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**KETAPANGIA, A NEW GENUS FOR MACAROSTOLA
LEUCOCHORDA AND ACROCERCOPS REGULIFERA
[GRACILLARIIDAE, LEPIDOPTERA]**

By TOSIO KUMATA

Systematic and Ecological Surveys on Some Plant-Parasitic Microarthropods
in Southeast Asia, Scientific Report No. 24.

Abstract

KUMATA, T. 1995. *Ketapangia*, a new genus for *Macarostola leucochorda* and *Acrocercops regulifera* [Gracillariidae, Lepidoptera]. *Ins. matsum. n. s.* 52 : 133-148, 8 figs.

A new genus, *Ketapangia*, is described for *Macarostola leucochorda* Meyrick, 1908, and *Acrocercops regulifera* Meyrick, 1933, with a discussion on its taxonomic position in the *Gracillaria*-group. Based on further material collected from Southeast Asia and Micronesia, both the species are redescribed in detail with illustrations of the male and female genitalia. The distributional pattern of the genus is discussed.

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INTRODUCTION

Macarostola leucochorda Meyrick, 1908, was described from India based on one female specimen. Later on it was transferred to the genus *Parectopa* (Meyrick, 1912), and its food plant, *Terminalia chebula*, was recorded from India (Meyrick, 1934). On the other hand, *Acrocercops regulifera* Meyrick, 1933, was described from the Malay Peninsula as a leaf-miner of *Terminalia catappa*. It is rather difficult to distinguish between these species in colour pattern alone in spite of the fact that they were classified in different genera.

After my careful examinations of the types and many additional specimens collected from Southeast Asia and Micronesia, I have come to conclude that the two species are congeneric and should be assigned to a new genus, *Ketapangia* as named below, which is quite different from *Parectopa* and *Acrocercops*. Moreover, the larval body chaetotaxy of the type-species has revealed that the new genus should be placed near to the *Aristaea*-subgroup (which probably includes the genera *Aristaea*, *Cupedia*, *Neurostrotia*, *Neurolipa* and *Systoloneura*) of the *Gracillaria*-group rather than to the *Parectopa*-group or the *Acrocercops*-group.

The specimens used in this paper show that *K. regulifera* is rather widely distributed in Southeast Asia. *K. leucochorda* has been collected, curiously enough, from India and Micronesia (Ogasawara Islands and Gilbert Islands), thus being widely interrupted by the distributional area of *K. regulifera*.

SPECIMENS AND THEIR DEPOSITORIES

The type-specimens of *Macarostola leucochorda* and *Acrocercops regulifera* were borrowed from the Natural History Museum at London (BMNH), together with further specimens collected from India and the Gilbert Islands.

Specimens from Malaysia and the Philippines were collected by me in connection with the Japan-Malaysia (1988-1991) and Japan-Philippines (1992-1994) joint project "Systematic and Ecological Surveys on Some Plant-Parasitic Microarthropods in Southeast Asia". About half of the specimens will be deposited in the Forest Research Institute of Malaysia, Kuala Lumpur (FRIM), for the material from Malaysia, and also in the Natural History Museum, University of the Philippines at Los Baños (UPLB), for the material from the Philippines. The remaining specimens are in the Laboratory of Systematic Entomology, Hokkaidō University, Sapporo (SEHU).

Specimens from the Ogasawara Islands (= Bonin Islands) were also collected by me under the permission [No. 267 (17. July, 1984)] issued from the Headquarters of Huzi-Hakone-Izu National Park, Environmental Ministry, Japan. The specimens are all deposited in SEHU.

Specimens from Taiwan were collected by me during my private trips, and are deposited in SEHU.

KETAPANGIA GEN. NOV.

Type-species. *Macarostola leucochorda* Meyrick, 1908.

Etymology. *Ketapangia* is named after "ketapang", a Malayan name for

Terminalia catappa, that is a food plant common to the species of the genus; feminine.

Description. Adult: ♂ ♀. Head and face smooth-scaled; ocelli absent. Labial palpus smooth-scaled, slender, slightly upcurved, with third segment about as long as the second. Maxillary palpus smooth, porrect, one-third to one-second as long as labial palpus. Proboscis developed, naked. Antenna 1.1 to 1.2 times as long as fore wing, filiform in both sexes; scape slightly thickened, without pecten.

