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NOTES ON ERORA (LYCÆNIDÆ)

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Prior to 1940 all the *Erora* occuring in the United States were considered to be *Erora læta* Edwards. The range at that time was known to be curiously disjunct. An eastern population occuring from Ontario and Nova Scotia south to Virginia and a southwestern population occuring in Arizona were known. Dos Passos (1940) described the population in Arizona and New Mexico as *Erora læta sanfordi*. He made no mention of *Erora quaderna* (Hewitson) so I presume no Mexican *Erora* were examined.

FIELD (1941) affiliated the Arizona population with *Erora quaderna* which was described from Mexico in 1868 and listed *Erora læta sanfordi* dos Passos as a synonym. FIELD's decision was based apparently on the original description and on the description found in the *Biologia Centrali-Americana*. He also made no mention of examining any *Erora* from Mexico. FIELD treated *Thecla attalion* Godman & Salvin as a dimorphic form of the male of *quaderna*, the name being based on a form lacking the green color on the ventral wing surfaces. He cautioned that such specimens lacking the green beneath may not occur in nature except in a worn condition. It has been my experience with *quaderna* in Arizona that the green overscaling is easily removed leaving a brownish-buff color on the undersurfaces. In view of this it seems that *attalion* can remain in synonomy.

CLENCH (1943) revived sanfordi as the subspecies of quaderna occuring in the southwestern United States. His opinion was primarily based on the comparison of two quaderna specimens from Tancitaro, Michoacan, Mexico with Arizona material. CLENCH selected Tancitaro as the type locality because the type of quaderna, a female in the British Museum, carried no accurate data. Unfortunately CLENCH failed to give any characters by which *quaderna quaderna* and *quaderna sanfordi* could be separated.

In an attempt to learn the diagnostic characters separating the subspecies I borrowed from the Museum of Comparative Zoology the two females (Tancitaro, Michoacan, Mexico, 7800', VI-30-41 and VII-8-41, resp.; H. HOOCSTRAAL and R. HAAC, collectors) which CLENCH had examined. In addition Dr. TARSICIO ESCALANTE kindly loaned me two females (Desierto de los Leones, approx. 7500', Distrito Federal, Mexico, I-45 and II-23-61). These four specimens from central Mexico were compared with a series of *Erora* from various localities in southern Arizona. The variation of the Arizona material clearly encompasses the Mexican material. On the basis of my comparison I consider *sanfordi* to be a synonym of *quaderna*, as did FIELD. I shall add that in a series of forty females from Madera Canyon, Santa Rita Mts., Santa Cruz Co., Arizona, there is considerable variation in the amount and shade of blue on the dorsal surface and in the size of the orange spots on the ventral surface.

In giving the distribution of *quaderna* within the United States FIELD (1941) lists Arizona, Utah, and New Mexico. I have been able to find no further record concerning the occurence of this species in Utah. Dos Passos (1940) records two specimens received from R. T. KELLOGG of Silver City, New Mexico. LLOYD M. MARTIN (*in litt.*) states that there is one specimen in the Los Angeles County Museum collection bearing the label data: III-22-40, Providence Mts., San Bernardino Co., California, T. B. BLEVINS, JR., collector. This is an entirely different environment from that in which it occurs in Arizona.

In 1960 I located a specimen of *quaderna* in the collection at park headquarters of Big Bend National Park. The data on this specimen, a female, were Big Bend National Park, Brewster Co., Texas, VI-12-37, ROLLIN H. BAKER, collector. To my knowledge this represents the first record of this species from Texas and is a considerable eastward range extension.

The data of my *Erora quaderna* collections in Arizona are as follows: APACHE COUNTY: Trout Creek Road, 4-6 mi. S of Smith Park, approx. 7500', VII-4-58, 3 males; VII-4-59, 4 males; VI-25 & 26-60, 4 males, 1 female; VII-22-61, 1 male, 3 females. COCHISE COUNTY: E. Turkey Creek Canyon, approx. 3 mi. E of Onion Saddle, Chiricahua Mts., 6400' IV-10-59, 2 males, 10 females, IV-15-60, 12 females. Pinery Canyon, Chiricahua Mts., IV-15-60, 2 males, 4 females. 1 mi. NW of the Southwestern Research Station, Chiricahua Mts., IV-15-60, 4 females. 1 mi.

