

Caterpillars injurious to Brassica species in Suriname

by

J. B. M. VAN DINTHER

(Entomologist, Agricultural Experiment Station, Paramaribo)

In this paper we shall deal with some caterpillars living on *Brassica* spp. in Suriname, which were observed during the years 1953—1955. As the author did not study the *Brassica* pests intensively, no full descriptions of all instars or detailed biological data of the several species will be given.

The following caterpillar species have been noticed regularly: *Laphygma frugiperda* S. & A. (on *Br. oleracea* L.), *Agrotis repleta* Wlk. (on *Br. oleracea* L. and *Br. oleracea* var. *capitata* L.), *Symphysa amoenalis* Wlk. (on *Br. chinensis* L.), *Hellula phidilealis* Wlk. and *Ascia monuste monuste* L. (on *Br. oleracea* L. and *Br. chinensis* L.). Caterpillars of *Agyrogramma verruca* Fabr. have only been noted once, on young plants of *Br. oleracea* var. *capitata* L.

Future investigations will probably show that each of the above mentioned caterpillar species is capable of attacking most or even all cultivated *Brassica* spp.

Laphygma frugiperda S. & A. (fam. Noctuidae)

Laphygma caterpillars may vary in their intensities of green, dark brown and intermediate colouration. Especially larvae of the last two instars, which often hide in the ground during daytime, may have a dark-greyish brown hue. However, all caterpillars can be recognized by the pale yellowish-white grey "Y" on the head, the pronotum with three parallel pale yellowish-white lines continuing backwards over the body, and four black spots (setae bases) arranged in a trapezium on most segments dorsally. The full-grown caterpillar attains a length of about 3.6 cm and a width of 0.5 cm.

For detailed information concerning the morphology and life history see: WOLCOTT, G. N., 1948, *J. Agr. Univ. of Puerto Rico* 32 (3): 591—593; DINTHER, J. VAN, 1955, *Ent. Ber.* 15 (18): 407—411.

Agrotis repleta Wlk. (fam. Noctuidae)

This caterpillar is rather polyphagous. Besides on cabbage plants, it has been noticed feeding on soybeans, peanuts and tomato. It lives and hides beneath the soil surface or between clods near the base of the stem of the foodplant during the day, but may emerge for nocturnal feeding on the foliage. The full-grown caterpillar attains a length of about 4.5 cm and a width of 0.8 cm. Dorsally, the body is dark greyish-brownish; ventrally, the colour is of a more dull pale grey. The caterpillar has a smooth appearance as setae are only very poorly developed.

For more details see: DINTHER, J. VAN, 1956, *Ent. Ber.* 16 (6): 106—107.

Symphysa amoenalis Wlk.¹⁾ (fam. Pyraustidae)

MORPHOLOGY

Egg. The ovoid hyalinous egg has a length and width of 0.85—0.98 mm and 0.55—0.65 mm, respectively.

¹⁾ Determination by H. W. CAPPS, U.S.D.A.

Larvae. There are 4 larval instars, having the following head widths in millimetres: 0.21—0.25 (I), 0.34—0.42 (II), 0.58—0.65 (III) and 0.92—1.04 (IV).

Larva I. The newly hatched glassy larva, with a body length of about 1.6 mm and a width of 0.17 mm, may attain a length up to 3.2 mm when full-grown. The hyalinous body is sparsely provided with long slender fine setae, several of which have a length of 0.25—0.3 mm. The abdominal legs are stalk-like. The mandible is armed with 9—11 teeth, arranged in an arc along the anterior margin and on a ventrally situated ridge; laterally, the mandible is provided with an extra tooth and two setae (see also fig. 1).

Larva II. The young glassy larva has a body length of 3 mm; when full-grown it reaches a length of 5 mm. The pale-yellowish and hyalinous body is sparsely provided with long fine colorless body setae. Dorsally, several of the body segments have a pair of setae located on the anterior region, which point forward; another pair is present on the posterior region, which are directed backward. Seen from the side these setae of two successive segments cross each other. The mandible has 13—15 teeth arranged in an arc.

