NOTES ON THE LIFE HISTORIES OF FOUR MOTHS AND ONE BUTTERFLY FROM VANCOUVER ISLAND (LEPIDOPTERA: PHALAENIDAE, LASIOCAMPIDAE AND LYCAENIDAE)

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Panthea portlandia Grt.

P. portlandia is one of the three species of the genus listed by Jones (1951) for British Columbia and the only one from Vancouver Island so far as I am aware. It is a fairly large moth with a wing expanse averaging 45 mm., conspicuously marked on the forewings with grey and black lines and bands. It is on the wing from April to August.

In confinement a female taken in Saanich laid 200 ova between August 10 and 12, 1962 in single mat-like layers in several groups.

Ovum

Size 1 mm. by 0.75 mm. A depressed sphere, smooth, shiny, with about 25 coarse ribs; bright yellow soon turning to dark brown and finally to lead grey at maturity. Hatched August 18.

Larva—1st Instar

Length 3 mm. Head smooth, shiny, jet black. Body light fuscous blending into pale lemon on the T. segments and on A. 6 to 8; tubercles prominent, shiny and black, bearing a short black hair; legs and claspers black. Fed on Douglas fir, eating the stomatic area on the underside of the needles.

2nd Instar

August 24. Length 8 mm. Head slightly notched, smooth, shiny, dark brown with a pale vertical line on each side connected below by a curved line of the same shade. Body pale orange brown, streaked with brown on the sides especially on the T. segments and the first few A. segments; a regular hyphenated white dorsal line; spiracular area indicated by a suffused greyish band; tubercles conspicuous bearing one or more black hairs, those on T. I larger than the others.

3rd Instar

August 30. Length 15 mm. Head shiny, light reddish with black hairs, a curved black line on each side of the front, the labium black. Body constricted between the segments, reddish purple, with a series of creamy elongated triangles along dorsum; spiracular band cream coloured and wavy; several very thin whitish lines between this and the dorsum; the lower side tubercles largest each with a spray of reddish hairs directed downward; a pair of short black tufts on T. I, A. I and A. 7; underside concolorous with the upper.

4th Instar

September 3. Length 20 mm. Head smooth, shiny, pale reddish with an intricate pattern of black scrolls and granulations. Body tapering slightly from the head backward; the ground colour black almost obscured above by a series of fine white lines and flecks, between the dorsal and spiracular lines; the dorsal line was a row of black-bordered white triangles except on A. 6-8 where they were replaced by a straight even stripe; the spiracular line wavy, interrupted, and creamy; the spiracles white; the tubercles large and spreading, bright rust-red bearing a tuft of short hairs; A. I and A. 8 with a pair of long black tufts on the dorsum; T. segments

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with some red and a whitish band on T. 2 and 3; the underside dusky. The larvae rested lying along twigs of the food plant where the pattern and colouration rendered them inconspicuous.

5th Instar

September 13. Length 40 mm. Head black to very dark brown, with the reddish markings much reduced. Body black with grey mottling, most evident on the T. segments; the dorsal line an interrupted chain of white bars, wider on the centre of the segments; spiracular stripe broad, wavy and white, constricted between the segments; spiracles white; tubercles large and red, bearing a few long red and black hairs, with more of the red ones on the lower sides; T. I with a pair of short black tufts; A. I with a pair of long black pencils; A. 8 with a pair of shorter pencils; the underside black with dull reddish bars and bands; claspers pale reddish.

There was some variation in colour and markings; one larva had white marbling and dapplings above and below, and orange claspers.

Pupation took place in a thin, tough, brown cocoon spun at the bottom of the cage among the debris, which was incorporated into it.

Pupa

Size 20 mm. by 8 mm. Rather stout; wing cases dull due to minute striations; A. segments smooth, shiny, strongly constricted between them; a dark reddish brown; cremaster consisting of many fine closely aggregated hairs of varying length with recurved tips; the longest in the centre, all set on a rugose prominence on the tip of the last segment.

Pupation occurred from mid-September to mid-October.

Ufeus electra Sm.

Of the four species of *Ufeus* listed by Jones for British Columbia, three are recorded from Vancouver Island. They are all uniformly dark brown with similar habits. They appear in the autumn, hibernate and reappear in the early spring. *U. electra* has an average wing expanse of 40 mm. and is usually taken at light.

