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NOTES ON THE BUTTERFLIES OF THE GENUS *ENODIA*
AND DESCRIPTION OF A NEW FRITILLARY FROM
PERU

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THE capture at Virginia Beach and at Princess Anne, in Princess Anne County, Va., on September 23 and 24, 1934, of a series of about 30 specimens of a satyrid butterfly belonging to the genus *Enodia* brought up the question of the proper application of the names that have been proposed for the species of this genus.

In 1781 Johan Christian Fabricius (*Species insectorum*, vol. 2, p. 82, no. 363) described *Papilio portlandia* in the following terms:

Portlandia 363. P. N. G. alis dentatis fuscis, posticis supra ocellis quinque coecis, subtus septem pupillatis.

Habitat in America meridionali. *Mus. Dom. Yeats.*

Paruus. Alae anticae fuscae versus apicem fascia flavescente maculis tribus ocellaribus atris. Posticae fuscae maculis quinque atris iride flavescente absque pupilla. Subtus fuscae strigis obscurioribus. Anticae versus apicem fascia lata apice bifida alba et in hac ocelli quatuor atri iride flava, exterioribus pupilla alba. Posticae fuscae versus apicem alba et ocello unico ante fasciam, sex pone fasciam atris ultimis duobus conuatis iride flava pupillaque oblonga argentea.

This may be translated:

P. N. G. with brown dentate wings, the posterior above with five blind ocelli, below with seven pupiled ocelli. Habitat in southern America. In the [John Pattison] Yeats collection. A small species. Fore wings brown, toward the

apex with a yellowish band with three black eye-spots. Hind wings brown with five black spots tinged with yellowish and without pupils. Beneath brown with darker stripes. Fore wings toward the apex with a broad white band bifurcated apically in which are four black eye-spots tinged with yellow, the outer with a white pupil. Hind wings with a white band toward the apex, a single eye-spot in front of the band, and behind the band six, the last two twinned, tinged with yellow and with an oblong silver pupil.

Fabricius listed *portlandia* between (*Vanessa*) *itea* from New Zealand (362) and (*V.*) *cardui* (364), indicating that he regarded it as a nymphalid related to these two species. In its general appearance it certainly does resemble a nymphalid more than it does most satyrids. The locality "America meridionalis" given by Fabricius means simply "southern America."

In 1787 Fabricius (*Mantissa insectorum*, vol. 2, p. 45, no. 439) changed the name *portlandia* to *iortlandia*. This was probably merely a typographical error.

Jacob Hübner did not mention Fabricius' *portlandia*, which he seems to have been unable to identify, possibly having been misled by the position between two species of *Vanessa* in which it was placed by that author.

Sometime between 1806 and 1818 (*Sammlung exotischer Schmetterlinge*, vol. 1) Hübner described and figured *Papilio* (*Oreas Marmorata*) *andromacha*. This appears to differ in no way from Fabricius' *portlandia*, of which it is generally conceded to be a synonym. In 1818 (*Verzeichniss bekannter Schmetterlinge*, p. 61, no. 587) Hübner listed this species as *Enodia andromacha*.

In 1821 (*Index exoticorum lepidopterorum*, p. 1) Hübner substituted the specific name *androcardia* for *andromacha*, giving no explanation for the change. He wrote simply "Andromacha Pap. nym. f. *Oreas marmorata*: *Enodia Androcardia*." It is possible that the name was changed because of an earlier *Papilio* (*Parnassius*) *andromacha* of Fabricius (*Systema entomologiae*, p. 466, no. 102, 1775), which is *Acraca andromacha* of the Australian region.

Thomas Say in 1859 (*American entomology*, vol. 1, p. 81, pl. 36) published a detailed description and colored figures of a specimen of *Hipparchia andromacha* from Arkansas.

In 1878 Ferdinand Heinrich Herman Strecker (*Butterflies and moths of North America*, p. 148, no. 299) described a specimen from Texas as

ab. a. ♂—Spots on upper surface of primaries very small and almost obsolete, the transverse lines entirely wanting. In the cells (excepting the discoidal) accompanying the veins are broad furry fuscous lines connected inwardly, open outwardly, leaving sagittate spaces of the brown ground colour in the middle of each cell. Mus. Strecker.