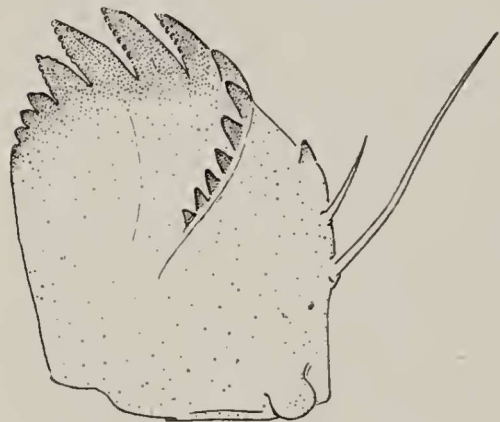


Fig. 1. Left mandible of larva III of *Symphysa amoenalis* Wlk., ventral view; actual width 0.13 mm.

Larva III. The pale-greenish to yellowish-green hyalinous larva attains a length of about 8.8 mm when full-grown. A pale silvery longitudinal line may be distinguished at both sides of the median. The mandible has 14—17 teeth arranged in an arc (see fig. 1).

Larva IV. The body length of the dull pale green to green coloured larva varies from 8—18 mm; the width from 1.5—2 mm. The yellowish-green hyalinous head and the pronotum are shiny; ocelli dark. At each side of the median a silvery-whitish line, more or less distinctly doubled, runs lengthwise over the body, which bears sparse long slender setae. The mandible is armed with 13—15 teeth; the tooth at the lateral margin is absent.

Pupa. The shiny brown pupa has a length and width of about 8 mm and 2 mm, respectively.

Adult. The micro-lepidopteron has a wing span of 13—14 mm. The yellow-golden coloured upperside of the front wing is ornamented with two undulating silvery shiny transverse narrow bands which divide the wing into three zones. Between these bands, in the anterior half of the wing, two silvery spots are situated. Bands and spots are greyish dark seamed and these borders have a somewhat violet gloss. Laterally and ventrally the front wing has a yellow-golden fringe. The lower side of the front wing has a silvery glossy appearance. The hind wing with a lateral and ventral fringe is silvery. Laterally, near its middle, the upperside is ornamented with a yellow-golden area, on which a silvery small narrow band is situated. Dorsally, the body mainly has a yellow-golden colour, ventrally the body is silvery. The eyes are greenish.

BIOLOGY.

The eggs are deposited in groups of 2—8 and partially cover each other. These groups can be found scattered on the lower side of the leaves. After hatching the egg shells can be noticed as colorless whitish flimsy films. The young larvae gnaw small holes in the leaves of the foodplant and dark green excrements also mark their activity. Numbers of 20—40 caterpillars may be present on a leaf, which becomes skeletonized. During the later stages larger parts of the leaf are destroyed. When full-grown the caterpillar spins a rather flat somewhat ovaly-shaped (0.9×0.4 cm) whitish flimsy cocoon. Pupation takes place just beneath the soil surface and also between fallen leaves and other debris on the ground. Shortly before pupation the caterpillar shortens to about 7 mm and its colour becomes greenish to reddish-violet. A pupal duration of 6—8 days has been observed. The total developmental period from egg-stage to adult will probably take about a month.

Hellula phidilealis Wlk.¹⁾ (fam. Pyraustidae)

MORPHOLOGY.

Young 2.5 mm long grey-yellowish larvae, with head and pronotum dark brown coloured and brownish longitudinally parallel running lines on the body have been noticed on young cabbage plants.

The full-grown caterpillar of the final instar (see fig. 2) attains a length of 1—1.4 cm and a width of 0.2 cm. The yellowish-brown head has a width of about 1 mm. The primary body colour is yellowish-greenish. Dorsally, in the median, a pale brownish line runs over the body. Dorso-laterally, a longitudinal double row of two brownish narrow band is present. Laterally, at the thorax, one or two shorter brownish longitudinal lines can be distinguished. Before pupation the larva shortens and dorsally the colour changes into a reddish-brown.

