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EREBIA YOUNGI HOLLAND, ITS SUBSPECIES AND DISTRIBUTION (LEPIDOPTERA, SATYRIDAE)

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The studies reported in this paper are the result of correspondence with B. C. S. Warren in connection with his proposed supplement to a monograph of the genus *Erebia* published in 1936. It was found that one of Leussler's species is best regarded as a subspecies of *E. youngi* Holland (1900, p. 388) and that, in addition to these two previously named populations, there is a third recognizable subspecies in the Mount McKinley region of Alaska.

The type localities herein mentioned are situated in Alaska, and in the District of Mackenzie, Northwest Territories, Canada, and as the crow flies are about the following distances from each other:

McKinley Park to Forty Mile and Mission Creeks	255 miles
McKinley Park to Herschel Island	490 miles
Forty Mile and Mission Creeks to Herschel Island	365 miles

Aklavik, also mentioned in this paper, but not a type locality, is in the District of Mackenzie, Northwest Territories, Canada, about 140 miles southeast of Herschel Island, and about 305 miles from the mountains between Forty Mile and Mission Creeks. It appears, therefore, that the type localities of the three subspecies discussed herein are at the corners of a triangle, lying approximately between latitudes 63° and 70° N. and longitudes 141° and 150° W. The range of the species is doubtless much wider, but so little collecting has been done thus far in Alaska and Northwest Territories that specimens of *Erebia* from there are extremely rare in collections.

Erebia youngi youngi Holland

Erebia youngi HOLLAND, 1900, Ent. News, vol. 11, p. 388.

Erebia youngi, GIBSON, 1920, Report of the Canadian Arctic expedition 1913–18, vol. 3, pt. 1, p. 18i, pl. 4, fig. 10.

Erebia youngi HOLLAND, 1931, The butterfly book, revised ed., p. 205, pl. 61, fig. 28, ♂, type; fig. 29, ♀, type; fig. 30, "♀," under side, paratype.

Erebia youngi, WARREN, 1936, Monograph of the genus *Erebia*, p. 242, pl. 83, figs. 1166, 1172.

Erebia youngi, MCDUNNOUGH, 1937, Canadian Ent., vol. 69, p. 18.

Erebia youngi, DOS PASSOS, 1939, Bull. Cheyenne Mt. Mus., vol. 1, pt. 2, p. S-13.

This insect was described from a series of three males and one female taken by the Rev. S. Hall Young in the mountains between Forty Mile and Mission Creeks, northeast Alaska, latitude 64° N., on July 20, 1899. Holland's figure (*op. cit.*, fig. 30) of a "♀," paratype is, in fact, a male. Through the courtesy of Dr. W. R. Sweadner, Curator of Entomology, Carnegie Museum, it has been possible to make a slide of the genitalia of this cotype. At the same time Dr. Sweadner advised the author that the third male cotype was missing from the collection. This missing specimen was not figured by Holland, but, fortunately, photographs of the entire type series are in the present author's collection. Dr. Sweadner also wrote that the males expand 38.5–39 mm., not 33 mm., and the female expands 38.25 mm., not 35 mm., as stated in the original description.

The genitalia of a specimen of *youngi youngi* from Nansen Creek, Yukon, Canada, is figured by Warren (*op. cit.*, pl. 42, fig. 385). An examination of that figure, the dissection of a cotype of *youngi youngi*, and of a specimen from Arctic Circle, Alaska, in this author's collection, show that this subspecies usually has the most complex form of clasp with three rows of spines, one on the costa of the clasp and one below the costa on either side.

HABITAT: The habitat of this sub-

species will probably be found to be in the basin of the Yukon River and its tributaries in northwest Alaska. There is a substantial mountain barrier between this territory and that of the following subspecies.

MATERIAL EXAMINED: Three male and one female cotypes, all then in the Carnegie Museum, and genitalia (slide no. 245, C. F. dos Passos) of the "♀," paratype figured by Holland (*op. cit.*) in the collection of the Carnegie Museum; one male, "Arctic Circle," Alaska, August (slide no. 256, C. F. dos Passos), in the collection of the author. This specimen was purchased from the late Herman J. Erb, and probably came from Circle, Alaska, which is about 50 miles south of the Arctic Circle, and about 150 miles from Mission Creeks, both localities being on the Yukon River. Most of Erb's Alaskan material came from Circle although sometimes labeled "Arctic Circle."

Erebia youngi herscheli Leussler

Erebia youngi, CARY, 1906, Proc. U. S. Natl. Mus., vol. 31, p. 448.

Erebia youngi, BRYANT, 1935, Bull. Brooklyn Ent. Soc., vol. 30, pp. 2, 8.

Erebia herscheli BRYANT (*nomen nudum*), 1935, Bull. Brooklyn Ent. Soc., vol. 30, p. 6.

