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NOTES ON THE LIFE HISTORIES OF THREE MOTHS FROM SOUTHERN VANCOUVER ISLAND (LEPIDOPTERA: PHALAEINIDAE AND GEOMETRIDAE)

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***Orthosia ferrigera* Sm.**

Eight species of the genus *Orthosia* are recorded for British Columbia, all of which occur on Vancouver Island.

O. ferrigera has a wingspread averaging 35 mm and is of a general rusty colour with the veins on the primaries indicated by a darker colour. It is scarce in my experience, being taken about once a year.

A specimen taken by day on a grass stem in April, 1963 laid 60 ova on the sides of the box in small groups of from 1 to 25, in a single layer. The resultant caterpillars died because I did not know the correct food plant. Another one taken at light in late March, 1964 laid 47 ova. It was found that Garry Oak (*Quercus garryana*) was avidly eaten, but to get the caterpillars started it was necessary to cut open the swelling buds for the trees were not in leaf at the time.

Ovum

Size 1 mm by 0.75 mm. Hemispheric, finely ribbed with about 40 ribs and cross-ribbed, having the effect of quadrangular reticulations since the height of the ribs and cross-ribs is equal; white slightly tinged with green, soon acquiring a pale orange dot on the micropyle and a ring of orange on the shoulder. A light lead grey at maturity. Hatched April 19.

Larva—1st Instar

Length 4 mm. Head smooth, translucent, with a pale brownish tinge. Body translucent with a bluish cast; both head and body heavily dotted with black; a short hair on each dot.

2nd Instar

April 25. Length 7 mm. Head as described. Body somewhat translucent, pale greenish with white dorsal, subdorsal and spiracular lines, the last-named being the widest; conspicuous black tubercles.

3rd Instar

May 1. Length 10 mm. Head smooth, semi-transparent, sordid white with a faint bluish tinge, conspicuously dotted with widely spaced black dots. Body smooth, yellowish green tinged with fuscous on sides and venter, with thin yellow dorsal, subdorsal and supraspiracular lines, the spiracular band yellow, interruptedly threaded with broad fuscous dashes on the centre of each segment; tubercles conspicuous and black, each bearing a minute black hair; a short, thin, slightly raised transverse bar on dorsum of A. 9; legs and claspers sordid.

4th Instar

May 8. Length 15 mm. Head a pale sordid flesh colour, sparsely dotted with black; plate tinged with blue, with three white lines as extensions of the dorsal and subdorsal lines. Body smooth, general colour russet,

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

dorsal and subdorsal lines yellowish, spiracular band luteous threaded with interrupted fuscous dashes; A. 1 to 8 with fuscous V marks on the dorsum of each; A. 9 humped and topped with a conspicuous transverse white bar; tubercles black on pale cream bases, most noticeable on the anterior segments, the whole body minutely dotted with fuscous; spiracles small, white ringed with black; legs and claspers sordid with black dots on the bases, venter sordid along the centre.

5th Instar

May 12. Length 30 mm. Head as described. Body similar to 4th instar but dorsal, subdorsal and spiracular lines indistinct; the dorsum of A.9 dark with conspicuous transverse white bar; the dorsal V marks and yellow bases of the outer dorsal tubercles more pronounced.

Full-fed by May 21, the larva was 45 mm long, and considerably duller in colour. Pupation was in an earthen cocoon on May 24.

Pupa

Size 17 mm by 6 mm. Smooth, shiny, wing cases finely vermiculated, anterior border of A. segments finely and closely punctate; colour a bright mahogany brown; cremaster set on the rounded tip of the last segment, and consisting of two short, fine, close-set spines with outwardly recurving tips and four minute similar hairs at the base.

Remarks

When not feeding the larva retired amongst the bud scales at the base of the leaf clumps where the russet colour rendered the caterpillar very inconspicuous. If disturbed it curled into a ring.

