). **Chuska Mts.:** BM, WhC, WWC, RB, WP, RL, BG, LP, 6 mi. SW Sn, 2 mi. SE Co, 2 mi. SW Co, 12 mi. S Toa,

- 12 mi. N WfL on TC, TL. **Zuni Mts.:** PoC, MS, PrC, uBC, DC, KC, uZC, GC, IZC, GS, PRC, OsR, FW (TM, 1909). April 24–August 18.
102. *Pyrgus xanthus* W. H. Edwards. **Chuska Mts.:** ? no specific data (KR). **Zuni Mts.:** 2 mi. W M, DC, 8 mi. N OjR, OjR, BD, PoC, PrC, IZC. April 25–May 30. Univoltine.
103. *Pyrgus scriptura* (Boisduval). **Chuska Mts.:** ReR. **Zuni Mts.:** PoC, SS, NJ. May 6–August 19. At least bivoltine.
104. *Pyrgus communis* (Grote) & *albescens* Plotz. Most material from the study area is probably referable to *communis*. However, a somewhat mosaic distribution exists, with certain pockets of *albescens* being existent, especially around BD (Toliver, 1978). I am not convinced two species are involved here. I do not think the concept of a single genetically dimorphic species should be ruled out in cases such as this and *Celotes* in the absence of corroborating fertility studies. In general, specimens are found nearly everywhere in the study area except above 8000'. At least April–September.
107. *Pyrgus philetas* W. H. Edwards. **Chuska Mts.:** L (CDF & RH). June 26. This is definitely not a resident species.
109. *Heliopetes ericetorum* (Boisduval). **Chuska Mts.:** HP, Toa. **Zuni Mts.:** NJ (KR & RH), FW (TM, 1910). June 10–July 3. Probably migratory and not present every year.
115. *Pholisora catullus* (Fabricius). **Zuni Mts.:** IZC, IBC, FW (TM, 1906). June 27–July 30.
- 118a. *Pholisora alpheus alpheus* (W. H. Edwards). **Chuska Mts.:** 2 mi. E WP, BGR. **Zuni Mts.:** NDR, FW, NJ, 400, 6 mi. E R. May 5–July 3.
121. *Piruna pirus* (W. H. Edwards). **Chuska Mts.:** WWC, RB, BG, W of Sn at 8000', 8 mi. W Toa, 10 mi. E WfL on WfC. June 22–July 21.

HESPERIIDAE-HESPERIINAE

145. *Oarisma garita* (Reakirt). **Zuni Mts.:** IZC, uBC, MS, ML, LCC, PoC. June 24–August 6.
146. *Oarisma edwardsti* (Barnes). **Zuni Mts.:** NDR, PoC, GS, LCC, MRC, PRC, NJ, FW (TM, 1908), EMNM (RL). July 2–August 6.
152. *Yaretta rhesus* (W. H. Edwards). **Zuni Mts.:** PoC, BD, 4 mi. E R, NDR, 3 mi. W M, LCC, PT, FW (TM, 1907 & 1908). May 21–June 15. Univoltine.
155. *Stinga morrisoni* (W. H. Edwards). **Chuska Mts.:** RB, TL, CP, 3 mi. S WhL, WP, 264. **Zuni Mts.:** PoC, MS, uZC, IZC. May 1–June 18.
- 156a. *Hesperia uncas uncas* W. H. Edwards. **Chuska Mts.:** WfL, Toa, 3 mi. W Toa, 2 mi. NW Toh, BM, HP. **Zuni Mts.:** NDR, NMJ, PoC, IZC, uBC, 412, 400, NJ, FW, GC, 12 mi. S G, PT. June 8–August 22. Bivoltine.
157. *Hesperia juba* (Scudder). **Chuska Mts.:** L (JJ & RH). May 18.
- 158n. *Hesperia comma susanae* L. Miller. **Chuska Mts.:** ? WP (KR). **Zuni Mts.:** SS, 4 mi. SW FW. August 26–September 5.
159. *Hesperia woodgatei* (R. C. Williams). **Chuska Mts.:** 2–4 mi. NW Toh. **Zuni Mts.:** 2 mi. S FW. September 10–+September 24. Woodgate also recorded this species at FW in 1907 and 1908, several years before the type series was taken (1913) at Jemez Springs, NM.
- 163a. *Hesperia pahaska pahaska* (Leussler). **Chuska Mts.:** 2 mi. NW Toh, RL, TL, CP, 3 mi. S WhL, WP, BM, HP. **Zuni Mts.:** 2 mi. S FW, GS, PoC, SS, DC, WT, IBC, LCC, PT. May 17–+July 4.
166. *Hesperia viridis* (W. H. Edwards). **Chuska Mts.:** Toa, BG, 2 mi. E CP. **Zuni Mts.:** LCC, MC, IZC, PRC, PoC. May 29–July 28.
- 175a. *Polites sabuleti sabuleti* (Boisduval). **Chuska Mts.:** Toa. May 26. A curious situation exists here from two viewpoints. Inspection of a particular arroyo perhaps 15 times over eight years yielded nothing. However, on 26 May 1978, *sabuleti* was present in numbers. Subspecies *chusca* (W. H. Edwards) apparently was not described from the Chuska Mts., but from Mohave Co., Arizona (Brown &