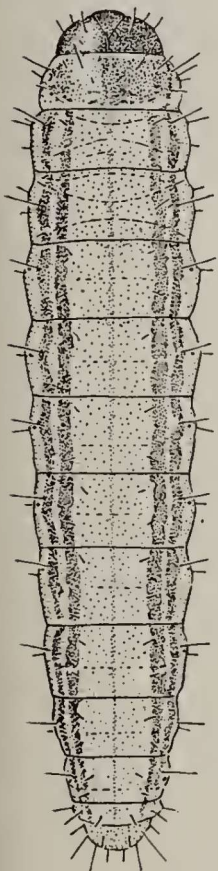


Fig. 2. Full-grown caterpillar of *Hellula phidilealis* Wlk., dorsal view; $7 \times$ natural size.

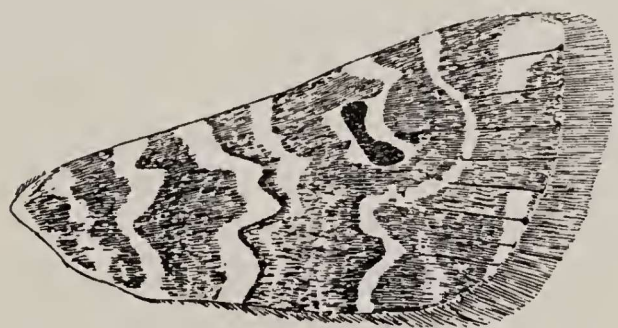


Fig. 3. Fore wing of *Hellula phidilealis* Wlk., dorsal view; $7 \times$ natural size.

¹⁾ Determination by H. W. CAPPS, U.S.D.A.

P u p a. The brownish pupa, slightly coated with a whitish waxy substance, has a length of about 7 mm.

A d u l t. The micro-lepidopteron has a wing span of 15—16.5 mm. The upper side of the fore wing is pale brownish and has a bronze coloured lustre. The wing pattern, composed of whitish undulating transverse bands and whitish spots (see fig. 3), may vary slightly between individuals. Near the centre a large dark spot and another more or less distinct smaller spot, which may have a metallic silvery to violet hue, are present. The lighter coloured upper side of the hind wing has a bronze lustre. Laterally, the wing colour is of a more pale brownish grey.

BIOLOGY

Young larvae have been observed feeding on the lower side of the leaves of *Br. chinensis*, sometimes leaving only the membranaceous epidermis. Caterpillars, especially of the later stages, burrow into the vegetative tip, the leaf stalk, the main leaf vein and the stem of the foodplant. In most cases the caterpillars only make rather shallow tunnels. However, injury to the plant may be serious, particularly when young *Br. chinensis* and *Br. oleracea* plants are attacked.

The caterpillars are able to spin silky threads, which are often found inside the tunnels. When full-grown the caterpillar spins an ovally shaped silky cocoon in the soil and transforms into a pupa. The cocoon, in the walls of which soil particles are incorporated at the outer side, has a length and width of about 13 mm and 5 mm, respectively. After a pupal duration of 6—8 days, the micro-lepidopteron emerges.

Ascia monuste monuste L.¹⁾ (fam. Pieridae)

MORPHOLOGY

The egg and the younger larval stages have not been observed. The caterpillar of the last instar but two attains a length of 1.2 cm. The yellowish head, with a width of 1.2—1.3 mm, is mainly provided with whitish-colorless setae, which are inserted on small brown-dark bases. Dorsally, the yellow coloured body is ornamented with black setae on black protuding bases. At both sides of the median and close to it, most segments have a very distinct black seta base; together these bases form a longitudinal row. Dorso-laterally, above the spiracles, a dark coloured band runs lengthwise. Laterally, whitish colorless setae on dark bases are mainly present.

The caterpillar of the last instar but one has a length and width of about 2—2.3 cm and 0.3 cm, respectively. The general body colour is greyish-dark with yellow. (The yellow colour has to be considered as the primary hue). On the yellowish head, which has a width of 1.9 mm, whitish-colorless setae are inserted on small round black bases. Dorsally, the pronotum is blackish in appearance and four large setae and a few smaller ones, inserted on black elevated bases, are present at both sides of the median. Dorsally in the median and also dorso-laterally, a yellow line runs over the body; laterally at the height of the spiracles, a longitudinal yellow or yellow-orange coloured line is present. Between these lines the body is greyish-dark coloured; black and also whitish setae on black, slightly elevated

¹⁾ Determination by W. D. FIELD, U.S.D.A.

bases are inserted here. Latero-ventrally and ventrally, the body has a more greenish colour; whitish-colorless setae on black and brown bases can be noticed.

