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Title	NOTES ON CALOPTILIA (SPHYROPHORA) OCTOPUNCTATA (TURNER, 1894) OF INDIA, WITH DESCRIPTION OF ITS LARVA (LEPIDOPTERA : GRACILLARIIDAE)
Author(s)	Kumata, Tosio
Citation	Insecta matsumurana. New series : journal of the Faculty of Agriculture Hokkaido University, series entomology., 24, 1-16
Issue Date	1981-07
Doc URL	https://hdl.handle.net/2115/9814
Type	departmental bulletin paper
File Information	24_p1-16.pdf



NOTES ON CALOPTILIA (SPHYROPHORA) OCTOPUNCTATA
(TURNER, 1894)
OF INDIA, WITH DESCRIPTION OF ITS LARVA
(LEPIDOPTERA: GRACILLARIIDAE)

Research Trips for Agricultural and Forest Insects in the Subcontinent of India (Hokkaidô University, University of Calcutta, and Zoological Survey of India Joint Project) [Grants-in-Aid for Overseas Scientific Survey, Ministry of Education, Japanese Government, 1978, No. 304108; 1979, No. 404307], Scientific Report No. 11.

By TOSIO KUMATA

Abstract

KUMATA, T. 1981. Notes on *Caloptilia (Sphyrophora) octopunctata* (Turner, 1894) of India, with description of its larva (Lepidoptera: Gracillariidae). *Ins. matsum. n.s.* 24: 1-16, 1 tab., 34 figs.

An Indian species known as *Caloptilia tetratypa* (Meyrick, 1928) (= *Gracilaria cirrhocrotala* Meyrick, 1928) is newly synonymized with *Caloptilia (Sphyrophora) octopunctata* (Turner, 1894), which was originally described from Australia. The male and female genitalia of the species are described and figured for the first time, with description of the larval stage. Discussion is also given on the subgenus *Sphyrophora*.

Author's address. Entomological Institute, Faculty of Agriculture, Hokkaidô University, Sapporo, 060 Japan.

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INTRODUCTION

The present paper is the 2nd report on the Indian Gracillariidae based on the material collected in 1978 in connection with the "Research Trips for Agricultural and Forest Insects in the Subcontinent of India (Hokkaidô University, University of Calcutta, and Zoological Survey of India Joint Project)". It deals with a species known in India as *Caloptilia tetratypa*, which will be synonymized with *Caloptilia (Sphyrophora) octopunctata* herein after.

In 1908 and 1910, Meyrick recorded from India *Gracilaria octopunctata*, which was originally described from Australia by Turner (1894). In 1928, however, Meyrick cancelled all his records of *octopunctata* from India, and then he divided his Indian *octopunctata* into 3 new species, *Gracilaria tetratypa*, *G. cirrhocrotala* and *G. isograpta*. Later on he synonymized *cirrhocrotala* with *tetratypa* because of the same food plant and the supposed difference between them being trifling (Meyrick, 1932).

Recently, by courtesy of Mr. S. L. Gupta and Dr. S. Ghai of the Indian Agricultural Research Institute, New Delhi, I have had the opportunity to review some specimens deposited there and determined as *tetratypa*, *cirrhocrotala*, *isograpta* and *octopunctata*, respectively, in addition to specimens collected from India in 1978 by the Joint Project members. The determination seems to have been done by the late Dr. T. B. Fletcher, because the Indian Agricultural Research Institute was formerly named Pusa Institution, where he worked. I have also examined 2 Australian specimens referable to *octopunctata* I received through the kindness of Dr. I. F. B. Common of Commonwealth Scientific and Industrial Research Organization, Canberra. My examinations on all these specimens have revealed the following. The Indian *tetratypa* and *cirrhocrotala* are exactly identical with each other, no serious difference having been found between the specimens examined. The Australian specimens of *octopunctata* are slightly different from them in size of the ampulla of the male genitalia, but I am inclined to believe that both Indian and Australian forms should be included in the same species; the name *octopunctata* has priority over *tetratypa* and *cirrhocrotala*. This species should be placed in the subgenus *Sphyrophora* of the genus *Caloptilia* as suggested by Vári (1961). On the other hand, the Indian specimens identified as *isograpta* and "*octopunctata*" are also exactly the same with each other, while they are quite different from *octopunctata* defined here in all essentials. The genital characters of *isograpta* indicate that it should be transferred to the genus *Calybites* and that it is identical with *C. phasianipennella* (Hübner, 1810-13), which is widely distributed in the Palaearctic Region. This synonymy will be discussed in detail in a separate paper.

In the following lines will be given a discussion on the subgenus *Sphyrophora* and descriptions of the adult and larval stages of *Caloptilia (Sphyrophora) octopunctata* (Turner, 1894), with a short note on the larval habit.

Abbreviations of the specimen depositories are as follows: — CSIRO: Commonwealth Scientific and Industrial Research Organization, Canberra, Australia; DZUC: Department of Zoology, University of Calcutta, India; EIHU: Entomological Institute, Hokkaidô University, Sapporo, Japan; IARI: Indian Agricultural Research Institute, New Delhi, India; and ZSI: Zoological Survey of India, Calcutta, India.

Genus *Caloptilia* Hübner

Caloptilia Hübner, 1825, Verz. bek. Schmett.: 427 [type-species: (*Tinea upupaepennella* Hübner, 1801) = *Tinea stigmatella* Fabricius, 1781].

Subgenus *Sphyrophora* Vári

Sphyrophora Vári, 1961: 26 [type-species: *Caloptilia (Sphyrophora) sapina* Vári, 1961].

Sphyrophora was originally described as a subgenus under the genus *Caloptilia*, being mainly characterized by the complicated structure of the valvae, "which are strongly constricted just before cucullus and have a strongly developed hammer-shaped ampulla and clearly pronounced harp" (Vári, 1961). After careful examinations of the adult and larval specimens of *C. (Sphyrophora) octopunctata*, I have found that *Sphyrophora* is clearly distinguished from the subgenus *Caloptilia* by the following characters besides the structure of the valvae.

