

Butterflies Collected in Mesa Verde and the Grand Canyon Region
by the American Museum Party in 1934.

By Ernest L. Bell and Frank E. Watson *

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The party consisted of Messers. Ernest L. Bell, Paul E. Geier, Frank E. Lutz and David Rockefeller. The object of the trip was to secure a general collection of insects. Mr. Bell paid particular attention to butterflies but found the collecting at that time (July and August) rather poor, although certain species were abundant in particular localities. The North Rim of Grand Canyon seemed to be the locality that was richest in species, particularly if allowance be made for the fact that the party was there for only two days and those ^{were} rainy ones.

The principal collecting places were as follows:

Santa Fe, New Mexico. — Altitude about 7000 ft. July 13 to 15.

Mesa Verde National Park, Colorado. — Altitudes from about 7000 to about 8400 ft. Aug. 21 to 25.

Flagstaff, Arizona. — Altitudes from about 6300 to about 7000 ft. Aug. 9 to 18.

San Francisco Mountains, Arizona. — Altitudes from about 9000 to about 12300 ft. (See Merriam, 1890, N. A. Fauna No. 3, U. S. Dept. Agriculture). Aug. 10 to 16.

Williams, Arizona. — Altitude about 6800 ft. Arid fields near the town. Aug. 8.

Supai, Hava~~s~~u Canyon, Arizona. — Altitude about 3500 ft. Aug. 2 to 5.

South Rim of Grand Canyon, Arizona. — Altitude about 7000 ft. July 16 to Aug. 7.

Indian Gardens, Grand Canyon, Arizona. — Altitude about 3800 ft. July 23 to 25.

Phantom Ranch, Grand Canyon, Arizona. — Altitude about 2500 ft. July 25 to 29.

North Rim of Grand Canyon, Arizona. — Altitude about 8000 to about 9000 ft. Aug. 18 and 19.

Mr. Bell is responsible for the taxonomic and other data concerning Hesperiidæ; Mr. Watson for those concerning the other families. In indicating the distributions only the "corners" of the ranges are mentioned, leaving out the details of distribution within the areas thus outlined.

Papilionidae

Papilio philenor philenor Linnaeus. — Supai and Indian Gardens. Occurs from southern Canada to Mexico. Feeds on Aristolochiaceae.

Papilio daunus Boisduval. — Supai and Indian Gardens. Occurs from British Columbia and Alberta to Colorado and Guatemala. Feeds on cherry, ash, willow, and Rosaceae.

Pieridae

Pieris beckeri Edwards. — Phantom Ranch. Occurs from Washington to Colorado, Arizona and California. Feeds on Cruciferae.

Colias eurytheme f. oest. amphidusa Boisduval. — Mesa Verde (~~V~~ at 7800 ft.), Flagstaff, Williams, and North and South Rims of Grand Canyon. Occurs from Atlantic to Pacific and Mexico. Feeds on clovers.

Eurema nicippe (Cramer). — Indian Gardens and Phantom Ranch. Occurs from Connecticut to Rocky Mountains, Brazil and Antilles. Feeds chiefly on Cassia.

Danaidae

Danais plexippus (Linnaeus). — Flagstaff, Supai and North Rim. Widely spread in both Hemispheres. Feed chiefly on Asclepias.

Satyridae

Neonympha henshawi (Edwards). — Flagstaff. Recorded from Colorado, Arizona, New Mexico and Mexico. Probably feeds on grasses.

Cercyonis oetus (Boisduval). — North Rim of Grand Canyon. Recorded from Idaho, Wyoming, California and Arizona. Feeds on grasses.

Nymphalidae

Euptoieta claudia (Cramer). — Flagstaff and Williams. Occurs in both North and South America. Feeds on Passiflora, Sedum, Portulaca, and pansy.

Argynnis nausicaa Edwards. — Flagstaff and North Rim of Grand Canyon. Recorded from Arizona and New Mexico. Probably feeds on Viola.

Lemonias pola pola (Boisduval). — Supai and North Rim of Grand Canyon. This typical subspecies is recorded from Colorado, Arizona, New Mexico, and (?) northern Mexico. The species occurs also in California.

Phyciodes batesi (Reakirt). — North Rim of Grand Canyon. Recorded range is from Ontario to West Virginia, Nebraska and Arizona. Feeds on Aster.