Mesothea viridipennata Hulst

M. viridipennata is the only species of the genus recorded for British Columbia. It has a wingspread of 20 mm and is coloured uniformly light green, soon fading to a thin washed-out brownish yellow. It commonly flies by day in open brush land.

A specimen taken in the Malahat district on May 15, 1964, had laid 30 ova by May 20, scattered irregularly over an alder leaf in the container.

Ovum

Size 0.8 by 0.5 by 0.3, a broad oval, laid broad side down, depressed in the centre of the upper surface, smooth, shiny, without reticulations; pale green. Hatched May 29.

Larva—1st Instar

Length 2 mm. Head large in proportion, smooth, dull, honey-colour. Body slender, smooth, creamy with the dark line of the alimentary canal showing through.

The june-berry or service berry, *Amelanchier florida*, was the preferred food plant, but *Geum macrophyllum* was readily consumed.

2nd Instar

June 6. Length 6 mm. Head markedly bi-lobed, dull, honey-colour. Body, T.1 with two fleshy projections directed forward, A.9 with one fleshy process directed backward; a light dun colour; faint whitish subdorsal, supraspiracular and spiracular lines, resulting in part from aggregation of many minute, rough, slightly raised white dots which thickly cover the body; spiracles small, black.

3rd Instar

June 10. Length 8 mm. Head strongly bi-lobed, rough, dull honey-colour. Body a light reddish fuscous, with a thin dark dorsal line, and very thin whitish subdorsal, supraspiracular and spiracular lines; venter, legs and claspers concolorous with upper parts.

4th Instar

June 14. Length 15 mm. As described with the general colour a light orange or rusty brown; the sides with very faint irregular lines.

5th Instar

June 24. Length 20 mm. Head strongly bi-lobed, the lobes pointed, rough, dark brown with crimson tinge. Body rough, rusty brown with a tinge of green, dorsal line dark crimson or purplish brown, lower

sides, below the black spiracles, with faint, dark, suffused, widely spaced dashes on A.1 to 5; venter concolorous with the upper parts; legs dark crimson below, claspers with a tinge of crimson which extends to the adjacent body.

July 5. Length 30 mm. Full grown. Pupated in a very loose cocoon of brownish silk among the debris on the bottom of the container.

Pupa

Size 10 mm by 3.5 mm. Dull, wing cases with prominent veins, chocolate; abdomen beige with a black dorsal line flanked by two black dots on each segment; venter with two black dashes on the sides, the lower one much the thicker, black dots between the dashes; cremaster a shiny, tapering projection with a pair of minute setae near the base and another pair near the tip, which is finely pointed.

Remarks

There was considerable individual variation in larval colour ranging from a greenish to brownish cast. The dorsal line was often broken and in some a thin dark subdorsal line was evident. The markings were always subdued.

When at rest the body was held rigidly at an angle to the substrate and the legs tightly appressed towards the head which was folded along the venter. The projections on T.1 were prominent so that the head looked like a bud at the end of a twig. The general effect was of a leaf stalk from which the blade had been removed.

Plagodis approximaria Dyar

Only one species of this genus is recorded for British Columbia where it occurs in the south including Vancouver Island.

P. approximaria has a wingspread of 32 mm. The primaries are luteus with a purple suffusion from a large purple blotch on the outer angle; the secondaries are similar, and the general effect is responsible for the popular name "The Scorched Wing."

A female taken in a light trap on June 8, 1964 laid 30 ova by June 11. These were in rows or heaps at the edges of alder leaves or on stems.

Ovum

Size 1 mm by 0.5 mm by 0.3 mm. Oval, slightly broader at one end, a little depressed in the centre of the upper side, smooth, shiny, showing very faint reticulations. Pale yellow becoming orange towards maturity. Hatched on June 20.

Larva—1st Instar

Length 2 mm. Head large in proportion, honey-colour. Body slender, honey-colour, very active. Fed on *Alnus rubra*.

