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A NEW SUBSPECIES OF *CERCYONIS PEGALA* (FABRICIUS) (LEPIDOPTERA: SATYRIDAE) FROM THE SOUTHERN SIERRA NEVADA OF CALIFORNIA

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ABSTRACT: A highly disjunct population of *Cercyonis pegala* (Lepidoptera: Satyridae) is described from extreme southern Tulare County in the Sierra Nevada of California. This subspecies is characterized by larger size in comparison to other Californian *C. pegala* populations, very prominent eyespots on the forewings, and a pale grayish-brown aspect ventrally.

KEY WORDS: biodiversity, disjunct population, biogeography, conservation.

INTRODUCTION

In the summer of 1997, while collecting in the drainage of Poso Creek in extreme southern Tulare County, Ken Davenport took a small series of an unusual *Cercyonis pegala*. Because this population was highly disjunct, nearly 300 air miles from the nearest *C. pegala* population on the west slope of the northern Sierra Nevada, Davenport sent some of the specimens to J. F. Emmel for examination and analysis. As most of this initial material collected was very worn and in poor condition because of having been taken late in the season, Davenport returned to the locality in the summer of 1998 to collect more material and to send live females to J. F. Emmel for rearing studies. A long series of specimens was ultimately accumulated and proved to be a distinctive new subspecies, which is described as follows.

Cercyonis pegala australosierra J. F. Emmel, T. C. Emmel, & K. Davenport,
new subspecies

Figs. 1, 2 (♂), 3, 4 (♀)

Description. MALE. Holotype forewing length = 26 mm. Forewing, dorsal surface ground color dark brown, with two prominent eyespots in the distal postmedian area. The eyespots are usually pupilled with a very small white spot and ringed by a halo of dull yellow scaling; in some specimens, this halo is indistinct and obsolescent. The posterior eyespot is slightly offset distally towards the outer margin. In the posterior submedian area of the forewing, there is a patch of dark grayish-brown androconial scales.

Hindwing, dorsal surface ground color dark brown, similar to forewing. A small black dot is usually present in the submarginal area of cell Cu₁-Cu₂. This spot is not pupilled with white and is absent in a small percentage of specimens. The basal two-thirds of the wing is clothed in long pale brown scales.

Forewing, ventral surface ground color pale grayish-tan, with numerous small, dark brown, irregular markings in the proximal three-fifths of the wing. Fringe grayish-brown. In the postmedian area, there is an irregular but distinct dark brown line which extends from inside the costal margin to within 2-3 mm of the inner margin. Eyespots in distal postmedian area are very prominent, pupilled with a small white dot and haloed by prominent light golden yellow scaling. In the submarginal and marginal areas, there are three parallel thin wavy dark brown lines paralleling the outer margin.

Hindwing, ventral surface ground color as in forewing, with scattered irregular dark brown markings in the basal half of wing. Presence of eyespots in distal postmedian area variable with spot in cell Cu₁-Cu₂ almost always present, usually pupilled with white, and ringed with pale brown scaling. In the postmedian and submarginal area of the wing, there is variable development of patches of gray scaling, giving this area of the wing a lighter appearance than the basal area. There is a prominent irregular dark brown line in the proximal postmedian area of the wing extending from the costal margin to vein 2A. In the submarginal and marginal areas, there are three parallel dark brown irregular lines, similar to the pattern on the marginal and submarginal area of the forewing.

Head, palpi, thorax, and abdomen covered with brown scales. Antennae with dark clubs; shafts encircled with alternating white and dark brown sections.

FEMALE. Allotype forewing length = 29 mm. Forewing, dorsal surface ground color dark brown, with very well developed eyespots in the distal postmedian area of the wing. The posterior eyespot is larger and more prominent than the anterior one. Surrounding the eyespots is a variable amount of pale yellow scaling, mixed with pale brown scales to give a lighter aspect to the distal two-fifths of the wing. In the submarginal area of the wing, there is a somewhat indistinct dark brown line paralleling the outer margin; in some specimens, this is obsolescent. Inner area of fringe of outer margin is bordered by a very thin dark brown line.

Hindwing, dorsal surface ground color dark brown, with extensive overscaling of light brown long scales in proximal three-fifths of wing. In the submarginal area, there is an irregular dark brown line paralleling the outer margin; distal to this, in the marginal area, a very thin dark brown line parallels the outer margin.

Forewing, ventral surface ground color, light brownish gray, with numerous small dark brown irregular markings in basal half of wing. There is a prominent irregular dark brown line in the median area extending from just inside the costal margin to within 2 mm of the inner margin. Distal postmedian area with two very large, prominent

eyesspots, pupilled prominently with white spots centrally and ringed by very prominent halos of pale golden yellow scaling. Apical area of wing with extensive whitish overscaling, giving this area of the wing a very pale aspect. In the submarginal area, there is a thin, dark brown, irregular line paralleling the outer margin; in the marginal area, there are two very thin dark brown lines paralleling the outer margin.

Hindwing, ventral surface ground color of wing as in forewing. There is a prominent dark brown, irregular median line extending from the costal margin to vein 2A. Distal to this line, there are variable amounts of whitish or grayish overscaling, giving the distal half of the wing a paler appearance. Eyespots in distal postmedian area usually absent, but if present, they are found only in cells Cu₁-Cu₂ and Cu₂-2A; if present, these eyespots are usually minute. Submarginal and marginal areas with three parallel, very thin, dark brown lines paralleling the outer margin.