In fore wing venation, the vein M_2 is well separated from the vein M_3 at their bases. In male genitalia, the tegumen bears some setae on the lower face lateral to the tuba analis as seen in the genera *Calybites* and *Ectropina*. In female genitalia, one of 2 signa is serrated on both the outer and inner curves and the other on the inner curve alone. In larval body chaetotaxy, on the 1st, 2nd, 6th and 7th abdominal segments, the seta SV_3 is located dorso-caudally of the seta SV_1 . In larval behaviour, the larva in late instars cuts a strip off the leaf-margin and rolls it up to form a cone on the underside of the leaf; the cocoon is formed inside the cone, and very roughly spindle-shaped; these larval habits are also known in the genera *Calybites* and *Ectropina* (Kumata, 1979).

These characters may suggest that *Sphyrophora* is a good genus distinct from the genus *Caloptilia* and located rather near the genus *Calybites* or *Ectropina*. In this paper, however, it will be treated as a subgenus under the genus *Caloptilia* according to Vári (1961), because it has also the following combination of characters: - the wing venation is the same with that of the subgenus *Caloptilia* except for one point stated above; the 7th and 8th abdominal segments of the male adult bear one pair of coremata, respectively; and the larval body setae are as in the subgenus *Caloptilia* in number and arrangement except for one point stated above.

The type-species of the subgenus, *sapina*, is distributed in South Africa, and *octopunctata* (= *tetratypha* and *cirrhocrotala*) in Australia, Kermadec Is. and India. These species are associated with *Sapium* or *Homalanthus* (Euphorbiaceae) in their larval stage.

Caloptilia (Sphyrophora) octopunctata (Turner)

Gracilaria octopunctata Turner, 1894: 123 [Brisbane, Australia]; Meyrick, 1908: 828 [Pusa, India] (part)¹⁾; *ibid.*, 1019a: 73 [Kermadec Is.]; Fletcher, 1920: 163 (part); Meyrick, 1928: 409.

Gracilaria tetratypha Meyrick, 1928: 410 [Dehra Dun, India, ex *Sapium sebiferum*]; *ibid.*,

1) At the same time Meyrick recorded under the name *octopunctata* some specimens from Khasi Hills and N. Coorg, and in 1910b (p. 227) also from Darjeeling, but in 1928 (pp. 410-411) he described a new species, *Gracilaria isograptata*, based on these specimens. *G. isograptata* should be transferred to the genus *Calybites* as stated under Introduction.

1932: 271 [*tetratypa*=*cirrhocrotala*, and emended the identification of food plant of the latter to *Sapium* sp.]. Syn. nov.

Gracilaria cirrhocrotala Meyrick, 1928: 410 [Pusa, India, ex *Dalbergia sissoo* (Leguminosae)].

Caloptilia tetratypa: Fletcher, 1933: 63 [bionomics].

Adult

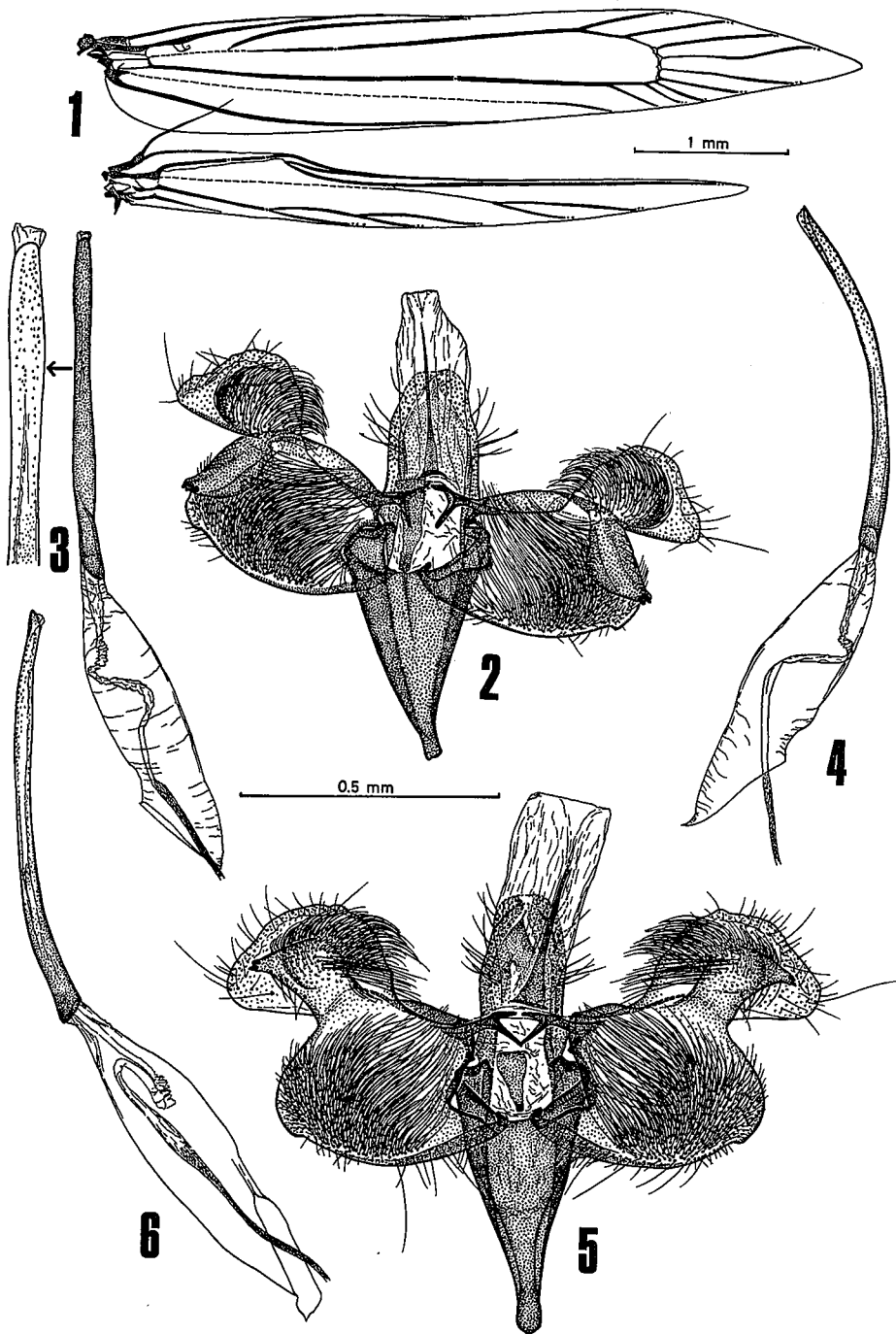
Material examined: 41♂♂ & 37♀♀. India — 1♂ & 1♀ (in coll. IARI), labelled "1610, Pusa, Bengal, c/8, A.M., 21 & 22. vii. 06; *Caloptilia tetratypa*"; 1♂ & 1♀ (in coll. IARI), labelled "29. vii. 1921, In rolled leaves of "Bilaity Sissoo", Pusa, Rangi coll.; *Caloptilia cirrhocrotala*"; 2♂♂ & 3♀♀ (in coll. EIHU), em. 21–26. x. 1978, Calcutta (Botanic Garden), West Bengal, ex *Sapium indicum*, breeding no. Ind-93; 36♂♂ & 31♀♀ (19♂♂ & 17♀♀ will be deposited in coll. ZSI and DZUC, and the others in coll. EIHU), em. 26. x. – 20. xi. 1978, Solan, Himachal Pradesh, ex *Sapium sebiferum*, breeding no. Ind-115. Australia — 1♂ & 1♀ (in coll. CSIRO), em. 17–23. iv. 1965, Port Macquarie, New South Wales, I. F. B. Common & M. S. Upton leg., ex *Homalanthus* sp.