Phyciodes camillus Edwards. — Mesa Verde, Flagstaff, Williams and Supai. Ranges from Idaho (?), and Montana to Kansas, Texas and Arizona.

Phyciodes mylitta pallida (Edwards). — San Francisco Mts. (at about 8000 ft. alt.). The species ranges from British Columbia to northern Mexico and Texas but the subspecies pallida has not been recorded north of Wyoming. Feeds on Carduus.

Polygonia satyrus (Edwards). — North Rim of Grand Canyon. Ranges from Ontario to British Columbia, California and New Mexico. Feeds on nettles.

Polygonia zephyrus (Edwards). — Flagstaff and San Francisco Mts. (at about 9400 ft.). Ranges from Nebraska to Oregon, California and New Mexico. Feeds on elm, azalea, rhododendron, gooseberry and currant.

Aglais antiopa (Linnaeus). — North Rim of the Grand Canyon. Widely distributed in Europe, Siberia and North America. Feeds on elm, Celtis, willow and poplar.

Vanessa cardui (Linnaeus). — San Francisco Mts. (at about 8000 ft. alt.). Widely distributed in both Hemispheres. Feeds on Compositae and Malvaceae.

Vanessa carye (Hübner). — Flagstaff and North Rim of Grand Canyon. Ranges from Vancouver to Colorado and Argentina. Feeds on Malvaceae and nettles.

Basilarchia weidemeyeri^e weidemeyeri (Edwards). — North Rim of Grand Canyon. Four of the six specimens are intermediate between typical weidemeyeri and angustifascia Barnes and McDunnough. The latter is recorded only from the White Mountains, Arizona. The species ranges from Montana to Nebraska, New Mexico and California. Feeds on willow and poplar.

Basilarchia obsoleta (Edwards). — Supai and Phantom Ranch. Ranges from Utah to southern California. Feeds on willow and poplar.

Asterocampa leilia (Edwards). — Indian Gardens. Known only from Arizona. Probably feed on Celtis.

Riodinidae

Apodemia palmeri palmeri (Edwards). — Supai. The species ranges from California to Utah, New Mexico and Mexico but the subspecies palmeri has not been reported from California.

Lycaenidae

Atlides halesus (Cramer). — South Rim of Grand Canyon. Ranges from New Jersey to Nevada, California and Central America. Feeds on mistletoe and (?) oak.

Strymon melinus pudica (Hy. Edwards). — Supai and North Rim of Grand Canyon. The species occurs throughout most of North America but this subspecies seems to be confined to the region from New Mexico to California. Feeds on Leguminosae.

Mitoura siva siva (Edwards). — South Rim of Grand Canyon. Ranges from Colorado and Utah to Arizona and (subsp. juniperaria Comstock) southern California. Feeds on juniper.

Tharsalea virginiensis (Edwards). — North Rim of Grand Canyon. Ranges from Colorado to California and Arizona.

Heodes heteronea gravenotata (Klots). — North Rim of Grand Canyon. The species ranges from Wyoming to Arizona and California but gravenotata is recorded only from Colorado and Arizona.

Leptotes marina (Reakirt). — Supai, Indian Gardens and North Rim of Grand Canyon. Ranges from Colorado and Texas to California and Guatemala. Feeds on Leguminosae.

Brephidium exilis (Boisduval). — Flagstaff, Supai, Phantom Ranch and Moenkopi (Arizona, about 4500 ft. alt.). Ranges from Colorado and Texas to California and South America. Feeds on Atriplex bracteosa, Chenopodium, and Petunia parviflora.

Hemiargus gyas gyas (Edwards). — San Francisco Mts. (at about 8000 ft. alt.) and Phantom Ranch. This typical form occurs in Arizona and southern California but the subspecies zachaeina (Butter and Druce) extends the range to Texas and Costa Rica. Feeds on Astragalus crotalariae.

Everes comyntas herri (Grinnell). — San Francisco Mts. (at about 8000 ft. alt.) and North Rim of Grand Canyon. The species occurs throughout much of North America south to Costa Rica but the subspecies herri is possibly confined to Arizona and New Mexico. Feeds on Leguminosae.