N of Rustler Park, Chiricahua Mts., VI-19-60, 2 males, COCONINO COUNTY: Oak Creek Canyon, 7 mi. N of Sedona, III-28-59, 1 male. Todd's Lodge, Oak Creek Canvon, VII-16-61, 1 female. GILA COUNTY: Peterson Ranch, 7000', Sierra Ancha, VII-2-60, 2 females. Tonto Creek Fish Hatchery, VI-28-61, 1 male. GRAHAM COUNTY: Wet Canyon, 6000', Pinaleno Mts., IV-23-61, 2 females. GREENLEE COUNTY: Rt. 666, 8 mi. S of Hannigan Meadows, VII-5-59, 6 males. Gray's Peak Road Camp, Rt. 666, VII-5-59, 5 males, 1 female. PIMA COUNTY: Madera Canyon, Santa Rita Mts., 4400-4600', III-8-59, 1 male; III-19-60, 3 males. Summerhaven, 7800', Santa Catalina Mts., V-24-59, 1 male; VII-9-61, 1 female. PINAL COUNTY: Peppersauce Wash, 5000', Santa Catalina Mts., IV-18-61, 1 female. SANTA CRUZ COUNTY: Madera Canyon, Santa Rita Mts., 5600-6400', III-29-59, 3 males; IV-9-59, 4 males, 28 females; IV-10-59, 1 male, 32 females; IV-3-60, 8 females; IV-9-60, 3 females; VII-6-60, 2 males, 7 females; VII-9-60, 4 females: VII-13-60, 2 females: IV-6-61, 12 females.

All of the known records of *quaderna* in Arizona are from the isolated mountain ranges in the southeastern part or from the Mogollon Rim area which extends in an irregular line from near Sedona eastward to McNary, then southeast to the vicinity of Glenwood, New Mexico. In addition to the counties previously mentioned it has been recorded by others from several localities in Yavapai County.

The flight peaks seem to fall during the first two weeks of April and again during late June and the first week of July. Captures range in elevation from 4400' to 7800' although *quaderna* was encountered most frequently from 5500' to 7500' in the oak and pine zones. The collections I have made indicate that females are more abundant than males by a 3:1 ratio. In the case of *læta*, females are also reported more frequently than the males. This unequal sex ratio may be only a result of incomplete sampling methods.

Erora quaderna is readily attracted to the flowers of *Ceanothus fendleri* Gray. I have also taken it on the flowers of *Prunus virens* (Woot. & Standl.), *Nolina microcarpa* Wats., and *Monarda* sp. It is not unusual during early April in Madera Canyon to see several hundred specimens during the course of a day. At that time of year they are easily taken at damp spots along the stream or in flight along the road and trails. The flight has been noted to move down the canyon unless a strong wind was blowing.

Several present day workers consider quaderna may be conspecific with *læta*. I am not prepared to comment on this relationship since I have examined only two speciments of the latter. A key character that has been cited for distinguishing males of these two species is the absence of a blue tornal patch on the dorsal surface of the hindwing in *quaderna* and its presence in *læta*. This is not a consistant character as I have five males of *quaderna* which exhibit a conspicious tornal patch.

I have not been successful in locating the foodplant of *quaderna*. The foodplants of *læta* have been listed as *Fagus* (beech) and *Corylus* (hazlenut). According to KEARNEY & PEEBLES (1960) no members of these genera occur in Arizona.

The southernmost record of *læta* that has been published was of a female taken along the Little River, 3000', Great Smoky Mountains National Park, Sevier Co., Tennessee, IV-15-38 by ARTHUR STUPKA, the park naturalist (Field, 1941). While checking collecting records at the park headquarters of the Great Smoky Mountains National Park I found reference to a specimen of *læta* taken VII-17-36, on Andrew's Bald, 5860', G.S.M.N.P., Swain Co., North Carolina, SIEBERT & EVANS, collectors. This is the first record of this species in North Carolina. It also represents an altitudinal high and the southernmost record for the United States.

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References

- Clench, H. K., 1943. A note on the Arizona Erora. Journ. N. Y. ent. soc. 51: 221-223.
- dos Passos, C. F., 1940. A new subspecies of *Erora læta* Edw. from Arizona and New Mexico. Amer. mus. novitates 1052: 1-2.
- Field, W. D., 1941. Notes on Erora læta (Edwards) and Erora quaderna (Hewitson). Annals ent. soc. America 34: 303-316, 3 pls.
- Kearney, T. H., & R. H. Peebles, with supplement by J. T. Howell & Elizabeth McClintock, 1960. Arizona flora, 2nd ed. 1085 pp., 45 pls.

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