Expanse of wings: Indian exs. — 9.0–13.0 mm (10.9 mm in average of 25 specimens); Australian exs. — 11.0–11.4 mm. Length of fore wing: Indian exs. — 4.5–6.5 mm (5.4 mm in average of 25 specimens); Australian exs. — 5.5–5.8 mm.

Colour: The colour pattern is well described by Turner (1894) and Meyrick (1928). Here the following characters will be added to their descriptions. Thorax on pleural face dark fuscous with a broad lemon-yellow band. Fore and mid tarsi white, the 1st segment dark fuscous at apical 1/3, the 2nd to 4th each with a very narrow and brownish apical ring, the 5th blackish entirely. Hind tarsus dark fuscous, the 2nd to 4th segments white at basal half.

Male genitalia: Tegumen simple, moderate in length, weakly sclerotized, thickly covered with long scales along entire caudal margin, with 6–15 setae on ventral surface lateral to tuba analis; subscaphium slender, widened towards base. Valva large, at apical 1/3 divided by deep constrictions into 3 parts, cucullus, harp and ampulla; cucullus the largest, round, densely setiferous on inner surface, with a shallow constriction near apex on ventral margin; ampulla strongly sclerotized, somewhat finger-shaped, with 2 thick spines at pointed apex, with 5–7 setae along one margin, and with rather dense slender setae and tiny scales on the other margin; harp about 1/3 as large as cucullus, bluntly pointed ventrally, with a round patch of dense slender setae; transtilla with a narrow process. Saccus a little longer than tegumen, triangular, long-pointed apically. Anellus with a juxta slender and faintly spiniferous on apical area. Aedoeagus about 2 times as long as saccus, slender, tubular, slightly curved, with vesica rather densely covered with microspines. Seventh abdominal segment weakly membraneous, not covered with scales; the sternite with a narrowly sclerotized band which has no interior process; a pair of coremata very thick and consisting of elongate scales. Eighth abdominal segment also membraneous, with a similar band on sternite; a pair of coremata small and consisting of a few scales; tergite weakly sclerotized on median ridge, with a transverse row of a few scales.

Female genitalia: Papilla analis moderate in length, oblong in lateral view; apophysis posterioris rather short, strongly widened on basal half. Eighth abdominal segment shorter than papilla analis; apophysis anterioris about 1.5 times



Figs. 1-6. *Caloptilia (Sphyrophora) octopunctata* (Turner). 1: wing venation (India, ex *Sapium sebiferum*) — 2: ♂ genitalia (Genitalia slide no. Grc-2397, India, ex *S. indicum*) — 3: aedeagus (Grc-2374, India, ex *S. indicum*) — 4: ditto (Grc-2397) — 5: ♂ genitalia (Grc-2747, Australia, ex *Homalanthus* sp.) — 6: aedeagus (ditto).

as along as apophysis posterioris, with a ventral prong fused with lamella postvaginalis, which is small and trapezoid. Ostium bursae small; antrum short, weakly sclerotized; ductus bursae narrow and membranous on entire length; corpus bursae pyriform, membranous, with 2 sickle-shaped signa, one being long, gently curved and faintly serrate on inner curve, the other shorter, 1/2 to 3/5 as long as the first, gently curved and faintly serrate on both curves. Ductus seminalis originated at portion just beyond antrum. Seventh abdominal segment a little longer than the 6th, the sternite moderately sclerotized on caudal area.

Larva

Material examined: One, 2, 1, 1 and 1 larva of 2nd, 3rd, 4th, 5th and 6th instars, respectively, and 9, 6, 2, 1, 1 and 6 exuviated head-capsules of 1st, 2nd, 3rd, 4th, 5th and 7th instars, respectively, 25. x. 1978, Solan, Himachal Pradesh, India, ex *Sapium sebiferum*, breeding no. Ind-115. All mounted on slides and in coll. ZSI, DZUC and EIHU.