A pair of this species was taken *in coitu* in a light trap on October 10, 1961. They were put in a cardboard carton provided with pieces of bark and moss where they successfully passed the winter. On March 7, 1962 the female commenced to oviposit in crevices of the bark. The male died a day or two later. Oviposition continued intermittently until April 14, resulting in about 200 ova. These hatched in ones and twos over a long period; those laid on March 7 hatched April 10, and the remainder hatched at gradually lessening intervals, as the temperature rose, running well into May.

Ovum

Size 1.00 mm. by 0.75 mm. A depressed hemisphere with about 40 fine ribs and cross ribs, the latter slightly indenting the vertical ones and giving them a beaded look; pale whitish green, turning in three days to pale brown with a reddish brown dot on the micropyle and a faint ring of the same colour around the shoulder; dark brown at maturity.

Larva—1st Instar

April 10. Length 3 mm. Head large in proportion, black, shiny, crevical plate the same. Body pale bluish fuscous, having a tinge of sienna brown on the sides; legs dark brown, claspers concolorous with the body and dotted with black on the sides. They crawled actively at first, finally concealing themselves under bark, between leaves or in loose material. They spun loose shelters in which to hide by day, feeding only at night. They preferred the leaves of *Populus trichocarpa* to any other plant provided.

2nd Instar

May 1. Length 8 mm. Head shiny, jet black, cervical plate the same. Body a dull glaucous green, with whitish dorsal and subdorsal lines; sides mottled with brown; spiracular line whitish; legs dark brown, claspers dull brown.

3rd Instar

May 9. Length 12 mm. Head jet black, not so shiny as before and with a few white hairs. Body, dorsum with a wide dark green band bordered by the bluish white subdorsal lines and centred by a similar dorsal line; sides dark brown; spiracular stripe bluish white; underside green; legs and claspers as described.

4th Instar

May 18. Length 15 mm. Head very dark olive green. Body light olive green with markings as described.

5th Instar

June 2. Length 20 mm. Head rather large in proportion, dark brown, mottled and reticulated with darker brown. Body as described, with sides dark fuscous brown; spiracular stripe having a central cinnamon line.

6th Instar

June 9. Length 25 mm. Head brown, heavily mottled and reticulated with fuscous brown, some of this colour concentrated to form a dark, suffused, oblique mark on each side. Body with a dark olive green band on the dorsum, centred with a wide blue-green dorsal stripe and bordered by the blue-white subdorsal lines; the sides darker tinged with brown; spiracular line a double wavy inconspicuous narrow band; spiracles white, thickly ringed with black and situated just above the line; underside pale grey; claspers grey with a black dot on the outer side.

The larvae continued to feed until July 11, 1962 when they measured 30 mm. in length.

At an early stage the larvae were divided into several lots and placed in a variety of containers; they appeared to feed well enough but in the last instar they languished and died from some unascertained cause.

Syngrapha celsa Hy. Edw.

Of the ten species of *Syngrapha* recorded by Jones in British Columbia six are known on Vancouver Island. Most of them are characterized by a silvery mark in the centre of the forewings. In *S. celsa* the forewings are blue-grey relieved by darker lines and marblings with the distinctive silver marks in the centre. The average wing expanse is 35 mm.

A specimen taken at the Forbidden Plateau Lodge on August 10, 1961 had laid 30 ova by August 15, scattered at random in the container.

Ovum

Size 0.95 mm. by 0.5 mm. nearly hemispherical, slightly depressed in the micropylar region, finely and closely ribbed, pale green, somewhat shiny due to reflected light from the ribs, soft and easily put out of shape, suggesting that under natural conditions it might be squeezed into a crevice in the bark.

Larva—1st Instar

August 20. Length 2 mm. Head very pale brown, almost white. Body white throughout, slightly translucent with a few scattered long white hairs. Food plants were Douglas fir and hemlock, preferably the former.

2nd Instar

September 1. Length 5 mm. Head smooth, pale brown. Body smooth, slightly humped on A. 8 and 9; green, with small black dots in place of the usual tubercles; lighter green along the spiracular area; the legs darker; the underside paler green. Fed on the soft stomatic zone on the underside of the needles; at rest they lay

along the needles and were hardly noticeable.