In 1888 W. H. Edwards (*The butterflies of North America*, ser. 3, pt. v, Debis 1) published a detailed account of the life history of

Debis portlandia with colored figures of both surfaces of each sex and of the early stages, and gave a survey of the occurrence, habits, and distribution, which covers all the forms. His figures of adults represent the form found in the mountains of West Virginia.

In 1897 (Ent. News, vol. 8, no. 10, p. 236) Dr. Henry Skinner described *Debis creola* from specimens sent to him by G. R. Pilate, who had captured them at Opelousas, La., on July 3, 1897. He said that this was probably what Dr. Strecker described as aberration a, based on a specimen from Texas, and added that Dr. A. G. Butler had recognized this species and that there were specimens in the British Museum from the Godman and Salvin collection, and that the great development of the male sexual patch seemed to him to be of specific importance. Dr. Skinner compared his new species with *portlandia*.

In 1926 (Ent. News, vol. 37, no. 2, p. 42) Dr. Skinner said he knew of *creola* only from the type and allotype in the collection of the Philadelphia Academy and the perfect figure in Holland's Butterfly Book. He said that typical *portlandia* was well figured by Edwards and that the Academy had some nice specimens from as far north as Miniota, Manitoba. The form occurring at Gainesville, Fla., Mobile and Chickasaw, Ala., and Macon, Ga., he called *andromacha*.

In 1932 (Bull. Brooklyn Ent. Soc., vol. 26, no. 5, pp. 234-255) Dr. A. Glenn Richards, Jr., considered in some detail *Enodia portlandia*, *E. p. andromacha*, and *E. creola*. He examined the male genitalia of all three and found no constant morphological differences. "Any two slides, even of the same form," he said, "will show a number of small differences, but these minute gaps are all bridged over in a series of preparations so that we can account for all differences on a basis of individual variation." He remarked: "The distinctions between the northern and southern races of *portlandia* are slight and intangible, southern specimens being larger and presenting a somewhat different aspect (the value of a separate racial name seems superfluous). *Creola*, however, is separated in the male by the sex scaling and more triangular fore wing, but I can not separate possible females of this species from large females of *andromacha*, and know no one who can distinguish them in this sex." He wrote that he found *creola* and *andromacha* flying together along a shady river trail southeast of Athens, Clarke County, Ga., and from a single "play-group" several times took a series of *andromacha* along with a single specimen of *creola*.

In 1935 I recorded (Proc. Ent. Soc. Washington, vol. 37, no. 5, pp. 115-116) a typical male of *Enodia creola* from the Edward T. Owen collection in the United States National Museum that had been taken in Michigan by David Bruce, of Brockport, N. Y., a female of this form from Palos Park, Ill., dated July 9, 1911, and another female without data. These individuals are smaller than those from

Georgia in the National Museum collected by Dr. Richards and are also smaller than the two figured by Dr. W. J. Holland, which I have been permitted to examine through the courtesy of Dr. Hugo Kahl, of the Carnegie Museum at Pittsburgh, Pa.

On September 1-3, 1935, I found *Enodia creola* fairly common along the western border of the Dismal Swamp (Nansemond escarpment) in Nansemond County, Va., from Suffolk southward, and also farther west. Here it occurs in company with *E. portlandia*, in some places in about equal numbers. East of the Dismal Swamp, and in the wetter woods generally, only *E. portlandia* was found. In life both sexes of *E. creola* are easily distinguishable from the corresponding sexes of *E. portlandia* at some distance. Belligerent males of *E. creola* are extremely quick in their movements, resembling vanessids.

The specimens from Princess Anne and Virginia Beach (pl. 22, figs. 3, 4) agree so closely with *portlandia* as described by Fabricius, and with *andromacha* as figured by Hübner, as to leave no doubt of their identity. Twenty additional specimens in the collection of the United States National Museum (of which 13 are in the Barnes collection) agree with them. These are from the following localities:

MISSISSIPPI: Vicksburg, George Dörner, September 1908 (1).

ALABAMA: Chickasaw, Mobile County, W. C. Dukes, May 21, 1921 (1); June 19, 1921 (4); 20, 1922 (2); 25, 1922 (2); August 1, 1920 (1); 8, 1920 (2); 15, 1920 (1); October 22, 1922 (1).