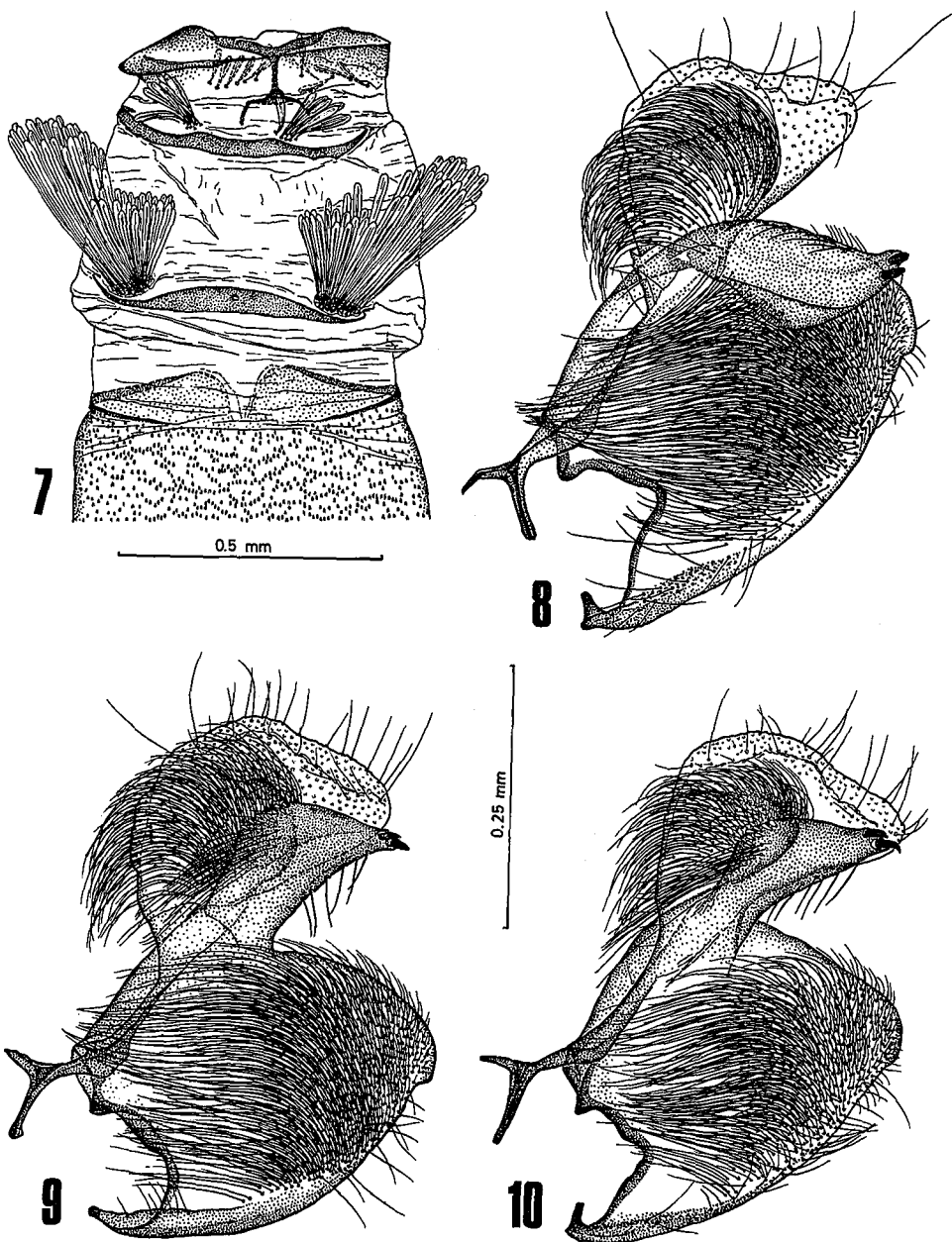
Number of instars: Measurements (length of frontoclypeus) of the material examined indicate that there are 7 instars in the larval stage (Table 1). The first 2 instars are of a sap-feeding form with a flat head, and the remaining 5 are of a tissue-feeding form with a round head.

Seventh (last) instar: Only broken exuviated head-capsules are examined. The characters which can be observed are not essentially different from those of the 6th instar described below except for the following points. Labrum about 2/5 as long as wide, with a wide median notch occupying about 1/3 length of labrum; epipharyngeal shield heart-shaped, much widened apically. Mandible with 5th tooth (numbered from outer side) well defined from the 6th, round apically.

Sixth instar: Only one larva examined. Head round as usual; coronal suture about 1/3 as long as frontal suture; adfrontal suture running nearly straight from depth of cervical triangle to lateral extremity of clypeus; posterodorsal prolongations absent. Epicranial seta A_2 slightly anterior to level of setae A_3 and posterior to level of setae F_1 ; P_1 and A_3 the longest among epicranial setae and followed by SO_2 and O_2 in length. Ocelli (Fig. 20) 6 on each side, arranged in a semicircle, all nearly same in size; seta O_2 situated between 1st and 6th ocelli, but closer to the former than to the latter, O_1 just behind 3rd ocellus. Antenna (Fig. 18) 3-segmented, with sensilla as usual in lepidopterous larvae; a long sensillum trichodeum on 2nd segment about 4 times as long as a shorter one; a sensillum

Table 1. *C. (S.) octopunctata*, larva: frontoclypeal length, larval form and feeding site.

Instar	Length of frontoclypeus in micra			Larval form	Feeding site
	n	range	mean		
1	9	105-120	111.9	Sap-feeder	Inside leaf-mine
2	7	160-180	168.6	Sap-feeder	Inside leaf-mine
3	4	170-180	176.3	Tissue-feeder	Inside leaf-mine
4	2	210-215	212.5	Tissue-feeder	Inside leaf-cone
5	2	260-280	270.0	Tissue-feeder	Inside leaf-cone
6	1	355	-	Tissue-feeder	Inside leaf-cone
7	6	390-415	398.3	Tissue-feeder	Inside leaf-cone



Figs. 7-10. *Caloptilia (Sphyrophora) octopunctata* (Turner). 7: 6th-8th abdominal segments of male (Grc-2397, India, ex *Sapium indicum*) — 8: right valva (ditto) — 9: ditto (Grc-2374, India, ex *S. sebiferum*) — 10: ditto (Grc-2755, India, determined as *tetratypa* by ? Fletcher).