- Miller, 1980). "Chuska" is a Navajo word meaning "white fir." "White fir" (*Abies concolor* (Gordon & Glendinning)) occurs in many Arizona mountain ranges including the Hualapais of Mohave Co., but not in the Chuskas (Kearney & Peebles, 1964; Pearce, 1975).
177. *Polites draco* (W. H. Edwards). **Chuska Mts.:** ? no specific data (KR).
179. *Polites themistocles* (Latreille). **Chuska Mts.:** WfL, WWC, Toa, 8 mi. N WfL on TC, OacTL, WhC, 4 mi. E WfL, 2 mi. NW Toh. **Zuni Mts.:** KC, PT. June 8–August 5.
- 187a. *Atalopedes campestris campestris* (Boisduval). **Chuska Mts.:** WhC. August 5.
194. *Ochlodes snowi* (W. H. Edwards). **Chuska Mts.:** ? no specific data (KR). **Zuni Mts.:** PrC, 4 mi. S FW, GS, IZC, PoC. July 29–August 15.
199. *Poanes taxiles* (W. H. Edwards). **Chuska Mts.:** Toa, 2 mi. E CP. **Zuni Mts.:** 4 mi. N NMJ, GS, PoC, LCC, MC, IZC, NDR, FW (TM, ?). June 8–July 28.
- 217a. *Euphyes ruricola ruricola* (Boisduval). **Chuska Mts.:** 1 mi. W Toa, WWC, 8 mi. N WfL on TC, Toa, 12 mi. N WfL on TC, 8 mi. E WfL on WfC. June 8–August 5.
222. *Atrytonopsis vierecki* (Skinner). **Chuska Mts.:** Toa, Sn. **Zuni Mts.:** IZC, NJ, LCC, SR, MC, FW (TM, 1907). May 19–June 8.
225. *Atrytonopsis python* (W. H. Edwards). **Zuni Mts.:** LCC, MC, PoC, NJ, SR, MRC, BD (MT), FW (TM, 1907). May 29–July 2.
230. *Amblyscirtes cassus* W. H. Edwards. **Zuni Mts.:** POC, LCC, PRC, GS, IZC, FW (TM, ?). June 25–July 28.
231. *Amblyscirtes aenus aenus* W. H. Edwards. **Chuska Mts.:** ? no specific data (KR). **Zuni Mts.:** IZC, GS, LCC, NDR, PRC, GC, PoC, FW (TM, 1907). June 1–August 8. An undescribed subspecies of *aenus* with very whitish dorsal forewing spots occurs in southern New Mexico. The present populations are typical.
233. *Amblyscirtes oslari* (Skinner). **Zuni Mts.:** GS. June 19.
236. *Amblyscirtes texanae* Bell. **Zuni Mts.:** OsR. August 18. One very worn specimen taken. Undoubtedly a stray from at least 100 miles to the south or west.
249. *Amblyscirtes phylace* (W. H. Edwards). **Zuni Mts.:** POC, GS, IZC, PoC, DC, BC, MRC. May 30–July 29.

MEGATHYMIDAE

- 286c. *Megathymus coloradensis navajo* Skinner. **Chuska Mts.:** 2 mi. N BG, 2 mi. NW Toh, WWC, 2 mi. SE Co, L, 12 mi. S Toa. **Zuni Mts.:** PoC, GS, 3 mi. NE M, IZC, FW. April 29–June 9. Woodgate took the type series of *navajo* at FW in 1910 or 1911 (Skinner, 1911).
289. *Megathymus streckeri* (Skinner). **Chuska Mts.:** 6 mi. SW of Jct. of Nav. Rt. 34B & main rd. to Sn, BM. **Zuni Mts.:** FW (TM, ?). May 20–July 4. Curiously, all wild-caught specimens of *coloradensis* have been males and all *streckeri* have been females.

PAPILIONIDAE

- 297a. *Battus philenor philenor* (Linnaeus). **Chuska Mts.:** 2 mi. SE of Co (visual record by RH and CDF). 25 June 1978.
- 303a. *Papilio polyxenes asterius* Stoll. **Chuska Mts.:** 3 mi. NW LP, TL, Toa. **Zuni Mts.:** PT, NJ, BD (OS). May 21–July 23.
308. *Papilio bairdii* W. H. Edwards. **Chuska Mts.:** 8 mi. SW Sn, BG, CP, LP. **Zuni Mts.:** NDR, 4 mi. S FW, GS, MS, WT, PoC, ML, BD (TM, 1969, leg. Funk). May 2–September 14.
- 311a. *Papilio zelicaon zelicaon* Lucas. **Chuska Mts.:** TL, FAA, WP, RB, WWC, WfL, 4 mi. S Co. **Zuni Mts.:** MS, GS, PoC, NDR, DC. April 29–June 14. Univoltine population.
- 312b. *Papilio indra minori* Cross. **Zuni Mts.:** FW (collector unknown, specimen is in LACM). 27 May 1917.