Last instar. The caterpillar, with a head width of 2.85 mm, reaches a length of 3—4 cm and a width of 0.4 cm (see further preceding instar).

P u p a. The newly formed pupa, with a length and width of about 2.2—2.5 cm and 0.6 cm, shows more or less the colouration and the colour pattern of the full-grown caterpillar. However, the colours fade after one day and the pupa becomes pale creamy, pale pinkish or more pale brownish. Dorsally, a somewhat long-drawn triangular sepia-brownish zone is present on the head and the prothorax, its base situated on the head, its apex on the anterior part of the mesothorax. Another sepia-brownish coloured but more equilateral triangular zone, its apex on the summit of the strongly developed median mesothoracic keel, may be present on the meso- and metanotum. The upper margin of the cream-whitish wing sheath has a sepia-brownish seam; near the lower border 2—3 short dark-black lines are noticeable which sometimes fuse. Moreover, the body has several small blackish dots.

In the middle of the anterior head region a brownish button-like outgrowth is present, while a smaller protuberance can be distinguished under each antennal base.

Dorso-laterally, near the anterior margin, the 3rd abdominal segment is ornamented with a strong black thorn-like projection.

A d u l t. The wing span of the butterfly varies from 5 to 6 cm. The upper sides of the wings are creamy white. The front wing has a dark colouration mainly along the lateral margin and at the tip (see fig.

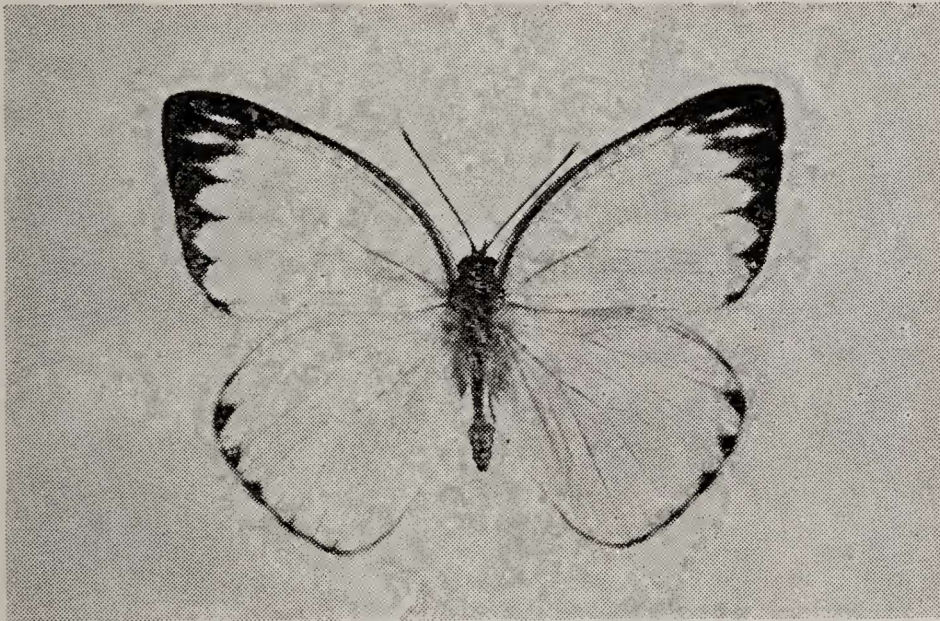


Fig. 4. *Ascia monuste monuste* L., male; dorsal view, natural size.

4). The hind wing generally has dark lateral markings, but these may be reduced or absent. The lower side of the hind wing, especially in the female sex, often has a yellowish cream colour, that may be clouded in pale-lightbrown.