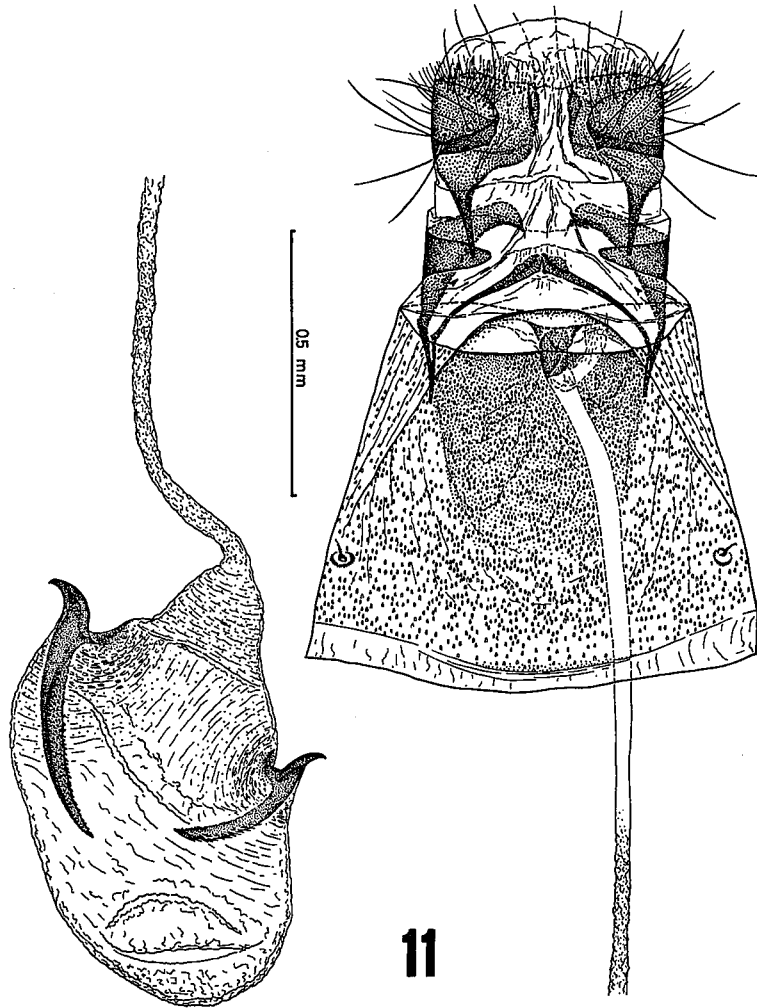
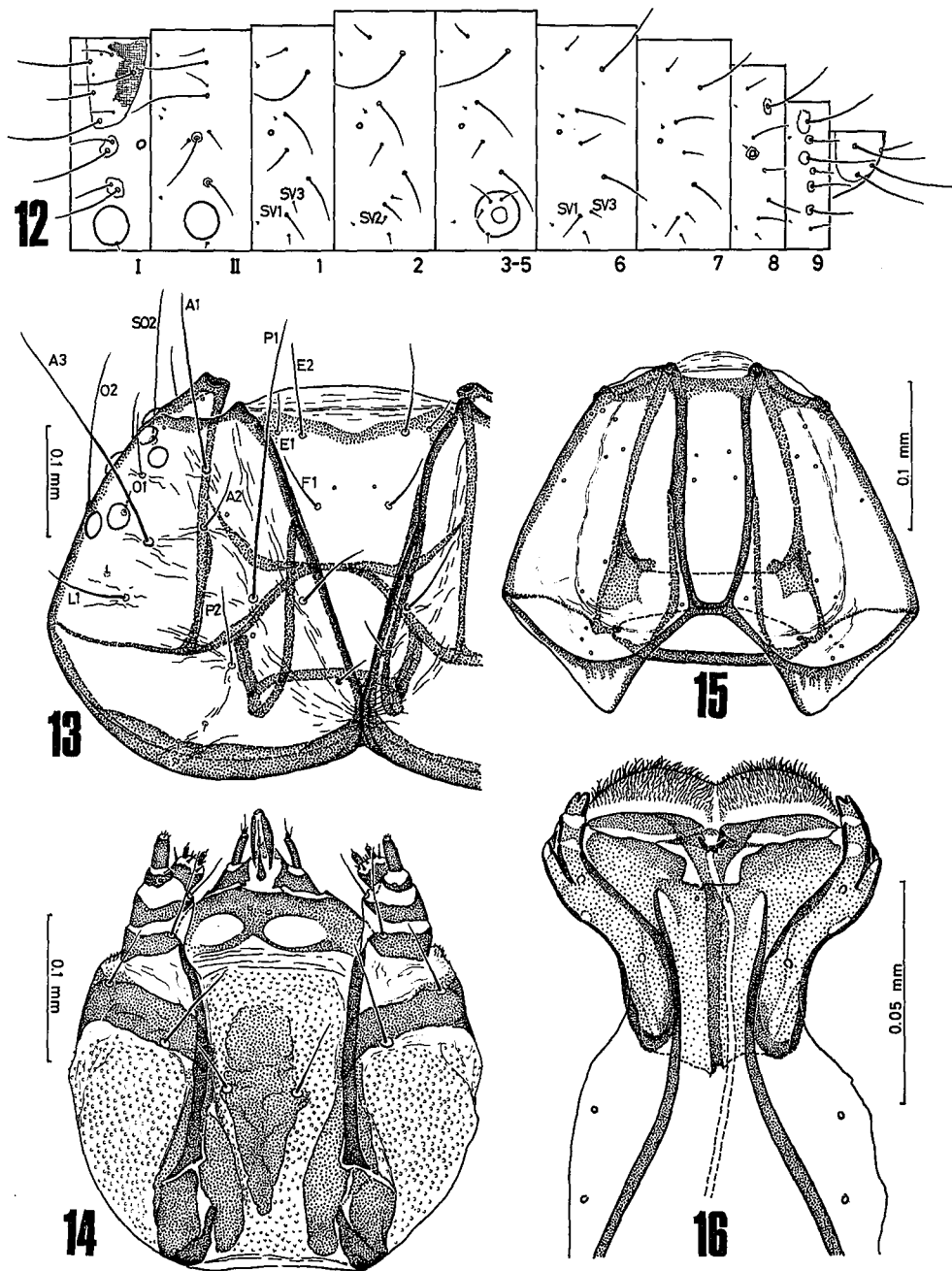
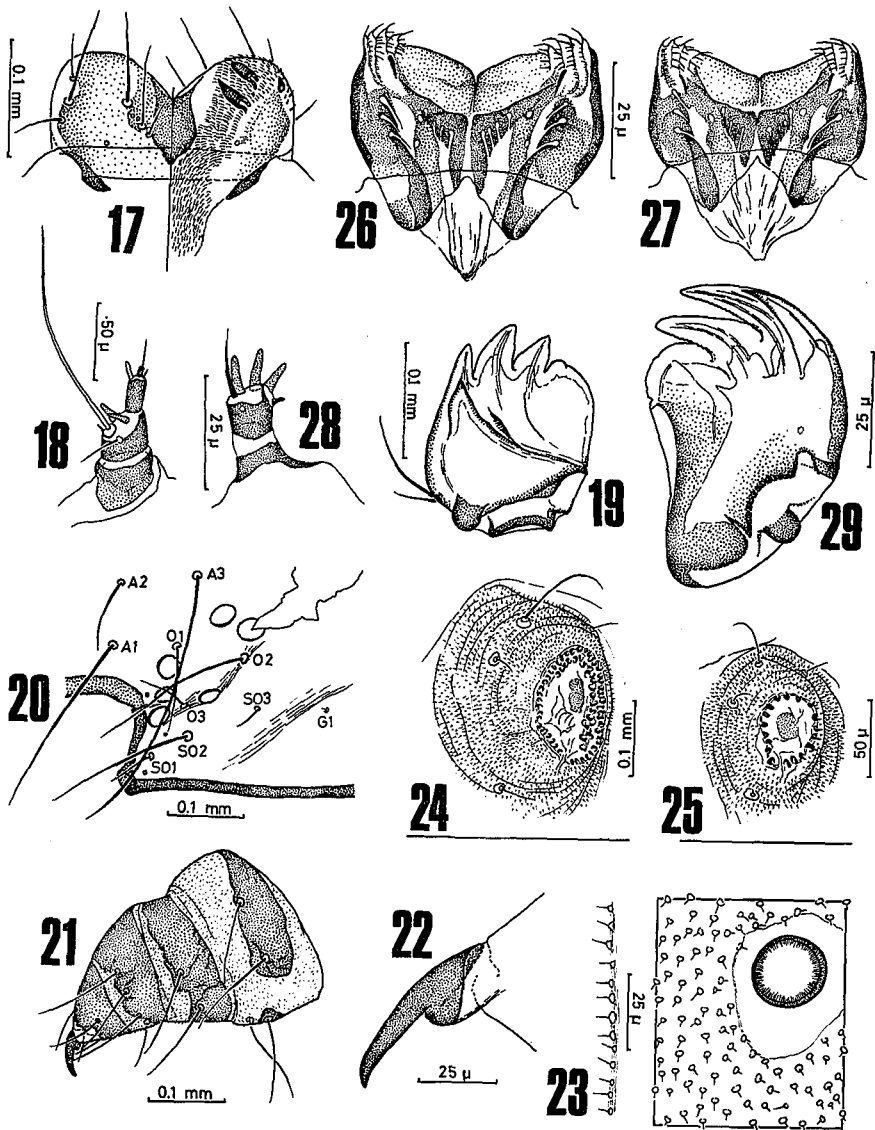


