

**NOTES ON THE LIFE HISTORIES OF ONE BUTTERFLY AND THREE
MOTHS FROM SOUTHERN VANCOUVER ISLAND
(LEPIDOPTERA: NYMPHALIDAE AND PHALAEINIDAE)**

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***Phyciodes mylitta* Edw.**

This species was first recorded from Vancouver Island at Goldstream in 1961 (Hardy, 1962). It has occurred since in the same general area, thus indicating a permanent addition to the fauna of Vancouver Island. *P. mylitta* is a small butterfly with a wing span of 30 to 33 mm for the female and 25 to 28 mm for the male. The upper surface of the wings has a yellow-fulvous base on which is imposed an intricate pattern of dark brown lines and dots, closer together and darker in the female than in the male.

Its flight is gliding with little vertical wing movement, though it can be swift and erratic, when the insect seems to vanish in mid-air. It haunts low sun-lit meadows and moist places with thistles, which are the food plants.

P. mylitta has a long period of flight; my earliest record is April 23, and the last September 18. It is most often seen in July and August. There are two generations. Larvae of the second brood appear in July, overwinter in the penultimate stage, and give rise to the first brood next April. In confinement there was an incipient third brood. A larva hatched on August 7, pupated on September 1 and emerged on September 22.

The eggs are laid near the tips of thistle leaves, *Carduus arvensis*, on the upper or lower surface, in batches of 80 to 180, in a single or double layer. These notes start with ova laid on May 13, 1963.

Ovum

Size 0.50 mm by 0.50 mm. A smooth truncated cone with rounded sides, summit depressed, the upper part with 25 ribs, the lower third

reticulate; the colour a pale pastel green, very inconspicuous, even in masses, on the surface of the leaf, changing through light to dark grey at maturity. Hatched May 25.

Larva—1st Instar

Length 1 mm. Head shiny, black with a few scattered short hairs. Body translucent, pale whitish, soon becoming a sordid grey, with minute black setae on the tubercles. Escaped through the top of the ovum, consumed the chorion, and fed gregariously on the epidermis of the underside of leaves.

2nd Instar

June 8. Length 3 mm. Head, as described. Body, with prominent hairy spines arising from the tubercles; colour black with a faint darker dorsal line.

3rd Instar

June 14. Length 7 mm. Head as described. Body black with a subdued greyish marbling on the lower sides.

4th Instar

June 20. Length 12 mm. Head as described. Body dull, black, faintly speckled with beige, with a dark dorsal line and white dots on the anterior base of spines along the subdorsal line; the spines on the spiracular band tinged with lemon yellow. The spiracular band consisting of two thin parallel lemon yellow lines, the spiracles black, ringed with bluish black; the under side pale grey. They readily dropped from the food-plant when disturbed, curling into a ring and remaining so for a time. At maturity they were 20 mm long. Just before pupation they suspended themselves from silken mats on the sides or top of the container, to remain for two or three days before pupating on June 29.

¹ Provincial Museum, Victoria, B.C. (Rtd.)

Pupa

Size 12 mm by 4 mm. Dull; the fore part abruptly square, A.3 to A.6 with conspicuous transverse ridges on the dorsal side, the antennal sheaths brown with a row of white dots indicating the segments; the wing-cases brown with two short rows of whitish dots near the hind margins. The ground colour of the pupa was beige thickly flecked and vermiculated with brown; cremaster a group of very fine setae with recurved tips on a short cylindrical base at the tip of the last segment.

Imago

Emerged July 15, 1963.

Remarks

Having failed hitherto to bring larvae through the winter, two larvae were placed in a jar indoors with a few leaves of the food plant on December 7, 1963. They fed sporadically but were less sluggish than those outside. One moulted on December 13, continued to feed and grew to a length of 20 mm. It pupated on January 5, 1964. The other moulted on January 5, pupating on January 26.

Normally the last moult would have taken place in the spring when the thistle was making new growth. In confinement only the two kept indoors ate *C. lanceolata*, which was the only thistle leaf available at this time of year. The summer brood completed the cycle in four instars, whereas the fall generation had five.

Xylomiges perlubens Sm.

Ten species of this genus are listed for British Columbia, of which seven are known to occur on Vancouver Island. It has a wing span of 38 to 40 mm. The primaries are patterned with contrasting browns and greys and the secondaries are white. It is attracted to artificial light from April to June.