Thorax smooth-scaled, without dorsal crest. Legs smooth, slender, rather long; hind tibia slender throughout, without bristly scales, and with anterior pair of spurs at basal third; hind tarsus about 1.2 times as long as hind tibia. Fore wing [Fig. 2 (A-B)] narrow, lanceolate, pointed; discoidal cell occupying basal five-sixths of wing, dilated distally, with a truncate apex; 11-veined, with veins M_3 and Cu_{1b} absent, and vein R_1 almost obsolescent throughout; veins R_2 and R_3 from near upper angle of cell; vein Cu_{1a} from lower angle of cell; vein An long, extending to basal

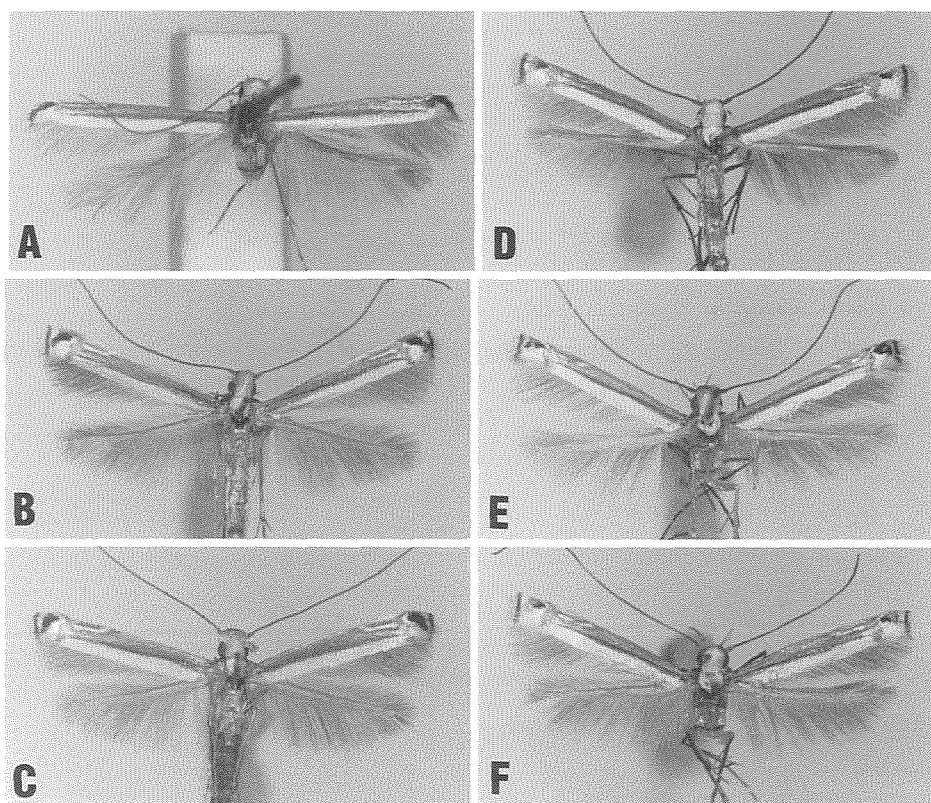


Fig. 1. Adult specimen of *Ketapangia* spp. A: *K. leucochorda*, ♀ [holotype] — B: Ditto, ♀ [Hahazima, Ogasawara Is., Japan] — C: Ditto, ♀ [Titizima, Ogasawara Is., Japan] — D: *K. regulifera*, ♂ [Telok Ayer-Yan, Kedah, West Malaysia] — E: Ditto, ♂ [Kuching, Sarawak (Borneo), East Malaysia] — F: Ditto, ♀ [Bagac, Bataan Prov., Luzon I., Philippines].

two-thirds of dorsal margin. Hind wing nearly linear, long-pointed, with cell opened between veins M_2 and Cu_{1a} ; 5-veined, with veins M_3 and Cu_{1b} absent; veins M_1 and M_2 long-stalked; vein Cu_{1a} ending near vein M_2 ; radial sector and stem of median veins obsolescent basally; cilia spread out into about thrice width of wing.