Fig. 11. *Caloptilia (Sphyrphora) octopunctata* (Turner), ♀ genitalia in ventral view (Grc-2376, India, ex *Sapium sebiferum*).

styloconicum on 3rd segment 2-segmented, longer than sensilla basiconica. Labrum (Fig. 17) about 1/2 as long as wide, moderately notched apically, the lateral lobes round apically; 3 lateral and 3 median labral setae on each side, the L_2 and M_3 the longest; 2 large epipharyngeal setae and a small one on ventral face of each side; epipharyngeal shield vase-shaped, somewhat constricted near apex. Mandible (Fig. 19) with 6 teeth; the 1st tooth the shortest and situated just interior to the 2nd, the 3rd the longest, the 6th crenulated around apical margin. Labiomaxillary complex resembles that of the most lepidopterous larvae in shape and structure; spinneret spindle-shaped, about 3 times as long as wide; labial palpus slender, the 2nd segment about 2/3 as long as spinneret; premental setae minute; a median sclerite of postmentum widest at postmental setae, then narrowed strongly posteriorly and gently anteriorly, somewhat constricted just beyond



Figs. 12-16. *Caloptilia (Sphyrophora) octopunctata* (Turner): larva. 12: body chaetotaxy of 6th instar — 13: head of 5th instar — 14: labiomaxillary complex of 5th instar — 15: head of 2nd instar — 16: labiomaxillary complex of 2nd instar.



Figs. 17-29. *Caloptilia (Sphyrophora) octopunctata* (Turner): larva. 17: labrum of 6th instar (left side in dorsal view, right side in ventral view) — 18: antenna of 6th instar — 19: mandible of 6th instar — 20: ocelli and adjacent setae of 6th instar — 21: metathoracic leg of 6th instar — 22: ditto, claw enlarged — 23: spinules of body surface around 4th abdominal spiracle of 6th instar — 24: proleg on 5th abdominal segment of 6th instar — 25: proleg on 3rd abdominal segment of 3rd instar — 26 & 27: labrum of 2nd instar — 28: antenna of 2nd instar — 29: mandible of 2nd instar.

postmental setae, which are situated posteriorly to level of longer setae of maxillary stipes; apical segment of maxillary palpus about twice as long as wide.