2nd Instar

June 30. Length 8 mm. Head honey-coloured with a darker feathered spot on each side of the vertex. Body very slender. A variously shaded bluish fuscous band on the dorsum, a light lemon band on the sides and dark brown band on the venter. Legs dark brown.

3rd Instar

July 7. Length 18 mm. Head pinkish, mottled with light and dark brown, more marked on the vertex. Body mostly fuscous purple with whitish streaks on T. and A. segments, less evident posteriorly; a small hump on T. 3, and a larger black hump on A.6 having a transverse white dash on top.

July 10. Some larvae with a green base colour with brown blotches on the sides adjacent to the humps.

4th Instar

July 15. Length 30 mm. Head dull, smooth, beige, closely mottled with pale purple. Body, general colour a dull purple streaked with white especially on the sides of T. segments, white patches on the sides of A.1 - 4; T.2 and 3 with continuous dorsal humps, larger on T.1, bordered in front with a transverse white line, as also on T.1; a hump on A.5, darker, divided by a white cross-bar; venter ashy with black W lines on the centre of segments A.1 - 5, most evident on A.1 - 3.

One pupated on July 28 in a silken cocoon spun in a fold of paper.

Pupa

Size 15 mm by 4 mm. Slender, wriggled actively when touched; wing-cases dull, fuscous; A. segments smooth, shiny, sparsely punctate on anterior borders, medium brown; cremaster two larger hairs with re-curved tips and about six smaller

similar ones at the base, all set on a rugose projection at the tip of the last segment.

Remarks

This larva is an excellent example of twig simulation in form, colour, and attitude, especially when resting with its body held out at an angle of about 45° to the twig.

SOME RECORDS OF LYCTIDAE IN VANCOUVER

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In the Proceedings, Vol. 4, pages 129-148, of the Seventh Pacific Science Congress held in New Zealand, February 1949, under the heading Regional Pest Faunas, is an article "The more important Insect Pests of British Columbia" assembled by K. M. King from contributions by H. Andison, E. R. Buckell, R. Glendenning, J. D. Gregson, K. M. King, J. Marshall and H. A. Richmond, all of the Federal Entomological Laboratories in British Columbia.

On page 147 of this paper is the statement "structural timber is not, on the whole, subject to any extensive damage by insects. However, on the coast, powderpost beetles, *Lyctus* species, have in a number of instances heavily attacked house timbers, occasionally necessitating the replacement of cellar beams."

I have been interested in household insects in this Province for many years especially those attacking structural timbers and have not yet come across an instance of this sort since all our wooden buildings are of native soft woods; also in the past 20 years I have inspected many buildings suffering from insect attack and have found that if a species of *Lyctus* was present, it occurred only in timber imported into the Province as flooring, veneer, panelling or carved ornaments and that building timbers were attacked NOT by lyctids

but by native and introduced anobiid beetles, termites and carpenter ants; the emergence holes of lyctids and anobiids are very similar, hence the mistake.

The family Lyctidae² is tropical or semi-tropical containing only 66 species known so far, included in 12 genera of which 10 occur in the New World. The genus *Lyctus* contains 25 species; other genera, 41 species. So far in Vancouver I have taken five species of *Lyctus* and one of *Trogoxylon*, making six in all. However, according to distribution lists in Gerber's monograph and in Hatch's Vol. III of the Beetles of the Pacific Northwest, seven species have so far been found in this Province, one being a single record.

Considering these species alphabetically, we have:—

Lyctus africanus Lesne

In June 1963 an importer of medicinal herbs brought in a pint of orris roots in which a few holes were showing; in a few days some beetles emerged which traced out to *L. africanus* Lesne which is very similar to *L. brunneus* except that the fourth abdominal sternite of the female has a dense conspicuous fringe of hairs. The insects are still actively breeding in the orris rhizomes in about equal numbers of males and females (March 1965),

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² Gerber, Eugene J. The New World Species of Powder-post beetles belonging to the Family Lyctidae. U.S.D.A. Technical Bulletin No. 1157, Wash., D.C. April, 1957.