Male abdomen [Fig. 2 (C-D)] with two or four pairs of eversible hair-tufts or coremata on dorsal side of basal segments, the coremata invaginated into abdominal

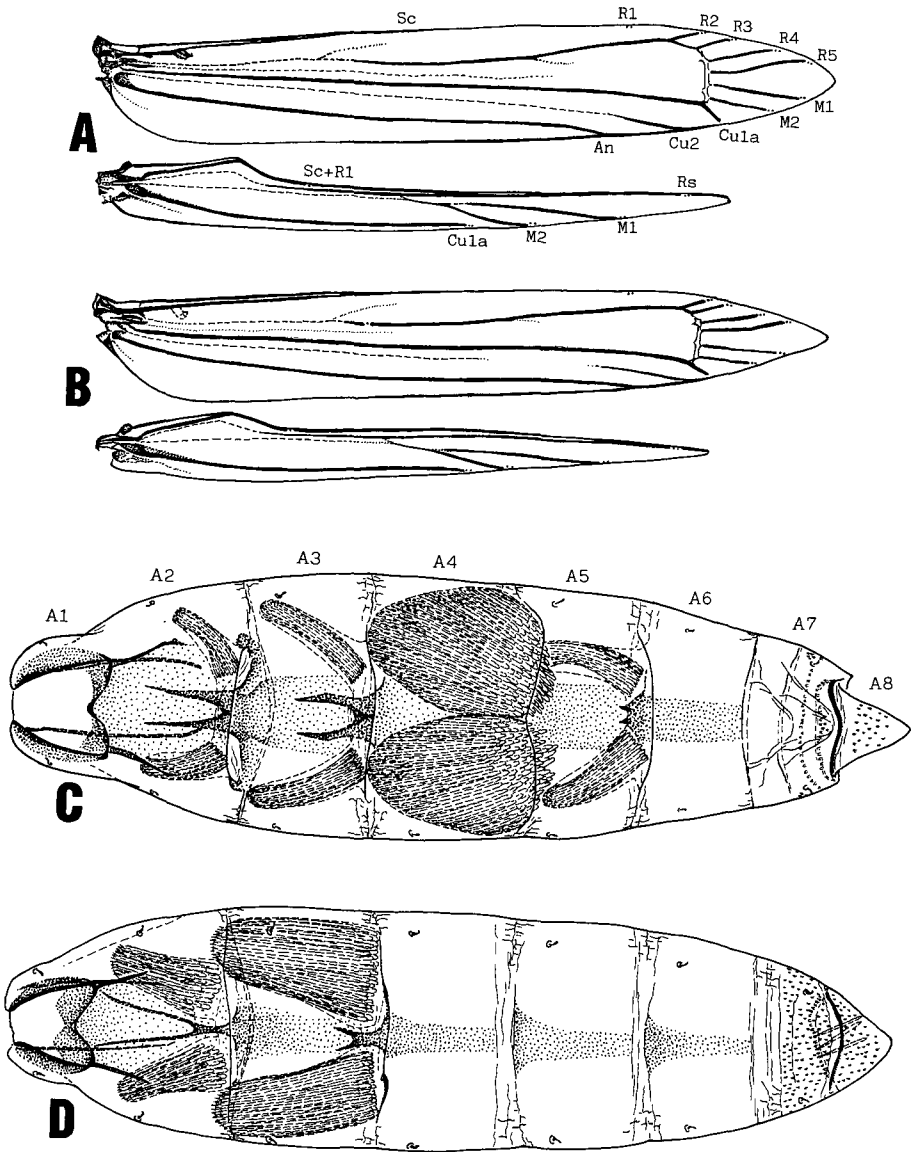


Fig. 2. Wing venation (A-B) and male abdomen in dorsal view (C-D) of *Ketapangia* spp. A & C: *K. leucochorda* — B & D: *K. regulifera*. (A1-A8: First to eighth abdominal segments.)

cavity from intersegments between second to fourth (i. e., second/third ; third/fourth) or second to sixth (i.e., second/third ; third/fourth ; fourth/fifth ; fifth/sixth) segments. Seventh segment rather short, squamose as usual or very sparsely so in type-species ; eighth segment with tergite alone prominent, triangular and sparsely squamose. Genitalia with tegumen developed, spatulate in ventral view, squamose dorsally, with a pair of subapical setae ; tuba analis weakly sclerotized ventrally, sparsely covered with fine setae laterally. Vinculum well developed, U- or V-shaped in ventral view, with a very long, narrow apical saccus, which is usually as long as valva. Valva rather elongate, tongue-shaped or ellipsoidal, straight, usually round apically, covered with slender setae alone in type-species or with several kinds of modified setae in the other species. Anellus simple, membranous, without sclerous juxta. Aedeagus very large and long in comparison with other genital organs, nearly twice as long as valva, straight, tubular ; vesica with two long cornuti ; ductus ejaculatorius very long, about twice as long as sclerotized aedeagus.