Body cylindrical, widest on first 5 abdominal segments, then slightly tapering both anteriorly and posteriorly. Thoracic legs (Fig. 21) all well developed; tarsus,

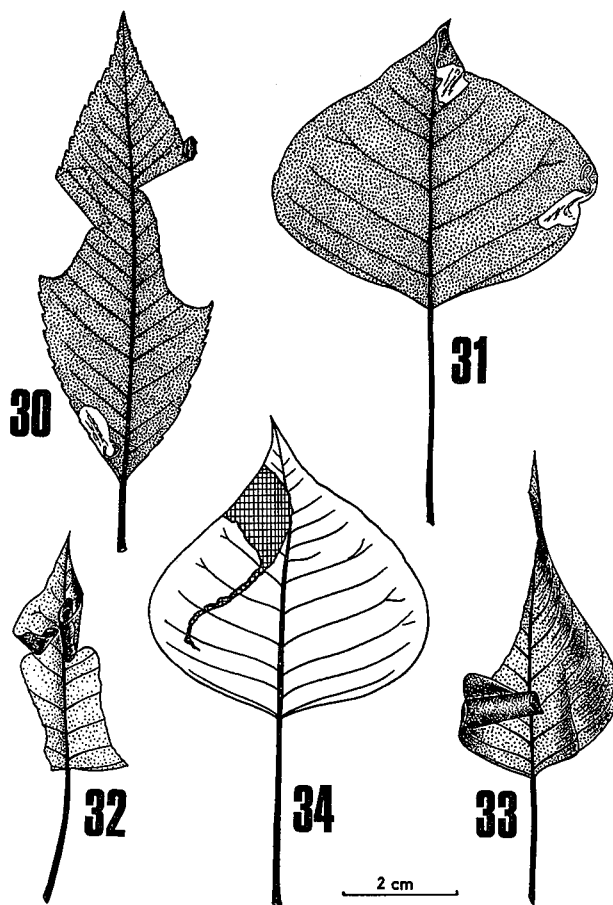
tibia, femur and coxa with 4, 4, 2 and 5+1 (micro) setae, respectively; claw as shown in Fig. 22. Ventral prolegs located on 3rd to 5th abdominal segments, with uniordinal crochets arranged in a lateral penellipse (39-46) plus a semicircle (21-27) (Fig. 24); anal proleg with crochets in a transverse row (16-18). Spinules of body surface (Fig. 23) minute, pointed, rather coarse. Chaetotaxy of body as shown in Fig. 12; very similar to that of *Gracillaria syringella* figured by MacKay (1972), but differing from the latter by the following points: — seta SV_3 on 1st, 2nd, 6th and 7th abdominal segment located dorso-caudad or caudad of seta SV_1 ; seta D_1 on 9th abdominal segment just ventral to seta D_2 ; seta SD_2 present on the 9th segment.

Fifth instar: One larva and 1 exuviated head-capsule examined. Head (Fig. 13) with coronal suture shortened, about 1/5 as long as frontal suture; adfrontal suture not visible. Labiomaxillary complex (Fig. 14) with a median sclerite of postmentum not constricted beyond postmental setae. Ventral prolegs with crochets arranged in a lateral penellipse (28-30) plus a semicircle (13-17); anal proleg with crochets in a transverse row (15-17). The other characters are essentially not different from the 6th instar described above.

Fourth instar: One larva and 1 exuviated head-capsule examined. Head with coronal suture not visible, thus frontal sutures connected with each other at depth of cervical triangle. The other structures are not different from those of the 5th and 6th instars.

Third instar: Two larvae and 2 exuviated head-capsules examined. The structure is same with that of the 4th instar, but crochets on prolegs are very different in arrangement; the crochets are in a uniordinal circle alone on ventral prolegs and 17-20 in number (Fig. 25), those on anal prolegs in a transverse row (9-12).

Second instar: One larva and 6 exuviated head-capsules examined; they are very different from the 3rd to 7th instar larvae in all essential structures. Head (Fig. 15) thinly flattened dorsoventrally, wedge-shaped, prognathous, narrowly sclerotized on lateral margins, with posterodorsal prolongations moderately developed and triangular. Frontoclypeus elongately oblong, slightly narrowed posteriorly. Epicranial setae all indicated by basal socket only; A_1 , A_2 and A_3 arranged in a triangle and located anteriorly to level of F_1 . One ocellus visible at anterior extremity of each lateral ridge of epicranium. Antenna (Fig. 28) 3-segmented, basal segment well sclerotized, 2nd segment partially fused with the 3rd at mesial side; a sensillum trichodeum on 2nd segment about as long as antenna; a sensillum styloconicum on apical segment simple, shorter than sensilla basiconica. Labrum (Figs. 26 & 27) quadrangular, a little wider than long, shallowly notched medianly on apical margin; lateral lobe with 4 teeth at apical extremity, the teeth each having a few hair-like spines on its apex and along inner stria. Mandible (Fig. 29) flat, 4-toothed; 4th tooth crenulated along its round apical margin. Labiomaxillary complex (Fig. 16) simple, flat dorsoventrally, without any distinct setae; prementum strongly widened and truncated apically, without palpi and spinneret; postmentum much more widened posteriorly, about 2.5 times as long as prementum; maxillary palpifer slender, bifurcate apically, the inner furcation (supposed galea) about twice as long as outer one (supposed maxillary palpus), protruded a little beyond labium, and shallowly bilobed apically; hypopharynx protruded well beyond labium, widely bilobed apically, covered with many hair-like spines.



Figs. 30-34. Leaf-mine and cone of *Caloptilia (Sphyrophora) octopunctata* (Turner). 30: leaf of *Sapium indicum* (upper surface) with a mine and cones — 31: leaf of *S. sebiferum* (upper surface) with mines — 32 & 33: ditto (lower surface), with cones — 34: ditto, with a cone unfolded (meshes showing the area eaten by larva).

Body flattened like head, tapering caudally, with intersegments moderately constricted. Prothorax with a triangular patch covered with microspines at each side of thoracic shield, which is trapezoid in shape. Meso- and metathorax banded with 4 to 7 transverse rows of microspines on both dorsal and ventral surfaces, the dorsal band a little longer and widened at lateral extremity. Abdominal segments except 9th and 10th banded with 2 or 3 rows of microspines on dorsum and with 1 row on ventrum likewise. Tenth abdominal segment round posteriorly, with a deep cleft at anal opening. Thoracic legs and abdominal prolegs absent. Body setae not visible.