Ova were laid on May 6 and 7, 1961, in a heap of several layers to the number of 400. Another lot was laid on April 30, 1962. These notes

were made from observations on both groups.

Ovum

Size 0.95 mm to 0.50 mm. A flattened sphere, with about 40 fine ribs and cross-ribs; pale green at first, soon developing a thin ring of tiny brown dots on the upper part and a brown dot on the micropyle. At maturity the ovum was a dark lead grey. Hatched May 15.

Larva—1st Instar

Length 2 mm. Head pale honey colour with a few large black dots. Body translucent, whitish, coarsely hairy from prominent black tubercles. They were very active, moving fast in looper fashion, making use of a silk thread if dislodged. They fed on *Cornus occidentalis*, *Prunus demissa*, and were reared on *Amelanchier florida*.

2nd Instar

May 22. Length 6 mm. Head shiny, pale whitish brown dotted with black. Body dark olive green, the dorsal and subdorsal lines thin bluish white, the spiracular line broader and of the same colour; tubercles black, larger on A. 9; the underside concolorous with the upper; the legs pale brown and claspers semi-translucent.

3rd Instar

May 28. Length 10 mm. Head smooth, shiny, opaque, whitish, sparsely dotted with black. Body fuscous with an olive tinge; the dorsal and subdorsal lines milky-white; the spiracular band white threaded with rust brown; venter and sides of the claspers dotted with black.

4th Instar

June 12. Length 20 mm. Head whitish brown with sides reticulated with darker brown and a pair of short vertical bars on the vertex. Body as described, with the venter sordid grey-green, the legs and claspers semi-translucent, the claspers having three black dots on the outer side.

5th Instar

June 25. Length 25 mm. Head light brown with four large and many small black dots on the front, reticulate on the sides. Body brownish grey due to fine, close mottling of brown on a light grey background, the dorsal and subdorsal lines thin and whitish, cervical plate brown with three white lines as extensions of the dorsal and subdorsal lines. The spiracular band white threaded with rust brown and a short transverse brown bar on A.9. The spiracles black, tubercles small, black on the inner, white on the outer sides; venter, legs, and claspers sordid.

6th Instar

July 5. Length 30 mm. Appearance as described, the colour more concentrated into bands with the dorsum red-brown, the sides darker with a fuscous tinge, the dorsal line brown and broken; the spiracular band greyish threaded with sienna brown, the tubercles indicated by white dots. Individuals varied in shade and intensity of pattern. The length of full growth was 40 mm. When disturbed they would curl into a ring. Just before pupation they constructed hard-walled cocoons with earth and small stones incorporated outside but very smooth within. Pupated about the end of July.

Pupa

Size 16 mm by 5 mm. The wing cases smooth, shiny, fuscous, almost black. The A. segments finely punctate anteriorly, dark brown; cremaster two closely approximated short hairs with recurved tips having a few much smaller ones at the base, set directly on the rounded tip of the last segment.

Imago

Emerged April 14 to 29, 1963.

***Pleroma cinerea* Sm.**

Four species of *Pleroma* are recorded for British Columbia, three of which occur on Vancouver Island

(Jones, 1951). However, two of these have been shown to be forms of a single species (Hardy, 1962).

With an average wing expanse of 33 mm, the moth is light grey with an oblique dash of darker grey extending from the apex to near the inner margin. In Saanich it comes occasionally to light during September and October and may do so wherever the food plant, *Symphoricarpos racemosa*, grows.

A specimen caught on September 23, 1962 laid about 30 ova scattered irregularly in a chip box.

Ovum

Size 1 mm by 0.90 mm. A depressed, rounded cone, flat at the base, with 30 coarse ribs, cream coloured, soon changing to a duller shade and irregularly marked with reddish lines and dots. These increased in intensity as development proceeded and the background took on a leaden hue towards maturity. Hatched February 16, 1963.

Larva—1st Instar

Length 4 mm. Head smooth, shiny, obscurely mottled light and dark brown. Body smooth, lead grey, with a few scattered hairs. They readily used suspensory threads when disturbed, and fed on newly opened buds of *Symphoricarpos racemosa*. By February 22 the length was 7 mm with a hump on A.8 and the colour was a very pale brown; the dorsal and subdorsal lines white; the hair-bearing tubercles black.