Erebia youngi, LEUSSLER, 1935, Bull. Brooklyn Ent. Soc., vol. 30, pp. 51, 61.

Erebia herscheli LEUSSLER, 1935, Bull. Brooklyn Ent. Soc., vol. 30, pp. 51, 60.

Erebia herscheli, MCDUNNOUGH, 1937, Canadian Ent., vol. 69, p. 18.

Erebia herscheli, DOS PASSOS, 1939, Bull. Cheyenne Mt. Mus., vol. 1, pt. 2, p. S-13.

This insect was described from a series of three males taken by Owen Bryant on Herschel Island, Yukon, Canada, latitude 70° N., on July 20, 1930. This island is in the Beaufort Sea, a short distance from the mainland. The holotype and one paratype were subsequently acquired from Bryant by the present author, and the holotype was presented to the American Museum of Natural History. The other paratype remained in the collection of the late R. A. Leussler, who worked up most of Bryant's Arctic butterflies. Recently Leussler's collection was acquired by the Ohio State University.

Dissections of the holotype of *herscheli*, and of the paratype in this author's collection, show that *herscheli* is, in fact, a subspecies of *youngi*, the genitalia being substantially similar except that there are usually only two rows of spines instead of three as in *youngi youngi*, one on the costa of the clasp and one just below the costa on the outer side. The spines are most numerous on the clasp of *herscheli*, being closer together than on *youngi*.

When Leussler described *herscheli*, he had also before him a few specimens of both sexes of *Erebia* from Aklavik which he referred to *youngi*. This series, or part thereof consisting of four males and two females, is before me. They are similar in size and pattern to the type series of *herscheli* except that the males do not have clearly defined, pale submarginal bands on the under side of the secondaries. This may be owing in part to the fact that they are "all somewhat the worse for wear" as Leussler mentioned. Occasional specimens of *youngi youngi* also lack this submarginal band. The genitalia of two of these specimens from Aklavik agree well with the two dissections of *herscheli*. Leussler was undoubtedly in error in referring these six specimens to *youngi*. Leussler (*tom. cit.*) terms *herscheli* ". . . a very obscure little insect." He further states ". . . it is a decidedly smaller . . ." insect than *youngi*, while a few lines above he gives the expanse of *herscheli* as 40 mm., whereas Holland's published expanse of *youngi* is 33 mm. It is obvious that Leussler was not familiar with typical *youngi*, and that his statement concerning the respective sizes of the insects mentioned is contrary to the facts. The holotype of *herscheli* and the paratype in my collection expand, respectively, 39.5 mm., and 41.4 mm.

HABITAT: The habitat of this subspecies probably will be found to be in the basin of the Mackenzie River and its tributaries. The Richardson Mountains, Ogilvie Range, and Mackenzie Mountains would appear to present a substantial barrier between this subspecies and the former one.

MATERIAL EXAMINED: Holotype male, and one male paratype, both from Her-

schel Island, Yukon, Canada, latitude 70° N. (Beaufort Sea), July 20, 1930 (slides nos. 257 and 243, C. F. dos Passos). The holotype is in the American Museum of Natural History, and the paratype in this author's collection; two males, Aklavik, Northwest Territories, July 11, 1931 (O. Bryant), and two males, same locality and collector, July 24, 1931 (slides nos. 253 and 239, C. F. dos Passos); two females, same locality, dates, and collector, all in the collection of this author, *ex* collection Owen Bryant.

Erebia youngi rileyi, new subspecies

MALE: Expanse 30.9 – 39.6 mm.; holotype 37.6 mm.

ABOVE: Primaries and secondaries Brussels Brown,[1] Light Seal Brown (holotype), or Bone Brown, the primaries with a submarginal row of four Apricot Buff or Ochraceous-Orange ocelli, each with a Black pupil somewhat elongated. Occasional specimens have ocelli lacking one or more pupils, and some lack the apical ocelli. Secondaries sometimes with one to three small submarginal spots, Apricot Buff or Ochraceous-Orange, faintly pupilled with Black.

BELOW: Primaries, basal, and limbal areas Verona Brown, Warm Sepia, or Light Seal Brown, separated by an Apricot Buff or Ochraceous-Orange submarginal band, cut by the nervules, in which the ocelli reappear, or in a few instances appear as Black points. Secondaries, basal, and limbal areas separated by a crenulate median band, the same color as the primaries, between which and the marginal crenulate band there is a wide submarginal band, Avellaneous, Wood Brown, or Fawn color. Fringes concolorous with wings—somewhat paler.

Head concolorous with wings; antennae annulated, White and Light Seal Brown, with spoon-shaped, Apricot Buff and Black club; thorax and abdomen Black with hairs the color of the wings; legs paler than wings.

[1] All color terms are those employed in "Color standards and color nomenclature" by Robert Ridgway, Washington, D. C., 1912, published by the author.

FEMALE: Expanse 34.5 – 41 mm.; allotype 34.5 mm.