Plebeius melissa melissa (Edwards). — Santa Fe, Flagstaff, San Francisco Mts. (8000 to 9400 ft. alt.), Williams, and South Rim of Grand Canyon. Kansas to Montana, California and New Mexico. Feeds on Astragalus and Lotus.

Plebeius icarioides lycea (Edwards). — Mesa Verde, San Francisco Mts. (at about 8000 ft.), and South Rim of Grand Canyon. The species occurs from British Columbia and Manitoba, to New Mexico and California. The subspecies lycea has been recorded from Colorado, New Mexico and Arizona. Feeds on Lupine and clover.

Plebeius acmon acmon (Westwood and Hewitson). — Flagstaff, San Francisco Mts. (from about 9000 to about 11,600 ft. alt.), and North Rim of Grand Canyon. Ranges from Washington and Montana to Nebraska, New Mexico and California. Feeds on Astragalus, Hosackia, Eriogonum and Lotus.

Glaucopsyche lygdamus oro (Scudder). — San Francisco Mts. at from about 8000 to about 9500 ft. alt. The species ranges from Alaska to Labrador, Georgia and California. The subspecies oro has been reported from Colorado, New Mexico and Arizona. Feeds on Lotus, Lupinus and Astragalus.

(The four preceding species were identified by Mr. E. I. Huntington.)

Lycoenopsis argiolus cinerea f. oest. arizonensis (Edwards). — North Rim of Grand Canyon. The species occurs from Panama to Alaska as well as in the Old World. The form arizonensis has been recorded only from Arizona. Feeds on the buds and flowers of various plants.

Hesperiidae

The two most interesting Hesperiidæ collected on this expedition are Pholisora mejicanus Reakirt and Ochlodes yuma Edwards. Records of mejicanus in the United States have been published from Las Vegas, New Mexico; "South-western States"; and questionably from Colorado, Nevada, and California, and it is more than probable that most of the records are based on misidentification of Pholisora catullus Fabricius for mejicanus, as the former species is abundant in the southwestern States. The writer has received a large number of specimens of catullus from professional collectors in Texas, New Mexico and Arizona, but this single male mejicanus from Santa Fe, New Mexico, is the only specimen he has ever seen from the United States. Reakirt's type came from Vera Cruz, Mexico. Dyar stated that he was unable to distinguish the two species except by locality and referred all southwestern examples to mejicanus, and this illustrates the uncertainty of the correctness of records from north of the Rio Grande.

O. yuma is generally but poorly represented in collections, in fact there was not a specimen in the American Museum collection.

Pyrginae

Proteides clarus Cramer. — North Rim of Grand Canyon. Fairly plentiful at the head of Transept Canyon. It is better known under the name tityrus Fabricius. Ranges from Vancouver and Quebec to Ecuador and Brazil. Feeds on legumes.

Pyrgus scriptura Boisduval. — A single male from Phantom Ranch. This small inconspicuous species ranges from Montana and Wyoming to California and New Mexico. Probably feeds on Sida hederacea.

Pyrgus communis Grote. — Flagstaff, Williams, Supai, Phantom Ranch, and North and South Rims of Grand Canyon. Rather abundant at Williams and Phantom Ranch. Generally known as tessellata Scudder. It ranges from northern Canada to Nicaragua. Feeds on Althoea, Abutilon, Sida, and Malva. Possibly the Mexican and Nicaraguan records should be referred to the race albescens Plotz (occidentalis Skinner). Skinner and Williams have restricted the name occidentalis to apply to the smaller, paler form of the species inhabiting the low arid regions from the Rio Grande to and up the coast of California. One of our specimens from Phantom Ranch very closely agrees with albescens.

Pholisora mejicanus Reakirt. — A single male was taken at Santa Fe. A few other small, black butterflies were seen there and these may have been mejicanus or they may have been its near relative catullus Fabricius. They managed to escape our nets due to their habit of flying low among the spiny vegetation. See above for a discussion of the distribution of this species.

Erynnis persius Scudder. — Mesa Verde and South Rim of Grand Canyon. Ranges from Alaska throughout Canada and the United States. Feeds on willows and poplars.

Erynnis meridianus Bell. — A single was taken at Supai. The type series is from Arizona and Texas.