Female abdomen with pregenital segments not modified into genital organs. Genitalia with papilla analis moderate in length, covered with fine setae on caudal half as usual ; apophysis posterioris moderate in length, about as long as papilla analis. Seventh segment rather short, about as long as papilla analis, with apophysis anterioris nearly as long as apophysis posterioris. Lamella postvaginalis transversely ribbon-shaped, slightly arched caudally on ventrum, with lateral arms connected with apophyses anteriores. Ostium bursae opening on ventrum between eighth and seventh segments, simple ; sclerotized antrum cup-shaped, spinulate on caudal area ; ductus bursae very long, slender, membranous, with a pair of stringlike sclerites occupying cephalic third ; corpus bursae large, pyriform, weakly sclerotized and sparsely spinulate on cephalic area, with a small to minute, cone-shaped signum.

Last instar larva : That of the type-species alone is available in the present study. Body chaetotaxy as in Fig. 3 (A). Prothorax with two lateral setae (L1 and L2) in front of spiracle as usual in Gracillariidae. Mesothorax and metathorax each with three lateral setae (L1, L2 and L3), seta L2 being anterodorsal to seta L1. First to eighth abdominal segments with seta D1 anterodorsal to seta D2 ; lateral group consisting of two setae (L1 and L2), the seta L2 anteroventral to seta L1 and shorter than the latter ; subventral group unisetose on first and eighth segments, bisetose on sixth and seventh, and trisetose on second to fifth ; seta SV3 on sixth and seventh segments posteroventral to seta SV1, and sometimes absent on seventh ; proprioceptors MD1 and MV3 present on all segments. Ninth abdominal segment with six setae (D1, D2, SD1, L1, SV1 and V1) and two proprioceptors (MD1 and MV3) on each side, seta D1 being anterolateral to seta D2. Tenth abdominal segment with four pairs of moderate setae on anal shield as usual, and with a minute cone-shaped dorsal projection produced just anteriorly of anal shield.

Thoracic legs well developed. Ventral prolegs located on third to fifth abdominal segments as in most species of Gracillariidae, with uniordinal crochets arranged in a lateral penellipse and a transverse row as in most members of *Gracillaria*-group ; anal prolegs on tenth abdominal segment with uniordinal crochets arranged in a transverse row.

Larval habit. The members of this genus are leaf-miners throughout the larval period, and make linear-blotch mines on the lower side of food plants as in Fig. 3 (B-