- 231a. *Pterourus rutulus rutulus* (Lucas). **Chuska Mts.:** WWC. **Zuni Mts.:** PoC, NDR. May 21–June 14. Unaccountably rare in Chuskas and Zunis.
322. *Pterourus multicaudata* (W. F. Kirby). **Chuska Mts.:** RL, 3 mi. NW Co. **Zuni Mts.:** 15 mi. S Grants on NM 53, PoC, EMNM (RL, sight record). June 24–July 23. This species is also unaccountably rare in the Chuskas and Zunis.

PIERIDAE

329. *Neophasia menapia* (C. & R. Felder). **Chuska Mts.:** 2 mi. W Toa, 1 mi. E WP, 8 mi. N WfL on TC, Toa, OacTL. **Zuni Mts.:** GS, PoC. July 16–August 7.
332. *Pontia beckerii* (W. H. Edwards). **Chuska Mts.:** BGR, 2 mi. S SM, L, 6 mi. S Sn, Toa, SM, 2 mi. E RoR. May 5–July 24. At least bivoltine.
- 333c. *Pontia sisymbrii elivata* (Barnes & Benjamin). **Chuska Mts.:** 2 mi. E of Toh, 2 mi. SE Co, WWC, WP, 10 mi. SW Toa, FAA, RB, 7 mi. SW Toa, WfL, TL, Toa, SR. **Zuni Mts.:** MS, BD, IZC, NDR, OsR (CC). April 22–June 14.
334. *Pontia protodice* (Boisduval & LeConte). Found everywhere, especially below 7500', in the study area. Some phenotypes from the study area fall into the outdated concept (Brown, 1957) of *occidentalis* (Reakirt), but not the present concept (Chang, 1963). At least from April to September.
338. *Artogeia rapae* (Linnaeus). **Chuska Mts.:** Ch, Toa (MF & RES), LP. **Zuni Mts.:** BV, SR. May 11–+June 26.
- 343c. *Euchloe hyantis lotta* Beutenmuller. **Chuska Mts.:** FAA, 7 mi. SW Toa, 2 mi. SW Co, TL. April 23–June 4.
- 348b. *Anthocharis sara inghami* Gunder. **Chuska Mts.:** 2 mi. SE Co, Toa, 7 mi. SW Toa. Chuska populations grade towards *julia* W. H. Edwards. **Zuni Mts.:** MS, uBC, 4 mi. S FW, GC, PrC, PoC, 3 mi. NE M, IZC, NDR. April 21–May 14.
- 351c. *Colias philodice eriphyle* W. H. Edwards. **Chuska Mts.:** WfL, Toa, 5 mi. S RB, BG, 6 mi. W Sn, 8 mi. N WfL on TC, 16 mi. N WfL on TC. **Zuni Mts.:** BV. May 15–September 2.
352. *Colias eurytheme* Boisduval. Found almost everywhere in NM. Records from Zunis and Chuskas are restricted to April–September due to collecting season. Sandia Mts. (Albuquerque, NM) records exist for every month.
355. *Colias alexandra* W. H. Edwards. **Chuska Mts.:** ? BG (KR).
- 368a. *Zerene cesonia* (Stoll). **Chuska Mts.:** RL, L, 8 mi. N WFL on TC. **Zuni Mts.:** GS. May 12–July 30.
- 371b. *Phoebis sennae eubule* (Linnaeus). **Zuni Mts.:** R, GS, NMJ. August 6–August 19. This species had strong northward migrations in 1976 and 1977. It is not a permanent resident of the study area.
380. *Eurema mexicana* (Boisduval). **Chuska Mts.:** several sight records; no actual specimens of this migratory species. **Zuni Mts.:** WT, POC. At least May–July.
388. *Eurema nicippe* (Cramer). **Chuska Mts.:** 16 mi. N WfL on TC, 8 mi. N WfL on TC, 10 mi. S SR. **Zuni Mts.:** WT, POC, RL, BD (MT). May 11 to at least July.
389. *Nathalis iole* Boisduval. **Chuska Mts.:** Sn, Toa, WfL. **Zuni Mts.:** PoC, NMJ, GS, BD (MT). April 22–late summer.