Hesperiinae

Butleria pirus Edwards. — A single male taken on the North Rim of Grand Canyon. Recorded from Utah, Colorado, New Mexico, and Arizona.

Oarisma garita Reakirt. — San Francisco Mts. (at 8000 ft. alt.) and North Rim of Grand Canyon. Ranges from Manitoba to New Mexico, Arizona and (?) Mexico.

Copaeodes aurantiaca Hewitson. — Supai, South Rim of Grand Canyon, Indian Gardens, and Phantom Ranch. Ranges from California to Texas and Mexico. Feeds on Cynodon dactylon.

Hesperia uncas Edwards. — A single female was taken at Santa Fe in Dr. Proctor's garden. Ranges from Saskatchewan and Montana to Kansas and Arizona. Records from eastern United States probably refer to Hesperia metea Scudder.

Hesperia comma colorado Scudder. — Mesa Verde and South Rim of Grand Canyon. Ranges from Canada to Iowa, New Mexico and California. The published records are unreliable owing to the variability among the species in this group and the consequent difficulty of accurately distinguishing individuals having similar maculation. The race colorado varies greatly in size and also in the color of both upper and under sides. Some of the Mesa Verde specimens very closely approach the form idaho Edwards in the bright yellow color of the under side of the secondaries but they are somewhat too darkly bordered above to assign them definitely to that form.

Hesperia viridis Edwards. — A male from Santa Fe and a female from the South Rim of Grand Canyon. The latter appears to be this species with a somewhat reduced discal band of white spots on the under side of the secondaries but it may possibly be some other species. This species has been recorded from Colorado to Texas and Arizona.

Hylephila phyleus Drury. — Supai. Ranges over the greater part of the United States from Connecticut to California and southern Brazil. Feeds on grasses.

Ochlodes sylvanoides napa Edwards. — Mesa Verde and North Rim of Grand Canyon. The race napa was described from Colorado and is distinguished from the typical form by the larger size, somewhat paler color of the upper side and less variability in the color of the under side of the wings; but small individuals hardly differing from typical sylvanoides occasionally occur within the range of napa. Previous records of napa are all from Colorado but the typical form ranges from Vancouver to Nebraska, Arizona and California.

Ochlodes yuma Edwards. — Very abundant for a short distance along a tiny brooklet in Indian Gardens but not found elsewhere. Recorded from

California, Arizona, Utah and Colorado.

Ochlodes snowi Edwards. — San Francisco Mts., at 8000 ft. Occurs in Colorado, Arizona, New Mexico and Mexico.

Poanes taxiles Edwards. — Indian Gardens and North Rim of Grand Canyon. Ranges from Nevada to Nebraska, New Mexico and southern California.

Atrytone ruricola Boisduval. — Taken only at the head of Transept Canyon on the North Rim of Grand Canyon although it is usually common and very widely distributed: southern Canada, practically the entire United States and into Mexico.

Geographic Distribution

The region from which these butterflies came offers points of unusual interest in connection with problems of geographic distribution. However, the number of species taken in each locality touched by this trip is too small for even reliable indications of their bearing on such problems. Even the North Rim of Grand Canyon is represented in this catch by only 24 species, of which 10 are so widely distributed that they are of little value in studying geographic factors.

Leaving out of account the species that range from Canada to Mexico, the four that were taken in the San Francisco Mountains at about 9500 feet altitude have an average midlatitude (See Lutz, 1922, "Altitude in Colorado and Geographical Distribution," Bull. Amer. Mus. Nat. Hist., XLVI, pp. 335-366.) of 43.0° . The fourteen from the North Rim of Grand Canyon have an average midlatitude of only 38.0° , which is as southern as that of the seven taken on the South Rim (38.2°). Without much doubt additional records will change these averages. It would be rather surprising to find that the North Rim had as southern a fauna as the lower South Rim.

So far as the butterflies taken on this trip are concerned, again leaving out widely distributed ones, the eight species from Supai, the five from

Indian Gardens, and the six from Phantom Ranch have practically the same midlatitude, about 33.5° . This would indicate that the butterfly fauna in each of these places is practically "Lower Sonoran" but a little too northern to be typical while the butterfly fauna on at least the South Rim is practically "Upper Sonoran" but a little too southern to be typical. A further study of this situation, particularly with reference to possible barriers to geographic spread, would be very interesting.