FLORIDA: Gainesville, May 1922 (2).

SOUTH CAROLINA: Charleston (1).

NEW JERSEY: Palisades, George P. Engelhardt, July 20, 1908 (1).

AMÉRIQUE SEPTÉNTRIONALE: From the Boisduval collection (1).

The form called *Enodia portlandia andromacha* by Richards is the same as that represented by these specimens.

A quite distinct form is that referred to as ab. a ♂ by Strecker, as *Debis creola* by Skinner, and as *Enodia creola* by Richards (pl. 22, figs. 5, 6). This form is now known to range from northern Illinois, Michigan, and Virginia southward to northern Georgia, southern Louisiana, and Texas. It is still rare in collections.

A third form, occurring in the East from southern New Hampshire southward to the higher altitudes of North Carolina and possibly farther (pl. 22, figs. 1, 2) is lighter, less brightly marked, and usually smaller than true *portlandia*. This is the form referred to as *portlandia* by Skinner and Richards, and by American authors generally. It is locally frequent in the mountains of Virginia, where its quick and active movements and its habit of keeping generally low down in the underbrush distinguish it rather sharply from the less active and commonly high flying true *portlandia* of the coastal region. Since none of the names that have been proposed for species of this genus is applicable to it, it may be known as

ENODIA PORTLANDIA ANTHEDON, new subspecies

PLATE 22, FIGURES 1, 2

Diagnosis.—In general similar to *E. p. portlandia* (Fabricius); wings beneath without white; ocelli of fore wings beneath in a straight line; ocelli of hind wings beneath each with a circular white pupil. From *E. creola* (Skinner) it differs in the absence of white beneath; in having the post-medial line on the under side of the fore wing with a single angle, at vein 4; in the somewhat less produced primaries, especially of the male; and in the absence of the broad furry band on the upper surface of the primaries in the male.

Type.—U.S.N.M. no. 51137 (William Barnes collection), from Lava, Sullivan County, N. Y., taken in June.

A fourth form, ranging from central Maine and Quebec westward to Manitoba seems to be worthy of recognition. It may be known as

ENODIA PORTLANDIA BOREALIS, new subspecies

Diagnosis.—Closely resembling *E. p. anthedon*; upper surface darker, with the dark margin of the hind wings broader and more uniform; lower surface darker and more brownish, usually with the ground color less varied and sometimes quite uniform, with only faint indications of a narrow lighter line enclosing the rows of spots on the fore and hind wings; on the hind wings the dark band between the light line enclosing the row of spots and the fine submarginal light line is, beyond the fourth and fifth spots, broader—usually much broader—than the distance between the submarginal line and the edge of the wing.

Type.—U.S.N.M. no. 51138 (William Barnes collection), from Hymers, Ontario, July 1-7.

Twenty-two specimens are at hand from the following localities:

MANITOBA: Miniota, June 17, 1923, H. Gibbon (1); July 1, 1922 (1); July 10, 1920 (12). Winnipeg, July 1-7 (1); no date (1).

ONTARIO: Hymers, July 1-7 (2).

QUEBEC: Meach Lake, Ottawa County (1); somewhat intermediate between this and the preceding form.

MAINE: Sebec Lake, July 16-23 (1); July 24-31 (2); more or less intermediate between this and the form preceding.

Enodia portlandia borealis is very variable, but it seems always to be distinguishable by the broader dark border on the hind wings above and by the relatively broad dark area between the row of spots and the submarginal light line on the hind wings below.

The interrelationships of the forms included in the genus *Enodia* are shown in the following key:

KEY TO THE FORMS INCLUDED IN THE GENUS ENODIA

- a*¹. Male with the fore wings more pointed than those of the female, above with a broad furry band interrupted at the veins and by long triangles in the interstices; under side of fore wings with post-medial line irregular, interrupted above vein 6, outwardly oblique between veins 6 and 4, and usually slightly indented on vein 5; on hind wings below the fourth ocellus is smaller than the fifth..... *creoia* (pl. 22, figs. 5, 6)
- a*². Sexes practically alike; under side of fore wings with post-medial line more or less oblique from costa to vein 4, or just above it; on hind wings below the fourth ocellus is larger than the fifth..... *portlandia*
- b*¹. Wings beneath with the rows of ocelli edged with white interiorly and more or less completely exteriorly; on the fore wings a white band runs from the costa to the region of the second ocellus, and beyond this a narrower white band runs from the costa to the upper part of the first ocellus; row of ocelli on under side of fore wings curved; second and third ocelli on under side of hind wings with elongate pupils, and fourth usually without a pupil.
portlandia portlandia (pl. 22, figs. 3, 4)
- b*². No white on wings beneath; row of ocelli on under side of fore wings below straight; all the ocelli on hind wings below have similar circular pupils.
- c*¹. Dark border on hind wings above narrow and tapering anteriorly; on the hind wings below the dark band between the light line bordering the fourth and fifth spots and the submarginal light line is little, if at all, broader than the distance between the submarginal light line and the margin of the wing.... *portlandia anthedon* (pl. 22, figs. 1, 2)
- c*². Dark border on hind wings above broader and more uniform, not narrowing appreciably anteriorly; on the hind wings below the dark band between the light line bordering the fourth and fifth spots and the submarginal light line is broader, usually much broader, than the distance between the submarginal light line and the edge of the wing; ground color below browner and usually more uniform..... *portlandia borealis*

Although when typically developed the four forms included in the genus *Enodia* are quite different, three of them are very closely related. On the basis of the available material it appears that typical *portlandia* intergrades more or less with *anthedon*, and the latter intergrades with *borealis*, the relations between the three suggesting the relations between *Cercyonis alope pegala*, *C. a. alope*, and *C. a. nephele* occurring in the same general regions.

Richards said that *creoia* intergrades with *portlandia*. It agrees, however, more closely with *anthedon*, as is evident from the straightness of the row of ocelli on the under side of the fore wings, the absence of clear white beneath, and the fact that all the ocelli on



1



2



3



4



5



6



7



8

- 1, 2. *Enodia portlandia anthedon*, new subspecies, ♂, type specimen. Lava, Sullivan County, N. Y., taken in June. U.S.N.M. no. 51137 (William Barnes coll.); upper (1) and under (2) sides.
- 3, 4. *Enodia portlandia portlandia* (Fabricius), ♀, Princess Anne, Va., A. H. Clark, September 24, 1934. U.S.N.M.; upper (3) and under (4) sides.
- 5, 6. *Enodia creola* (Skinner): 5, ♂, western edge of Dismal Swamp, about 8 miles south of Suffolk, Nansemond County, Va., A. H. Clark, September 1, 1935, under side, U.S.N.M.; 6, ♀, western edge of Dismal Swamp, near Suffolk, Va., A. H. Clark, September 2, 1935, under side, U.S.N.M.
- 7, 8. *Brenthis hana*, new species, ♀, type specimen. Chanchamayo, Peru, on the eastern slope of the Andes. U.S.N.M. no. 51139 (William Schaus coll.); upper (7) and under (8) sides.



the under side of the hind wings are pupiled (compare figs. 2, 5, and 6, pl. 22). Judged from the specimens at hand, and from my experience with it in life, *creola* is readily distinguishable in both sexes from *portlandia* and its two forms and is a perfectly valid species.

For the privilege of studying the material in the National Museum collection I am under deep obligations to the late Foster H. Benjamin, who also was so good as to go over the literature with me and to assist me in other ways.

Dr. William Schaus has called my attention to an apparently new fritillary from Peru in his collection, now in the National Museum, and has been so kind as to suggest that I describe it. This new fritillary may be known as

BRENTHIS HANA, new species

PLATE 22, FIGURES 7, 8

Description.—Expanse, 41 mm. Distance from tip of fore wing to center of thorax, 24 mm. Antennae, 12 mm long.

Head thickly beset with long golden-brown hairs, becoming silky white on the frons and beneath and behind the eyes. Sides of palpi with a broad band silky white, heavily scaled and without hairs. Upper, inner, and lower sides of the palpi with very long golden-brown hairs, darkest above, lighter below, becoming whitish toward the base below. Antennae yellowish brown, the club darker.

Thorax black with numerous long golden-brown hairs. Abdomen above black with a sparse investiture of long golden-brown hairs, which laterally become brownish-gold scales; beneath the scales become more densely packed and lighter, and are interspersed with numerous long whitish hairs.