2nd Instar

February 25. Length 8 mm. Head ash grey, lightly dotted with black. Body slender with a slight hump on A.8 and a black band along the dorsum containing the white dorsal line which is interrupted on A.1 to A.3. The sides grey with a white line between the white spiracular line and the dorsal area and having a wider area of grey between A.1 and A.7; the venter dusky, legs and claspers dusky with a bluish tinge. They rested along the twig with the head stretched out in line with the

body, when they were very inconspicuous; the head resembles an unopened bud of the food plant.

3rd Instar

March 2. Length 12 mm. Head quadrate, smooth, light grey, with a vertical suffused bar of light brown; this was darker above and in the centre, on each side of the front close to the sutures; the sutures indicated by dark lines; sides of the head dotted with black. Body tapering towards the head, with a decided hump on A.8; T. segments and A.8 and 9 dark velvet-brown connected by a broad dorsal band of the same colour; the sides of A.1 to A.7 light grey; a conspicuous white dorsal line interrupted on A.1 and 2, more evident on A.7 and 8; spiracular line white, more evident on T. segments and A.7 to A.9; venter dark brown; the claspers grey with a large round spot on the outer side.

4th Instar

March 9. Length 25 mm. Head as described. Body smooth; the laterally compressed hump on A.8 becoming more prominent as growth continued; colour and markings as described, but with many additional fine, suffused dark lines along the sides; the spiracular line white, very faint on A.3 to A.6; the spiracles small, white, ringed with black; venter pale with a dark central line.

5th Instar

March 15. Length 35 mm. Head as described. Body generally brown, lighter on the sides; the dorsal line white threaded with reddish on T. segments and A.7 and 8; the spiracular line cream; venter grey with a dark central line.

March 20. Length 40 mm. Colour in general lighter, with less contrast between the T. segments and A.7 and 8; the dorsum of A.1 to A.7 with a band of light grey-brown constricted between the segments. The larvae rested stretched out along the stem by day and fed by night. Length just before pupation 45 mm. They spun tough cocoons among the twigs, pupating about March 25.

Pupa

Size 16 mm by 4 mm. Smooth, dull, fuscous, with wing-cases minutely and closely vermiculated with impressed lines. A. segments fuscous with anterior margins encircled by a row of short longitudinal ridges; cremaster a rugose, truncate, dorsoventrally flattened process on the dorsal side of the last segment having 3 pairs of minute spines in series from base to summit.

Imago

2 emerged August 28, 1963. One on September 14.

Remarks

There is close resemblance between the larvae and pupae of *P. cinerea* and *P. conserta*. The pupae, with rows of short ridges, are characteristic. Most pupae of the family are punctate on the A. segments. It would be of interest to know if *P. bonuscula*, a mainland species, has the same larval and pupal resemblance.

Dryotype opina Grt.

This species seems to be the only North American member of the genus, and is recorded only from the western part of the continent. Originally it was described by Grote in 1878 from California under the generic name of *Valeria*.

The alar expanse is 33 to 35 mm. The primaries are dark fuscous-brown relieved by lighter lines and bands, with a small, conspicuous and characteristic vertical, slightly curved white reniform line; the secondaries are whitish shading to grey on the hind margins, and containing a dark dot in the centre, with a curved dark line parallel to the margin. It occurs frequently in light and sugar traps in the Royal Oak district in September.

A batch of about 60 ova were laid on September 21, 1956, and again in September, 1962; about 270 were laid September 29, 1963. They were deposited in clustered masses or scattered indiscriminately on the sides or bottom of the containers and in

crevices. The ova were kept in an open shed. In each case the larvae emerged in late December or early January. They were overlooked at first and the 1962 batch were nearly missed also but one was reared to maturity in *Vicia* species. The 1963 batch were taken in time and two were brought to the pupal stage, feeding at first on *Vicia* and on a garden mint, *Mentha rotundifolia*, in the later stages.

The following notes are combined from the 1962 and 1963 groups, the dates referring to the last-named.

Ovum

Laid September 29. Size 0.75 mm by 0.50 mm. A squat connate sphere with about 24 coarse ribs connected by cross-ribs; cream coloured, soon becoming blotched and streaked with light red-brown, including a patch on the micropyle. By November 1 it was very dark fuscous with the black head showing through the top. Hatched December 24, 1963.

Larva—1st Instar

Length 2 mm. Head large, smooth, dark brown. Body, cervical plate similar, rest of body semi-translucent, pale brown or green with short, light brown hairs on prominent black tubercles.

2nd Instar

January 3, 1964. Length 5 mm. Head apple green. Body green; the dorsal and subdorsal lines thin, milk-white; the spiracular band broad and white, with an irregular fine white line between the dorsal, subdorsal and spiracular lines; tubercles small, black, white-ringed, each bearing a short hair.