LYCAENIDAE

- 392d. *Tharsalea arota schellbachi* Tilden. **Chuska Mts.:** ? no specific data (KR). **Zuni Mts.:** FW (TM, ?). Specimen is in Carnegie Museum. It may not be a Woodgate specimen.). No date.
404. *Epidemia helloides* (Boisduval). **Chuska Mts.:** WfL, 3 mi. W Toa. May 17–June 22. Number of broods uncertain, but probably more than one. WfL (just below dam) is the site of the only known *helloides* population in Arizona. The *Rumex* at this site may be introduced.
- 408a. *Hypaurotis crysalus crysalus* (W. H. Edwards). **Chuska Mts.:** 2 mi. SE Co, 2 mi. NW Co, Toa. **Zuni Mts.:** GS, FW (TM, 1907). July 3–August 13. Possibly bivolt-

- tine in some areas. Curiously, bivoltinism is suspected in more boreal parts of northcentral NM, and in the Sierra Madre of Chihuahua. Chuska and Zuni populations appear to be univoltine.
- 412a. *Atlides halesus halesus* (Cramer). **Chuska Mts.:** Toh, 2 mi. SE Co, Toa, 6 mi. SW S, CP. **Zuni Mts.:** GS, POC, FW (TM, 1906 & 1907). May 2–August 5.
- 418b. *Satyrium behrii crossi* (Field). **Chuska Mts.:** BG, 3 mi. SE Co, 3 mi. NW Co, 10 mi. SW Sn, LP, 2 mi. SW Co. **Zuni Mts.:** GC, FW (TM, ?). June 25–July 13.
- 422c. *Satyrium sylvinus itys* (W. H. Edwards). **Zuni Mts.:** FW (TM, ?). Specimen is in Carnegie Museum. It may not be a Woodgate specimen. No date.
433. *Ministrymon leda* (W. H. Edwards). **Chuska Mts.:** L. **Zuni Mts.:** 5 mi. W M, LCC. May 21–June 19. These specimens are obviously migrants as the foodplant *Prosopis* does not grow in or near the Zunis or Chuskas.
- 446a. *Callophrys apama apama* (W. H. Edwards). **Chuska Mts.:** TL, WWC, 8 mi. WfL on WfC, 2 mi. NW of Toh. **Zuni Mts.:** PrC, GS, PoC, FW (TM, 1909 & 1910), OjR (RB). April 29–August 15. Bivoltine, peaks in May and early July.
- 449b. *Callophrys sheridanii neoperplexa* Barnes & Benjamin. **Chuska Mts.:** no actual records, but RES believes it may be present as it is found farther south in Apache Co., AZ (White Mts.). *sheridanii* has erroneously been reported as occurring in northeastern NM. The only known NM population is in the Sacramento Mts. in the southern part of the state, although a single specimen turned up in 1983 in the San Juan Mts. just south of the Colorado state line (JS & RES). Thus, its distribution is strongly disjunct.
452. *Mitoura spinetorum* (Hewiston). **Chuska Mts.:** 2 mi. SE Co, RB, WP, TL, FAA, 2 mi. NW Toh. **Zuni Mts.:** SS, PoC, DC, FW, IZC, NDR, GS, BD (MT). April 23–August 14. Out-of-state collectors often express surprise that *spinetorum* is a common butterfly in New Mexico, as it apparently is much less abundant in other parts of its range. There is a record of 400 specimens being taken in a day near Magdalena, NM (JJ).
- 458a. *Mitoura sita sita* (W. H. Edwards). **Chuska Mts.:** WWC, Toa, 2 mi. NW Co, Co, L, Toh, 6 mi. SW Sn, 2 mi. E CP, 4.5 mi. S HP, 11 mi. SE RoR, LP. **Zuni Mts.:** PoC, CC, IBC, IZC, 4 mi. S FW,¹ NDR, RL, GS, SR, 6 mi. E R. April 22–August 6.
463. *Sandia mcfarlandi* P. Ehrlich & Clench. **Zuni Mts.:** IZC. 2 May 1976 (2 specimens). Not seen in other years. In 1974, Holland stated that the foodplant *Nolina texana* does not occur on Mt. Taylor. Since then, I discovered a colony visible only by railroad about 10 miles east of Grants. Intensive searching has failed to turn up *mcfarlandi* at this site. The IZC population is extremely small, and may be on the verge of natural extinction (human impact on the area is minimal). A similar very weak population occurs near Acoma, about 30 miles east of Grants. No adults have ever been taken at Acoma, but a single larva was found there in 1971 and reared out.
- 464d. *Incisalia augustus iroides* (Boisduval). **Chuska Mts.:** taken at CC (MF & RES), 29 April 1974; no records from actual slopes of Chuskas.
- 465b. *Incisalia fotis fotis* (Strecker). **Chuska Mts.:** 1 mi. NW Toh, Toa, L. **Zuni Mts.:** PrC, PoC, GS, FW (TM, ?). April 21–June 8.
- 471a. *Incisalia eryphon eryphon* (Boisduval). **Chuska Mts.:** WWC, WP, 2 mi. NW Toh, BG, FAA, RB, 4 mi. W WP, 7 mi. SW Toa, WfL, 8 mi. N WfL on TC, 10 mi. S SR. **Zuni Mts.:** PrC, PoC, DC, 3 mi. W M, GS. April 24–June 14.
- 478c. *Strymon melinus franki* Field **Chuska Mts.:** 3 mi. W Sn, 8 mi. N WfL on TC, 2 mi. SE Co, 11 mi. E RoR, 4 mi. N OS, WWC, BGR, L, 8 mi. SW Sn, 2 mi. NW

¹ Miller and Brown indicate the type locality of *sita* is "Probably near Fort Wingate, Arizona [sic]." Actually, Fort Wingate is in New Mexico, and always has been as Arizona was once part of New Mexico. For a general discussion of the indiscriminate use of the locality designation "Arizona" on material collected by the Wheeler Expedition, see Brown (1983). Refer to Brown and Opler (1970) for a discussion of the confusion caused by this indiscrimination with respect to fixing the *sita* type locality.