Fore wings roundedly pointed, the outer border convex in the apical third, becoming straight in the lower two-thirds. Hind wings well rounded, curving slightly more sharply around the end of vein 4 than elsewhere, and with a slight indication of an anal lobe.

Wings above dull yellowish fulvous, in the basal portion slightly infuscated and with numerous long golden-brown hairs, the veins and markings uniform dark yellowish brown.

Costal border of fore wings brown, with numerous fulvous scales in the proximal half. Outer margin of wings narrowly dark brown. Parallel to the dark border and near it on the hind wings is a narrow dark brown scalloped line, these two dark lines being separated by a fulvous line slightly wider than the inner dark line interrupted by the dark veins. This is repeated on the fore wings, but here the brown is more extensive so that the effect is that of a broad brown border with rather small crescentic fulvous spots that become still

smaller and more triangular apically. Each interspace, except the uppermost on the hind wings, bears a conspicuous oval dark spot distant from the inner dark line, in the middle of the interspace, about as far as that is from the outer edge of the wing. On the fore wing the spot between veins 2 and 3 is the largest, those on either side of this being slightly smaller, and the three nearer the apex much smaller, the middle one larger than the other two. On the hind wings the most anterior spot is very small, the next is larger, the following is small, though larger than the first, the two succeeding are large again, and the last is very small. Beyond the inner ends of these spots and the same distance from them as the submarginal line is a moderately broad continuous line, broadened at the veins and narrowed in the middle of the interspaces so that the dark submarginal spots lie each in the center of a light oval patch bordered by the dark veins and the concave borders of the lines on either side of them.

On the fore wings from the costal border somewhat beyond the middle a rather broad dark line runs directly inward to vein 5, then diagonally outward to vein 4, where it meets the line just described in a rather narrow point. Midway between the inner end of this line and the end of the cell a heavy dark line crosses the interspace between veins 4 and 3; just beneath the end of the cell a similar line crosses the interspace between veins 3 and 2; just touching the inner side of the lower end of the last a similar line, turning outward in its lower half, crosses the interspace between veins 2 and 1; just below the origin of vein 2 a similar line, turning inward instead of outward in its lower half, runs between veins 2 and 1. The two lines crossing the interspace between veins 2 and 1 are connected by a line parallel to the veins in the middle of the interspace. The end of the cell is crossed by a broad dark bar, broadest at the ends, with some light scales in the middle of its basal portion. In the outer half of the cell, touching the costal border though not quite reaching the vein below, is a broad 8-shaped figure with a few light scales in the middle of its lower half.

On the hind wings a well-defined, narrow, almost straight dark line runs from the basal third of the costal border parallel to the inner margin to vein 4, where it approaches very near the line within the row of submarginal spots; at this point it turns at approximately a right angle and runs toward the inner margin of the wing as far as vein 1. Within this line the markings of the wing are obscured by dark infuscation and long hairs; but the distal portion of the cell and the inner ends of the interspaces above and below the cell are light.

On the under side the fore wings are lighter and more yellowish than above, becoming pale reddish cinnamon apically. The markings

of the upper side are for the most part only very faintly indicated in slightly darker fuscous yellow; but the post-medial line is narrowly and sharply defined in dark brown, the spots in the three lowest interspaces are reproduced in dark brown, there is a narrow brown band across the end of the cell with a very fine curved line beyond it, and there is a chevron-shaped mark or incomplete circle in the middle of the outer half of the cell. The outer half of the costal margin, a narrow marginal line on the outer border, and the veins where they cross the pale reddish cinnamon apical area are silky white—almost silvery. A narrow but conspicuous line of the same silky white color runs from near the apex downward and sharply inward nearly to vein 6.

Hind wings beneath pale reddish cinnamon with the veins and a narrow marginal line conspicuously silky white and the costal margin light silky grayish. The markings of the upper side appear very faintly indicated on the lower. A long light fuscous-yellow band occupies the interspace beyond the end of the cell, running from near its outer end to just within the cell. The inner ends of the two interspaces beneath the end of the cell are dark brown, and the inner ends of the two interspaces above the end of the cell are obscurely dark brown.

Type.—U.S.N.M. no. 51139, from Chanchamayo, Peru, on the eastern slope of the Andes.