Figures 1-8. *Cercyonis pegala* from southern and northern Sierra Nevada areas in California (D=dorsum, V=venter). **1-2)** *C. pegala australosierra*, holotype ♂, D, V, from extreme southern Tulare County type locality, data in text; **3-4)** *C. pegala australosierra*, allotype ♀, D, V, from extreme southern Tulare County type locality, data in text; **5-6)** *C. pegala ariane* ♂, D, V, from Plumas County type locality area, data in text; **7-8)** *C. pegala ariane* ♀, D, V, from Plumas County type locality area, data in text.

Types. Holotype male (Figs. 1,2): California: Tulare County; north end of Linns Valley, west-southwest of Posey, ca. 3,250 feet elevation; S35, T24S, R30E, 21 July 1998, *leg.* Ken Davenport. Allotype female (Figs. 3,4): same locality data as holotype, reared from ova laid by Female #2 taken 27 July 1998, *leg.* Ken Davenport; reared at Hemet, California, on *Poa pratensis* and *Festuca rubra*, by J. F. Emmel; emerged 4 April 1999. Paratypes (74 males, 90 females): 13 females, same data as holotype except 4 August 1997; 4 males, 8 females, same data as holotype except 5 August 1997; 2 males, 20 females, same data as holotype except 11 August 1997; 7 males, 6 females, same data as holotype except 17 July 1998; 17 males, same data as holotype; 8 males, 3 females, same data as holotype except 27 July 1998; 7 females, same data as holotype except 7 September 1998; 4 males, 4 females, same data as holotype except 24 July 1999; 3 females, same data as holotype except 23 July 2001; 16 males, 7 females, same data as allotype except *ex* Female #1, emergence dates 25 December 1998 to 18 March 1999; 6 males, 14 females, same data as allotype, emergence dates 14 January 1999 to 13 April 1999; 4 females, same data as allotype except *ex* Female #3, emergence dates 24 -29 January 1999, 2 males, same data as allotype except *ex* Female #4 taken 7 September 1998, emergence dates 15 & 28 March 1999; 2 males, same data as allotype except *ex* Female #5 taken 7 September 1998, emergence dates 12 & 14 March 1999; 2 females, Kern Co.; along Poso Creek just south of Kern/Tulare county line, 15 July 2000, *leg.* Ken Davenport; 3 females, same data as previous except 22 July 2000; 2 females, same data as previous except 23 July 2001.

Deposition of types. The holotype, allotype, and the majority of paratypes will be deposited in the collection of the McGuire Center for Lepidoptera and Biodiversity, Florida Museum of Natural History, Gainesville, Florida. The remaining paratypes will be distributed to the following collections: Natural History Museum of Los Angeles County; California Academy of Sciences, San Francisco; American Museum of Natural History, New York; National Museum of Natural History, Smithsonian Institution, Washington, D.C.; C. P. Gillette Museum of Arthropod Diversity, Colorado State University, Ft. Collins, Colorado; and in the collections of the authors.

Type locality. California: Tulare County; north end of Linns Valley, west-southwest of Posey, ca. 3,250 feet elevation; S35, T24S, R30E.

Etymology. The subspecific name *australosierra* refers to the distribution of this subspecies in the southern Sierra Nevada.

Distribution and phenology. Thus far, this taxon is known only from the drainage of Poso Creek in southern Tulare and extreme northern Kern counties in the Sierra Nevada. The subspecies flies from early July to mid-September, with a peak flight in late July. The habitat is an interdigitated mixture of oak woodland and grassy meadows.

DIAGNOSIS AND DISCUSSION

This subspecies is characterized by very prominent eyespots on the forewings, relatively large size, and generally pale grayish tan undersides, which give it a resemblance to certain phenotypes of *Ceryconis sthenele*, such as *silvestris* (W. H. Edwards, 1861) in the Sierran foothills or *behrii* (Grinnell, 1905) in the California Coast Ranges. It is particularly remarkable that no other *Ceryconis pegala* populations are known from the west slope of the Sierra Nevada between the southern Tulare County locality and *C. pegala* populations in the northern Sierra Nevada. *Ceryconis p. australosierra* differs from *C. p. ariane* (Boisduval, 1852) of the northern Sierra Nevada and *C. p. boopis* (Behr, 1864) of coastal Contra Costa County in its larger size, paler

ventral surface, and more prominent forewing eyespots. For comparison with the phenotype of the new subspecies, we illustrate (Figs. 5-8) typical male and female *C. p. ariane* from Quincy, Plumas County (3,437 feet elevation), in the northern Sierra, in the Feather River drainage area of the designated type locality for *ariane* (Emmel, Emmel, and Mattoon, 1998).

The area of the type locality for *C. p. australosierra* is privately owned, and overtures recommending conservation measures for this extremely restricted subspecies have been negatively received. Furthermore, the owner has fenced the area where the butterfly is found to discourage collectors from trespassing. It is recommended that an organization with diplomatic skills in such matters, such as the Nature Conservancy, be encouraged to contact the owner regarding a conservation easement.

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