- Toh, 4.5 mi. S HP, 264, BM. **Zuni Mts.:** GS, ML, IZC, 5 mi. W M, NDR, MRC, 6 mi. E R, FW (TM, 1907). May 11–+August 7.
495. *Brephidium exilis* (Boisduval). **Chuska Mts.:** 264, RoR. **Zuni Mts.:** PoC, FW, 400, NMJ, G, RL. May 11–August 31.
498. *Leptotes marina* (Reakirt). **Chuska Mts.:** WWC, Toa, 5 mi. E G, Ch, 10 mi. S SR, 264. **Zuni Mts.:** NDR, 5 mi. W M, PoC, 1 mi. N FW, PT. May 11–August 6.
- 502a. *Hemiargus isola alce* (W. H. Edwards). Common and universally distributed in NM at elevations up to 7500'. At least May–September in Zunis and Chuskas.
- 504d. *Everes amyntula herrti* F. Grinnell. **Chuska Mts.:** 2 mi. SE Co, Toa, WWC, 4 mi. S Co. **Zuni Mts.:** uZC, PoC, PrC, GS, IZC. May 1–August 15.
- 505h. *Celastrina argiolus cinerea* (W. H. Edwards). **Chuska Mts.:** BG, WWC, WP, FAA, 4 mi. W WP, HP, WhC, 2 mi. SE Co, Toa, 4 mi. S Co, 2 mi. NW Toh. **Zuni Mts.:** PoC, 5 mi. W M, DC, PoC, NDR, FW (TM, 1906 & 1910). Form "marginata" occurs commonly in the Chuskas but never in the Zunis. April 30–August 9.
- 508a. *Euphilotes battoides centralis* (Barnes & McDunnough). **Zuni Mts.:** PoC, PrC, IZC, GC, 400, 5 mi. W M, 3 mi. NE M, OsR, PrC, MC, EMNM (RL). July 10–August 22.
- 508b. *Euphilotes battoides ellistii* (Shields). **Chuska Mts.:** 2–3 mi. NW RoR, 20 mi. S Ch on AZ 63. August 31–September 10.
- 511c. *Euphilotes rita spaldingi* (Barnes & McDunnough). **Zuni Mts.:** PoC, GS, 12 mi. S G, 4 mi. S FW (JS), M (JS), FW (TM, 1907). July 29–August 22.
- 511d. *Euphilotes rita emmeli* (Shields). **Chuska Mts.:** "E of Shiprock on dunes" (JS in TM). August and September.
- 513d. *Glaucopsyche pius dauntia* (W. H. Edwards). **Chuska Mts.:** WP, WWC, RB, 3 mi. NW Co, 8 mi. E WfL, RL, 12 mi. N WfL on TC, 2 mi. S WP. **Zuni Mts.:** 2–3 mi. W M, PoC, GS, PT, FW (TM, 1910). May 16–June 30.
- 514f. *Glaucopsyche lygdamus oro* (Scudder). **Chuska Mts.:** WP, 2 mi. NW Toh, 1 mi. E WP, WWC, 2 mi. SE Co, 12 mi. N WfL on TC, 2 mi. S WP. **Zuni Mts.:** GS, PoC, PT, FW (TM, ?). Specimen is in Carnegie Museum. It may not be a Woodgate specimen.). April 29–June 22.
- 517b. *Lycaeides melissa pseudosamuelis* Nabokov. **Chuska Mts.:** 2 mi. NW Toh, Toa, 2 mi. SE Co, RL, WfL, WWC, BGR, L, 6 mi. SW Sn. **Zuni Mts.:** uBC, PoC, NDR, PrC, GS, CCT, FW (TM, 1907 & 1908). May 18–August 20.
- 518b. *Plebejus saepiolus whitmeri* F. M. Brown. **Chuska Mts.:** 2 mi. S WP, ? TC (KR). June 17.
- 520b. *Icaricia icarioides lycea* (W. H. Edwards). **Chuska Mts.:** 3 mi. NW Toh, 2 mi. SE Co, 2 mi. W Toa, 1 mi. E WP, WfL, BG, 8 mi. N WfL on TC, OacTL, WhC, LP, 5 mi. NW Toa, 4 mi. N OS, 4 mi. S Co, BM. **Zuni Mts.:** GS, PT, IZC, PoC, 5 mi. W M, DC, 3 mi. NE M, WT, GC, FW (TM, 1909 & 1910). May 23–August 9. Bivoltine.
- 522b. *Plebejus acmon texana* Goodpasture. **Chuska Mts.:** 10 mi. N WP, 8 mi. SW Sn, RL, 16 mi. N WfL on TC, WfL, 2 mi. S WP, LP. **Zuni Mts.:** PoC, IZC, NMJ, FW (TM, 1910), BD (MT). May 1–+August 19.
- 526e. *Agriades rustica rustica* (W. H. Edwards). **Chuska Mts.:** WP, RB, WWC, BG, 8–16 mi. N WfL on TC, 2 mi. NW Toh, 2 mi. S WP, LP. **Zuni Mts.:** PoC, DC. May 29–July 10.
- 544a. *Apodemia mormo mormo* (C. & R. Felder). **Chuska Mts.:** 6–8 mi. SW of Sn, 2 mi. NW of Toh. **Zuni Mts.:** 3 mi. NW of NDR, FW (TM, 1907 & 1910). July 24–September 18. At least bivoltine. Populations from the Rio Grande Valley, from Albuquerque south, are *m. cythera* (W. H. Edwards), *m. mejicanus* (Behr) or *m. duryi* (W. H. Edwards). Jemez Mts. populations I have personally seen are all *m. mormo*. Due to the great distances between known colonies in western New Mexico, we do not know where the dark DHW form (typical *mormo*) begins to replace the reddish form (*cythera*). Mixed or intermediate populations have not been found in the northern half of New Mexico.
550. *Apodemia nais* (W. H. Edwards). **Zuni Mts.:** PoC, PrC, GS, FW (TM, 1910). June