First instar: Nine exuviated head-capsules examined. Head comparatively a little wider than that of 2nd instar, slightly round on lateral margins; frontoclypeus also a little wider than that of 2nd instar. The other characters are as in 2nd instar.

Food plant: *Sapium indicum* Willd. and *S. sebiferum* Roxb. (Euphorbiaceae) in India, and *Homalanthus* sp. (Euphorbiaceae) in Australia (after the labels fixed on specimens examined).

Larval habit: Eggs might be singly laid on the upper surface of the host-leaf, because the mines are always started at the upper epidermal layer in the plant specimens examined. The mine at first is narrowly linear, upper epidermal, and transparent-whitish in colour, then it widens to an irregularly blotch-formed mine, which is upper parenchymal and greenish-brown in colour. This type of mine may be associated with the sap-feeding larvae of the first 2 instars. The 3rd instar larva, transformed to the tissue-feeding type, continues feeding within the mine-cavity; the mine in this stage is completely changed in colour to pale brown, and slightly contorted on the upper epidermis with silken threads. The final stage of the mine is 8–12 mm × 4–6 mm in the blotchy part.

After the moult, the 4th instar larva emerges from the mine through a round hole, and migrates to the margin of the same leaf or another one; it cuts a strip of the leaf along the margin and rolls up the strip into a cone on the lower side of the leaf; then the larva continues to feed inside the cone. The larva seems to make one or more leaf-rolls during the remaining 4 instars. Pupation occurs within the final leaf-roll in a white and spindle-shaped cocoon.

At Solan, India, I observed an isolated tree of *Sapium sebiferum* being heavily infested by this species. The tree was discoloured into brown in a distant view, and almost all the leaves had two or more larval mines and cones. The most part of the insect material used in this paper were collected from this tree.

Distribution: India (West Bengal; Bihar; Uttar Pradesh; Himachal Pradesh); Australia (Queensland; New South Wales); and New Zealand (Kermadec Is.).

Caloptilia (Sphyrphora) sapina Vári, which is closely allied to *octopunctata* as discussed in the following lines, is distributed in South Africa (Natal). Thus the known distributional areas (Australia, India and South Africa) of the subgenus *Sphyrphora* are quite distant from each other. This may suggest that the 2 species are relics of an ancient common fauna — the Gondwana fauna, but it should be emphasized that our knowledge on the Gracillariidae is still very poor in worldwide view. In this connection it may be noteworthy to state that the members of the genus *Ectropina* are also distributed in India and South Africa (Kumata, 1979).

Remarks: After the comparison of the Australian specimens of *octopunctata* with the Indian ones including those identified as *tetratypa* and *cirrhocrotala*, I have come to conclude that all the specimens are almost exactly alike and must be included within the same species. In Australian specimens the ampulla of the male genitalia is comparatively small (see Fig. 5), but this difference seems to be an infraspecific variation.

Reading through the original description of the South African *sapina*, I am inclined to believe that *sapina* is also conspecific with *octopunctata*. According to Vári (1961) *octopunctata* is distinguishable from *sapina* as follows: "cucullus more rounded ventrally; ampulla a little smaller and more slender; ♀-genitalia: aphophyses wider at base and antapophyses a little shorter than in *sapina*". He also emphasized the difference in food plant between *sapina* and *octopunctata*. The morphological differences mentioned by him seem to be unconvincing to me, and it

is now known that both species attack *Sapium* in common. I would like, however, to defer this conclusion to a future opportunity to examine material of *sapina*.

ACKNOWLEDGEMENTS

First of all I wish to express my cordial thanks to the Authorities of the Indian Government for their permission and support for the Joint Project. Prof. Dr. D. N. Raychaudhuri, University of Calcutta, and Prof. Dr. T. N. Ananthakrishnan, Loyola College at Madras and the former Director of the Zoological Survey of India, both have been Indian promoters of the Project, which has not been realized without their co-operation. On this occasion I wish to express my hearty thanks to them. I also express my thanks to Prof. T. Nakashima of Hokkaidô University, the leader of the Project, for his kindness in giving me the chance to join the Project.

I am thankful to the Director and staff of the Botanical Survey of India, Calcutta, for their permission and help for the collecting in the Botanic Garden and for their kindness in identifying the food plants of the Indian Gracillariidae.

Although I could join the Research Trips in 1978 only for a very short time because of an accident, I will never forget the following persons for their kindness in giving me help during my joining the Trips and at the accident: Dr. M. R. Gosh of University of Kalyani, Dr. P. K. Mandal of University of Calcutta, Dr. R. K. Varshney and Dr. G. S. Arora, both of the Zoological Survey of India, Calcutta, Dr. J. M. Julka of High Altitude Zoology Field Station of the Zoological Survey of India, Solan, Dr. Arun Kumar and Dr. S. C. Verma, both of the Northern Regional Station of the Zoological Survey of India, Dehra Dun, Mr. K. Okuda of the Japanese Embassy at New Delhi, and all of the Japanese members of the Project. I also make grateful acknowledgements to the staff of East West Medical Center, New Delhi, for their kindness during my stay in the hospital. My hearty thanks are due to Prof. V. K. Gupta of Delhi University for his kindly visiting and cheering me in various ways during my stay in the hospital; and also to Prof. K. Yasumatsu and Dr. A. Lewvanich for their kind help and hospitality I received in Bangkok.

I wish to express my special thanks to Dr. I. F. B. Common of Commonwealth Scientific and Industrial Research Organization, Canberra, and Mr. S. L. Gupta and Dr. S. Ghai, both of the Indian Agricultural Research Institute, New Delhi, for their kindness in sending me many valuable specimens used in this paper at my requests; and also to Mr. H. Takizawa and S. Yamane, both of the Japanese members of the Joint Project, for their help in rearing the leaf-mining Lepidoptera after my accident. Without their kindness and help, I could not write this paper.

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