ABOVE: Primaries and secondaries Brussels Brown (allotype) or Warm Sepia, the primaries with a submarginal row of four Apricot Buff or Ochraceous-Orange ocelli; six specimens with Black pupilled ocelli somewhat elongated; pupils obsolete in four specimens. Secondaries occasionally with one to three small submarginal spots, Apricot Buff or Ochraceous-Orange, faintly pupilled with Black.

BELOW: Primaries, basal, and limbal areas Verona Brown or Warm Sepia, separated by an Apricot Buff or Ochraceous-Orange submarginal band, cut by the nervules, in which the ocelli sometimes reappear, or in a few instances appear as Black points. Secondaries, basal, and limbal areas separated by a crenulate median band, sometimes only outlined, at other times solidly colored, between which and the marginal crenulate band there is a wide submarginal band, Light Drab, Light Olive-Gray, or Drab, sometimes indistinct. Fringes concolorous with wings.

Head concolorous with wings; antennae similar to males, but darker; thorax and abdomen Black with hairs the color of the wings; legs paler than wings.

Specimens, both male and female, that do not show any Black pupil in the ocelli on the primaries usually have faint Apricot Buff submarginal points between the veins on the under side of the secondaries.

This subspecies is named for my friend, N. D. Riley, Keeper, Department of Entomology, British Museum (Natural History).

Usually this new subspecies has the simplest form of clasp, and the fewest spines—only in one row on the costa of the clasp with a few sometimes on the outside (slides nos. 238 and 247, C. F. dos Passos). From the eight dissections of *youngi*, no positive conclusions can be drawn. There is considerable individual variation among specimens from the same locality, although the general form of the male genital armature is similar in all three subspecies. In separating the subspecies it must be conceded that in so far as the studies have progressed, the results, while useful, nec-

essarily lack finality. Other superficial characters must be considered also.

In addition to the genitalic characters, *rileyi* may be distinguished from *youngi youngi*, its nearest relative, by the slightly smaller size, the narrower, more broken, and somewhat darker submarginal band on the upper and under sides of the primaries in both sexes, by the general absence of the submarginal markings on the upper side of the secondaries in both sexes (those on the cotype of *youngi youngi* being Black pupilled, a condition not observed in most of the females of *rileyi*), and by the fact that about one-quarter of the specimens in both sexes of *rileyi* do not show any Black pupil in the ocelli on the upper and/or under sides of the primaries. On the secondaries the basal area of *youngi youngi* is concolorous with the median band, whereas in *rileyi* it is usually the same color as the submarginal band. The new subspecies may be distinguished from *herscheli* by the smaller size. The median band on the under side of the secondaries of *herscheli*, when present, is almost concolorous with the rest of the wing, and the submarginal band is also less prominent and lacking in most specimens examined, while the reverse usually is true in *rileyi*.

HABITAT: The habitat of this subspecies is in the Alaskan range, where it seems to fly at about 3500 feet elevation. A large portion of this range is in the Mount McKinley National Park. No barrier appears to exist between *rileyi* and *youngi youngi*, unless the low lands along the Tanana River act as such. If not, it would seem that further collecting in this region will establish the intergradation of the two subspecies.

TYPE MATERIAL: The holotype male is from McKinley Park, Alaska, June 19, 1932, and the allotype female is from Mount McKinley Park, Alaska, June 20, 1932. There are 15 pairs of paratypes from Alaska as follows: six males and six females, McKinley, July 4–15, 1930, *ex* collection J. D. Gunder; three males, McKinley Park, June 20, 1932, and six females, same locality, between June 17 and June 28, 1932; five males, Mount McKinley Park, between June 25 and July 9, 1932, and one female, same locality, July 10, 1932; one female, McKinley National Park, July 11, 1931, *ex* collection J. A. Comstock; one male and one female, Mount McKinley Park, July 5, 1938, 3500 feet (G. P. Engelhardt). The holotype, allotype, *ex* collection of the author, and six pairs of paratypes, *ex* collection J. D. Gunder, are in the American Museum of Natural History. The remaining paratypes are in the collection of the author.

ADDITIONAL MATERIAL EXAMINED: The author has examined also the following specimens of *rileyi* from Alaska, but they are not made paratypes: one male, McKinley Park, July 29, 1930 (D. Fraser); 12 males and four females, McKinley, July 4–15, 1930, *ex* collection J. D. Gunder, all in the American Museum of Natural History; three males and two females, McKinley Park in the collection of B. C. S. Warren, Folkestone, Kent, England, *ex* collection C. F. dos Passos; four males, McKinley Park, in the collection of Don B. Stallings, Caldwell, Kansas, *ex* collection C. F. dos Passos; 47 males, labeled variously McKinley Park, Mount McKinley Park, 3500 feet, and McKinley National Park, between June 15 and July 22, in the collection of the author.