24–August 15. Bivoltine. In New Mexico, *nais* feeds on *Ceanothis* and usually occurs in association with *C. apama* and *E. pacuvius*.

LIBYTHEIDAE

- 552b. *Libytheana bachmanii larvata* (Strecker). **Chuska Mts.:** 11 mi. E RoR. **Zuni Mts.:** DC, NMJ. May 27–August 19.

NYMPHALIDAE

562. *Euptoieta claudia* (Cramer). Records from virtually everywhere in NM. At least April–October.
568. *Speyeria nokomis nigrocaerulea* (W. & T. Cockerell). I personally am convinced *nigrocaerulea* is a valid subspecies. **Chuska Mts.:** colonies in Apache Co., AZ, and San Juan Co., NM; numerous other dubious records; one authentic specimen from WWC (BG). Ova obtained from confined females from Apache Co. have been reared through on potted *Viola* without attempt by the larvae to enter the usual, troublesome *Speyeria* larval diapause. This procedure yields adults around 1 Dec. (JJ). **Zuni Mts.:** BD (MT, sight record, 29 August 1967). At present, sheep and goats have rendered this locality incapable of supporting a *nokomis* colony. The WWC record in the Chuskas may represent a stray from an as yet unlocated colony. I fear the Zuni Mts. population is now extinct. July 20–August 10. *This should be proposed as an endangered species.*
- 574f. *Speyeria atlantis dorothea* Moeck. Populations in Chuskas and on Mt. Taylor are definitely *dorothea*, not *nikias* (Ehrmann). **Chuska Mts.:** FAA, BG, RB, 1 mi. E WP, 8 mi. N WfL on TC, OacTL, 4 mi. SE Co, 8 mi. S ReR, 10 mi. WSW Sn. **Zuni Mts.:** ? no specific data (KR). June 22–July 27.
592. *Poladryas arachne* (W. H. Edwards). **Chuska Mts.:** 8 mi. N WfL on TC, 2 mi. NW Toh, WWC, BG, Toa, 3 mi. NW Co, OacTL, RL, TL, BM, HP. **Zuni Mts.:** PoC, IZC, PrC, GC, NDR, LCC, FW (TM, 1907), BD (MT). May 14–August 31. Bivoltine.
- 597d. *Thessalia leanira alma* (Strecker). **Chuska Mts.:** 2 mi. NW Toh, WfL, L, RL, WhC, HP. **Zuni Mts.:** PoC, IZc, NMJ, CC, NDR, 6 mi. E R, FW (TM, 1907), BD (MT). May 17–August 9.
- 599a. *Chlosyne lacinia crocale* (W. H. Edwards). **Zuni Mts.:** CG. August 15.
609. *Charidryas acastus* (W. H. Edwards). **Chuska Mts.:** 2 mi. SE Co, WWC, Co, L, 4.5 mi. S HP. **Zuni Mts.:** PoC, NMJ. May 13–June 15.
623. *Phyciodes tharos* (Drury) ssp. **Chuska Mts.:** 3 mi. SE Co, 2 mi. NW Co, RB, 8 mi. W Toa. June 15–July 23. Unlike eastern populations and some which have become established around cultivated areas in southern NM, this large phenotype is univoltine. See Ferris and Brown (1981) for interesting remarks on the Chuska Mts. *tharos*. It seems possible that we are dealing with two species in New Mexico; one native, large, bright, mostly univoltine and found in undisturbed places; and another introduced from the East which is small, dark, multi-voltine and generally restricted to built-up areas.
- 625c. *Phyciodes pratensis camillus* W. H. Edwards. **Chuska Mts.:** Toa, WWC, 2 mi. SE Co, L, WfL, RL, HP, 8 mi. N WfL on TC, 2 mi. NW Toh, WhC, 12 mi. N WfL on TC. **Zuni Mts.:** 4 mi N NMJ, 2 mi. W M, PrC, SS, 5 mi. W R, BD, NDR, BV, PoC, GS, B, NMJ, IBC, FW (TM, ?). May 1–August 6.
- 626b. *Phyciodes picta canace* W. H. Edwards. **Chuska Mts.:** BGR, 3 mi. W Sn, 6 mi. E Sn, WhC. May 12–+August 10. At least four broods.
- 629b. *Phyciodes mylitta* nr. *callina* (Boisduval). **Chuska Mts.:** 1 mi. E WP, WP, 2 mi. NW Toh, RB, WWC, 8 mi. W Toa, 8 mi. E WfL, RL, 12 mi. N WfL on TC, 5 mi. NW Toa. **Zuni Mts.:** BD, PoC, GS, PrC, IZC, uBC, FW. April 29–+July 3. *callina* (TL Sonora, Mexico) is not a very satisfying name for these populations. However, the name *arizonensis* Bauer is so vaguely described as to make one unsure as to what it is applied.