3rd Instar

September 12. Length 10 mm. Head small, smooth, shiny, semi-translucent. Body green; a milky-white spiracular line; thin, whitish subdorsal lines with a dark green dorsal line, which increased the resemblance to the needles along which they rested with the head held in a straight line with the body.

From this date through the winter months the larvae became semi-quiescent, feeding very little and in partial hibernation, but not leaving the food plant.

On November 10 the brood was divided into two groups, one was caged in a sleeve on a fir branch, the other confined in a large glass jar with a muslin cover and placed in an open shed. Those in the sleeve cage died, but the other group overwintered in good condition.

4th Instar

March 18, 1962. Length 14 mm. Head quadrate, smooth, shiny, pale translucent green, faintly mottled with darker green on the sides; cervical plate similar without the mottling. Body with a glaucous green band along the dorsum containing the dark green dorsal line and the thin subdorsal lines; below this band a dark green area just above the broad glaucous green spiracular stripe; spiracles black along the upper edge of the spiracular stripe; tubercles indicated by black dots; underside dark green; legs dark brown; claspers green.

5th Instar

April 20. Length 18 mm. As described; growth was very slow.

6th Instar

May 27. Length 20 mm. Head as described. Body as described but the colour contrasts were more intense. Fed on the buds at the tip of the Douglas fir sprays and consumed the young needles.

June 13. Length 35 mm. Head smooth, shiny, pale translucent green. Body as described. Now full-grown.

June 22. Pupated in a dense but transparent cocoon spun among the needles at the base of the fir sprays.

Pupa

Size 20 mm. by 5 mm. Somewhat slender, smooth, shiny, black; legs and antennae faintly but distinctly outlined in pale ochre; the pleura between the A. segments 4-6 dull ochre on ventrum only, this colour extending in the form of a broad ochre saddle containing a central dark brown dot on to the underside of A. 5 and 6. Cremaster, two fine spines with recurved tips, on the end of the broad dorso-ventrally flattened rugose 'tongue' at the end of the last segment.

Imago

Emerged July 16, 1962.

Tolype dayi Blkmre.

Of the two species of *Tolype* recorded by Jones for British Columbia, *T. dayi* appears to be the only one found on Vancouver Island. It is ash grey with two darker cross bands, the veins noticeably white, and the white downy thorax with a dark central band. It is remarkably well camouflaged in all stages. The wing expanse is 30-35 mm.

A female taken at Royal Oak, September, 1961 had laid a number of ova by September 12. These were scattered on crumpled paper and in the crevices of bark in the container.

Ovum

Size 2 mm. by 1.5 mm. A slightly depressed sphere; the chorion very tough, dull, minutely and closely punctate; covered with many black and a few white scales from the tip

of the moth's abdomen, which obscured the shape and size of the ovum. Hatched on June 14, 1962. The larva escaped through a round hole at one side of the egg which usually split into equal halves held together by a small section at the opposite side.

Larva—1st Instar

Length 5 mm. Head dark brown almost concealed by dense white hairs directed forward and curved downward from the T. segments. Body pale soon becoming black with a faint interrupted yellow dorsal line, most pronounced on A. 1-5; several thin whitish lines on the sides; tubercles prominent especially on the sides of T. 1., each bearing long black hairs on the dorsum and white, more abundant hairs on the sides. Ate the stomatic area on the undersides of Douglas-fir needles.

2nd Instar

June 22. Length 10 mm. Head dull, black. Body dark grey; a double thin, milky-white dorsal line; yellowish subdorsal lines with three fine whitish lines below these; tufts on the T. segments, the largest on T. 1 with forwardly directed white hairs; white hairs on the lower sides recurved downwards blending the body into the twig; dorsal tufts consisting of a few long black hairs; claspers yellowish with a large dot on the outer sides.

3rd Instar

June 30. Length 15 mm. Head as described. Body light grey, otherwise as described.

4th Instar

July 8. Length 20 mm. Appearance similar to the third instar; the general effect black with many fine grey lines; dorsum of T. 3 black with two yellow dots close together.

5th Instar

July 21. Length 40 mm. Head black with grey pubescence in several fine vertical lines. Body as described but with a more contrasting pattern of light and dark grey; dorsal band dark, alternately expanded and contracted on the A. segments.