BIOLOGY

The larvae of *Ascia monuste monuste* L. have a spinning capacity. When strongly irritated they vomit a mucous fluid. The caterpillars gnaw holes of irregular shape and size in the leaves and can also destroy the head of the cabbage plant. Greenish excrements can often be found caught in the folds of the leaves and between the leafstalks and the stem. Young plants may be completely defoliated and the voracious cabbageworms of the final instar may even wander from one plant to another in search of food. Of older plants only the main leaf veins, the stalks and the stem may remain after a severe attack. The caterpillars grow rapidly

and the whole larval life will probably last about 10 days. When full-grown the caterpillar changes to the pupal stage without spinning a cocoon. The tail end of the chrysalis is hooked into a small pad of silk on a cabbage stalk or other support. A belt of silk around the pupa at the height of the abdominal base holds the head upright. The pupal stage lasts from 5 to 6 days.

Argyrogramma verruca Fabr.¹⁾ (fam. Noctuidae)

Dull green coloured full-grown caterpillars of the final larval stage, with a length and width of 2.7 cm and 0.3 cm, have once been observed while feeding on the lower side of the leaves of *Br. oleracea* var. *capitata* L. Dorsally, the body has six pale yellow whitish longitudinal lines, while another similar line is present above the spiracles. The head, with a width of 1.8 mm, is shiny green. Abdominal legs are present on segments 5, 6 and 10; the caterpillar moves by a looping action of the body.

The pupa has a length of 1.4 cm and a width of 0.4 cm; the pupal stage has a duration of about 6 days.

¹⁾ Determination by E. L. TODD, U.S.D.A.

=====

✓ Coloured illustrations of the Insects of Japan, Coleoptera.

De bibliotheek van onze vereniging werd onlangs verrijkt met een Japans werk over Coleoptera. Aangezien het in het Japans is geschreven, is het wat moeilijk toegankelijk, maar desondanks heeft het zo veel goede kwaliteiten, dat we hier gerust van een belangrijke aanwinst mogen spreken. Toch mogen we het niet hoger aanslaan dan wat het is bedoeld te zijn, nl. volgens de Engelse ondertitel: Coloured illustrations of the Insects of Japan, Coleoptera. Edited by the Kinki Coleopterological Society. Osaka, 1954, Hoikusha Co Ltd. De serie, waarvan dit deel 2 uitmaakt, schijnt voornamelijk bedoeld om de belangstellende leek een inzicht te geven in de rijkdom van de fauna van eigen land en tevens een leidraad te verschaffen voor de verschillende families. Dit werkje, dat behalve 196 pagina's tekst, 64 gekleurde platen bevat, waarop samen 1170 kevers zijn afgebeeld, zal naar mijn mening veel tot dit doel bijdragen. Bij de bijzonder mooie reproducties wordt steeds een korte toelichting gegeven (Japans), doch hierbij vinden we ook de Latijnse naam vermeld, soms ook synoniemen en verwijzingen. Tevens zijn in dit werk een aantal nieuwe soorten en variëteiten beschreven (Engels).

In de inleiding wordt de plaats van de kevers tussen de andere insecten duidelijk gemaakt, de anatomie en benamingen worden zowel in Japanse als Engelse taal aangegeven bij 4 duidelijke figuren. Vervolgens wordt een kort overzicht gegeven over voedingsgewoonten, bv. fytofaag, necrofaag, etc. en er wordt gesproken over geografische verspreiding. Ook aan het systeem van de Linneaanse nomenclatuur worden enkele regels gewijd

Ondanks dit zijn er onbegrijpelijke dingen ingeslopen, zoals volkomen foutieve namen bij de enkele afbeeldingen op de eerste plaat, waar overigens dieren uit alle windstreken zijn vertegenwoordigd. Kennelijk zijn verschillende groepen door specialisten behandeld en nomenclatorisch behoorlijk in orde. Bij andere groepen krijgt men meer de indruk van compilatiewerk, waarbij dan gebruik is gemaakt van verouderde werken, (Vb. *Chrysomela populi* L.)

Hoewel het werkje als geheel nomenclatorisch niet feilloos is te noemen — ik kwam diverse vreemde combinaties tegen, ook aperte fouten — heeft het voor ons de grote verdienste, dat we een behoorlijk globaal overzicht krijgen van een lokale fauna. — C. DE JONG.