- 631a. *Occidryas anicia alena* (Barnes & Benjamin). **Chuska Mts.:** 2 mi. SE Co, N slope BG, Co, L, 1 mi. NW Toh, WfL, 2 mi. SW Co, 12 mi. S Toa, 4.5 mi. S HP, 5 mi. E G. **Zuni Mts.:** GS, NDR, NMJ. April 30–June 15.
- 631g. *Occidryas anicia chuskae* Ferris and R. Holland. **Chuska Mts.:** RB, 8 mi. N WfL on TC, 8 mi. W Toa, OacTL (CDF & RH), 10 mi. E of WfL on WfC, 6 mi. NW Toa. June 22–+July 8. Separated from *alena* temporally (latest *alena* June 15, peak in May) and altitudinally (*alena* 5500' to 7000' in Chuskas, *chuskae* 7300' to 9000').
- 638a. *Polygonia satyrus satyrus* (W. H. Edwards). **Chuska Mts.:** Toa, 8 mi. W Toh. **Zuni Mts.:** NDR. April 21–+July 11.
642. *Polygonia zephyrus* (W. H. Edwards). **Chuska Mts.:** BG, RB, FAA, 3 mi. NW Toh, WWC, WP, 2 mi. S WP. **Zuni Mts.:** DC, 4 mi. S FW. April 23–+August 10.
- 647a. *Nymphalis californica californica* (Boisduval). **Chuska Mts.:** 2 mi. SE Co, 4 mi. SE Co, BG, Toa. **Zuni Mts.:** PoC, DC. April 21–July 21.
- 648a. *Nymphalis antiopa antiopa* (Linnaeus). Common everywhere in NM at intermediate elevations (Upper Sonoran and Canadian zones) at least April through October.
- 649b. *Aglais milberti furcillata* (Say). **Chuska Mts.:** ? no specific data (KR). This species is found on other mountains in northwestern NM.
650. *Vanessa virginiensis* (Drury). **Chuska Mts.:** Toa, 8 mi. W Toa, 264. **Zuni Mts.:** 3 mi. W M, WT, DC, NJ. May 11–+July 22.
651. *Vanessa cardui* (Linnaeus). Abundant everywhere and every year in NM from April to November. Migrations are much heavier in some years than others. In years of heavy migration, a few specimens always may be taken several weeks before the main migration arrives. Occasionally during migrations, the population is so dense as to interfere with nighttime light trapping of moths.
652. *Vanessa annabella* (Field). **Chuska Mts.:** WP, 2 mi. SE Cove, RB, Toh, WfL, TL. **Zuni Mts.:** IBC, NDR. May 19–+June 21.
- 653a. *Vanessa atalanta rubria* (Fruhstorfer). **Chuska Mts.:** WfL, 2 mi. SE Co, Toa, 11 mi. E RoR, 8 mi. N WfL on TC, 264. **Zuni Mts.:** NDR, DC, NMJ, OjR (RB). May 11–+July 11. Population may have a migratory component, as it is much more common in years of strong *cardui* migrations.
656. *Junonia coenia* Hubner. **Chuska Mts.:** RL, WhC, Toa, 12 mi. E RoR. July 1–August 6. All Chuska Mts. records from 1978, when a migration occurred. Not frequently encountered in the northwestern quarter of NM, although taken in numbers in the Jemez Mts. in 1983 and 1984.
- 665e. *Basilarchia weidemeyerii angustifascia* Barnes and Benjamin. **Chuska Mts.:** 2 mi. SE Co, WWC, BG, 4 mi. E WfL, 2 mi. E CP, BM, 2 mi. SW Co, LP. **Zuni Mts.:** 4 mi. N NMJ, NDR, GS, PoC, PrC, MRC, FW (TM, 1909). May 30–+July 21.
- 668a. *Adelpha bredowii eulalia* (Doubleday & Hewiston). **Chuska Mts.:** 8 mi. N WfL on TC, WfL, 6 mi. W Sn, WWC. **Zuni Mts.:** GS, PoC. May 28–September 2.