6th Instar

August 1. Length 45 mm. Head as described. Body more brown than grey; the segments noticeably constricted where they joined one another; a wavy black line bordering the ash-grey spiracular area; the dorsal tubercles with short black hairs, the lower tubercles with long black and white, downward-curving sprays with scaly expansions along the lower part of the hairs which end in spatulate tips; spiracles grey, ringed with black, underside pink with a central band of orange that connects with the orange claspers; superimposed on this band is a transverse dark brown bar on the centre of each segment.

August 18. The larvae spun dense grey cocoons on the bark that blended in colour and texture into the substratum.

Pupa

Size 18 mm. by 7 mm. by 5 mm. Dorso-ventrally compressed; smooth, dull, piceous brown; no obvious cremaster.

Imago

Emerged through the thin end of the cocoon between September 2 and October 4.

Remarks

Each stage is characterised by camouflage; the disruptive pattern of the imago matches the light and dark shading of the bark on which it rests by day; the ovum is well disguised even when it is in full view; the larva, with its contrasting colours and hairiness is almost indistinguishable among the twigs; and the cocoon is also nearly invisible by its close resemblance to the substratum.

Plebeius aquilo megalo McD.

Nine species of the genus are recorded by Jones in British Columbia. Four are known from Vancouver Island. *P. aquilo* is an arctic species, the form *megalo* occurring on the Island. It has a wing expanse of 25 mm. Generally it is brownish blue with a black dot on each of the four wings.

A specimen observed on Mt. Becher, NW of Comox Lake on August 1, 1962, was seen to deposit an egg on a leaf of *Saxifraga bronchialis* near the tip of a shoot, another was found in a similar situation nearby.

Ovum

Size 0.9 mm. by 0.3 mm. Shaped like a flattened turban; the micropylar area deeply indented; closely pitted with round depressions, otherwise smooth, colour white. Hatched on August 13.

Larva—1st Instar

Length 1.5 mm. Head small, shiny, dark brown. Body rather short; white soon becoming honey-coloured then vinaceous with a fairly dense covering of very short hairs in four indistinct double rows.

2nd Instar

August 30. Length 3 mm. Head as described. Body slightly onisciform but the head not retracted; a rich vinaceous purple; faint, thin, pale subdorsal lines, with fuscous hairs in rows as described. The shed cuticle of the first stage was evident for a short time as a thin white tissue at the end of the body. They fed on the epidermis at the base of the upper surface of the leaves, where they also rested, protected by the overlapping leaves.

September 11. The larvae rested at the base of a leaf and ceased to feed, apparently having entered hibernation.

February 3, 1963. The larvae were in the same position as on Sept. 11. They were placed in a glass tube lightly covered with muslin and kept in an open shed. Both survived until late March, 1963, but did not feed on a garden specimen of *Saxifraga bronchialis*.

Attacks on Humans by IXODES ANGUSTUS Neumann, the Coast Squirrel Tick, and I. SORICIS Gregson, the Shrew Tick

In his publication on the ticks of Canada Gregson mentions (p. 38) two British Columbia and three United States records of **Ixodes angustus** Neumann, attacking humans. I now add three more records.

On September 17, 1958 a flat adult female was removed from a 9-year old girl at White Rock, B.C. The location of the attachment was not recorded.

On September 26, 1958, a flat adult female was removed from under the arm of a Vancouver woman who had been tramping through the bush at White Rock, five days before the tick was detected.

On October 23, 1963, an engorged female was removed by a doctor from the abdomen of a middle-aged woman in North Surrey. The doctor reported that the woman was house-bound with a sick husband and seldom went out, but that she had a cat which could have brought in a small mammal which harbored the tick. He was surprised at the point of attachment because the woman wore several layers of clothing, including what he called "corsets", so the tick must have attached at night when the woman had removed her garments.

The other unusual record is that of a flat adult female of the shrew tick, **Ixodes soricis** Gregson, which was removed from the outer upper arm of a 14-year-old girl from North Vancouver, on April 11, 1960. In this case also the tick may have come from a shrew brought into the house by a cat because children and shrews inhabit rather different strata on the earth's surface.

Gregson, John D. The Ixodoidea of Canada. Pub. 930, Science Service, Entomology Division, Can. Dept. of Agric. Jan., 1956.

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