3rd Instar

January 12. Length 12 mm. Head and cervical plate smooth, shiny, light green. Body green, darker above the spiracular line, minutely freckled with whitish dots, the dorsal and subdorsal lines doubled and dark green; spiracular line white, sharply dividing the dark green sides from the lighter apple green below; legs and claspers green; tubercles as described.

4th Instar

January 18. Length 18 mm. Head green with a brownish tinge. Body purple-brown above, thickly freckled with lighter specks, venter apple green; spiracles very small, black and ringed with white, otherwise as described. Some larvae remained green in later instars.

5th Instar

January 26. Length 25 mm. Head smooth, dull green faintly tinged with brown, having a few short hairs on front. Body, cervical plate greenish, the rest smooth and cylindrical; dorsum pale sienna brown due to minute white and brown freckles on a green base, the brown predominating; dorsal and subdorsal lines dark brown threaded with white; spiracular line thin and white; venter apple green thickly freckled with minute white dots, otherwise as described. Hid by day, fed by night.

6th Instar

January 30. Appearance as described, the upper side dark brown, sometimes with a greenish suffusion on the T. segments; the dorsal line solid dark brown; subdorsal lines very thin on the middle of the segments but thicker in the inter-segmental areas; the same feature was on a line bordering the dorsal side of the white spiracular line.

At maturity the length was 35 mm. Pupated on February 18, 1964, in a slight cocoon spun among the debris at the bottom of the jar.

Pupa

Size 15 mm by 5 mm. Smooth, shiny, dark brown, with wing-cases minutely vermiculated; the anterior borders of the A. segments finely and closely punctuate; cremaster two fine spines with slightly recurved tips set on a dorso-ventrally flattened rugose base at the tip of the last segment.

Imago

Emerged September.

Remarks

From the evidence it would appear that ova laid in September hatch in late December or early January; the larvae feed or become dormant ac-

ording to the state of the weather. A larva taken at large in June pupated June 6 and emerged September 17.

References

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ANNOTATED LIST OF FOREST INSECTS OF BRITISH COLUMBIA PART XII, BOARMIINI AND MELANOLOPHIINI (GEOMETRIDAE)¹

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Larvae of these tribes are often twig-like, marked with shades of grey, red or brown with prominent tubercles or humps; some are green with no prominences. They are defoliators of coniferous trees and broad-leaved trees or shrubs. Infestations of two species have been recorded, however the other British Columbia members of these tribes have not been considered as economically important. Some species overwinter as naked pupae in the duff while others overwinter as small larvae.

Four species of *Stenoporpia*, occurring in British Columbia will be dealt with in a later paper.

Boarmiini

Hesperumia sulphuraria Pack. — *Salix* spp., *Prunus* spp., *Pseudotsuga menziesii* (Mirb.) Franco, *Betula papyrifera* Marsh. (4 records), *Alnus* sp. (1), *Populus trichocarpa* Torr. and Gray (1), *Larix occidentalis* Nutt. (1), *Tsuga heterophylla* (Raf.) Sarg. (1). Distributed generally throughout British Columbia south of latitude 54°. LARVA: 1 $\frac{3}{8}$ inches;

head, pale pinkish buff marked with brown or reddish-brown except along cleavage lines; body, yellowish-green, orange or brown; broad reddish-brown or dark brown subdorsal stripe, darkest on thoracic segments; reddish-brown or brown middorsal stripe finely outlined with yellow or pale buff, somewhat obscure on thoracic segments and occasionally on the abdominal segments of paler specimens; prominent subdorsal tubercles on second abdominal segment dark brown, particolored dark brown and yellow or dark brown and orange; spiracles outlined with black; pale yellow or buff ventral stripe.

Anavitrinella pampinaria Gn. — P.

menziesii, *Salix* spp., *L. occidentalis* (4 records), *Picea glauca* (Moench) Voss (4), *Populus tremuloides* Michx. (3), *Pinus ponderosa* Laws. (2), *Thuja plicata* Donn (2). Throughout the Interior of British Columbia south of latitude 54°. LARVA: 1 $\frac{5}{8}$ inches; head moderately bilobed, pale cream or buff marked with reddish-brown or dark brown; body, pale reddish-brown or pale grey with dark reddish-brown or dark brown and black markings; dark brown addorsal lines on thoracic segments and at the posterior margin of the first, second

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