SATYRIDAE

- 717a. *Cylopsis pertepida dorothea* (Nabobov). **Chuska Mts.:** 2 mi. SE Co, Toa, 2 mi. NW Toh, HP. **Zuni Mts.:** PoC, IZC, GS, NDR, LCC, PRC, MC, FW (TM, ?), BD (MT). June 18–August 13.
729. *Coenonympha ochracea* W. H. Edwards. **Chuska Mts.:** ? BG (KR).
- 733a. *Cercyonis meadii meadii* (W. H. Edwards). **Chuska Mts.:** 6 mi. W Sn, Toa, 2 mi. SE Co, 8 mi. SW Sn. July 14–September 2. *C. meadii* and *sthenele masoni* intergrade in the Chuskas.
- 734a. *Cercyonis sthenele masoni* Cross. **Chuska Mts.:** 1 mi. SE Co, 6 mi. W Sn, Toa, 8 mi. SW Sn, 8 mi. NW Sn. July 13–September 2.
- 735a. *Cercyonis oetus charon* (W. H. Edwards). **Chuska Mts.:** RB, 5 mi. S RB, 8 mi. W Toa, 8 mi. N WfL on TC, 3 mi. W Toa, 12 mi. N WfL on TC, 6 mi. W Sn, OacTL, 4 mi. E WfL, 10 mi. E WfL on WfC, BM. June 22–August 5.
- 748a. *Neominois ridingsii*. **Zuni Mts.:** IZC, uBC, 1 mi. N FW. May 31–June 27.

DANAIDAE

760. *Danaus plexippus* (Linnaeus). **Chuska Mts.:** 1 mi. W Toa, 8 mi. N WfL on TC, LP, HP. **Zuni Mts.:** NDR, FW. May–September.
- 761b. *Danaus gilippus strigosus* (Bates). **Chuska Mts.:** Toa, 11 mi. E RoR. **Zuni Mts.:** NDR, MRC. May 27–July 22.

ACKNOWLEDGMENTS

The author is indebted to R. E. Stanford, C. D. Ferris and L. D. Miller for reviewing this article. The Toliver manuscript is an indispensable reference for faunal studies of New Mexico. It is most regrettable it was never published.

LITERATURE CITED

- BROWN, F. M. 1983. The type of *Argynnis apacheana* Skinner. J. Lepid. Soc. 37:79–80.
- , with D. EFF & B. ROTGER. 1957. Colorado Butterflies. Denver Museum of Natural History, Denver. viii + 368 pp.
- & L. D. MILLER. 1980. The types of the Hesperiid butterflies named by William Henry Edwards Part II, Hesperiidae: Hesperinae, Section II. Trans. Amer. Entomol. Soc. 106:43–88.
- & P. A. OPLER. 1970. The types of the Lycaenid butterflies described by William Henry Edwards. Trans. Amer. Entomol. Soc. 96:19–77.
- CHANG, V. C. S. 1963. Quantitative analysis of certain wing and genitalia characters of *Pieris* in western North America. J. Res. Lepid. 2:97–125.
- FERRIS, C. D. 1976. A checklist of the butterflies of Grant County, New Mexico and vicinity. J. Lepid. Soc. 30:38–49.
- & F. M. BROWN. 1981. Butterflies of the Rocky Mountain States. University of Oklahoma Press, Norman. xviii + 442 pp.
- HOLLAND, R. 1974. Butterflies of six central New Mexico mountains, with notes on *Callophrys* (*Sandia*) *macfarlandi* (Lycaenidae). J. Lepid. Soc. 28:38–52.
- KEARNEY, T. H. & R. H. PEEBLES. 1964. Arizona Flora. University of California Press, Berkeley. viii + 1085 pp.
- MILLER, L. D. & F. M. BROWN. 1981. A Catalogue/Checklist of the Butterflies of America North of Mexico. Lepid. Soc. Mem. 2. vii + 280 pp.
- PEARCE, T. M., with I. S. CASSIDY & H. M. PEARCE. 1975. New Mexico Place Names, A Geographical Dictionary. The University of New Mexico Press, Albuquerque. xvi + 187 pp.
- SKINNER, H. 1911. A new variety of *Megathymus yuccae* (Lepid.). Entomol. News. 22:300.
- TOLIVER, M. E. 1978. Distribution of butterflies (Lepidoptera: Hesperioidea and Papilionoidea) in New Mexico. (Unpublished.)
- WILLIAMS, R. C. 1914. One hundred butterflies from the Jemez [sic] Mountains, New Mexico (Lepid.), with notes and descriptions of a new species. Entomol. News 25: 263–268.