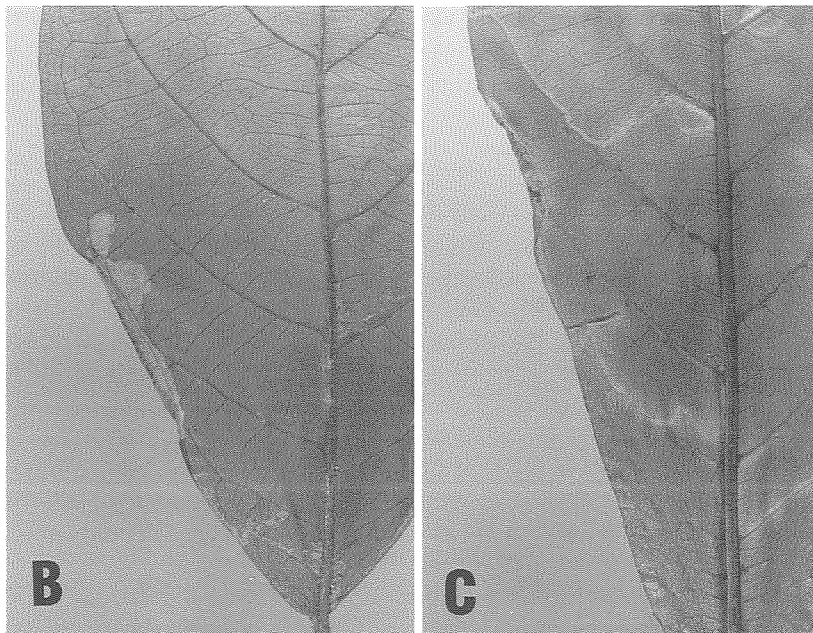
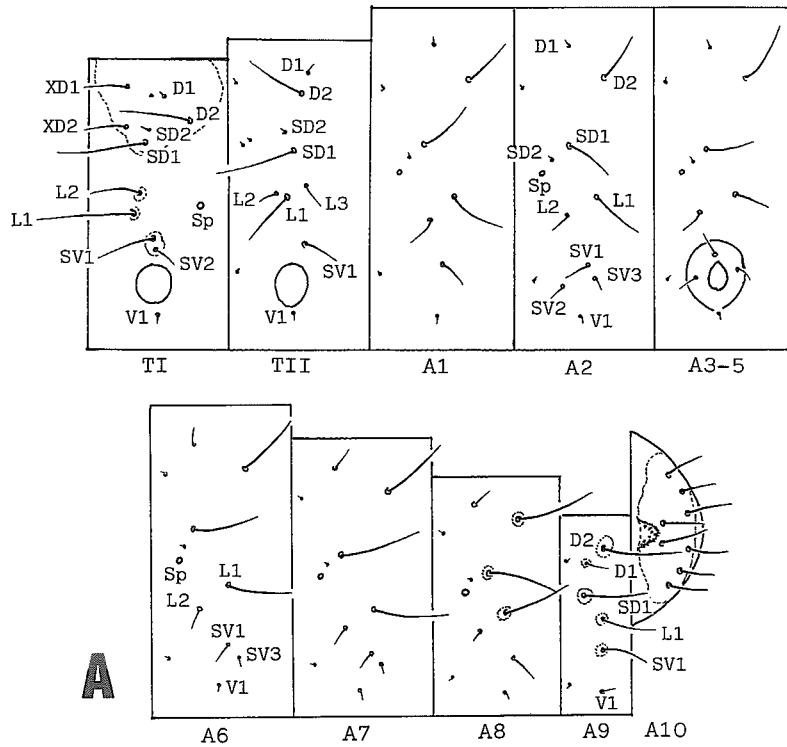


Fig. 3. Body chaetotaxy of last instar larva (A) and larval leaf-mine (B-C) of *Ketapangia* spp. A: *K. leucochorda* [breeding no. 2506, Hahazima, Ogasawara Is., Japan] — B: Ditto on leaf (lower side) of *Terminalia catappa* [breeding no. 2506] — C: *K. regulifera* on leaf (lower side) of *T. catappa* [breeding no. 5233, Bagac, Bataan Prov., Luzon I., Philippines]. (TI and TII: Prothorax and mesothorax; A1-A10: first to tenth abdominal segments.)

C). The linear part of the mine is made by the young larva, epidermal, usually running from the median area near the mid vein to the leaf-edge with an irregularly curved trace. The blotchy part is elongated along the leaf-edge, with parenchymal tissues within this part almost eaten by the larva. Finally the leaf-edge at the blotchy part is narrowly folded down owing to shrink of the lower epidermis on the mining part. The full-grown larva emerges from the mine through a round hole (not a semicircular slit) to make a cocoon outside. The cocoon is usually placed on the lower side of the leaf, mostly as the side of the mid or lateral vein, boat-shaped, whitish, partly stained by grains of frass, and covered by five to seven bars of silken threads across the cocoon, without bubbles or globules.

Distribution. Two species assigned to the new genus are leaf-miners on the genus *Terminalia* (Combretaceae); especially they feed on *T. catappa*, which is widely distributed in Southeast Asia and South Pacific islands. As far as their habitats are known, the two leaf-miners are distributed allopatrically in South Asia, Southeast Asia and Micronesia as shown in Fig. 4.

K. regulifera is distributed in Southeast Asia from the Ryukyu Islands to Malay Peninsula through Taiwan, the Philippines and Borneo, whereas *K. leucochorda* was collected from India and Micronesia (Ogasawara Islands and Gilbert Islands). This distributional pattern appears strange, because the habitats of *K. leucochorda* are widely separated by *K. regulifera*. Competition for the same food resource may be a possible explanation for this strange distributional pattern, because both the species make very similar leaf-mines on the same plant species, *Terminalia catappa*.

Remarks. The new genus *Ketapangia* certainly belongs to the subfamily Gracillariinae especially in the radial sector of the hind wing approaching to the vein

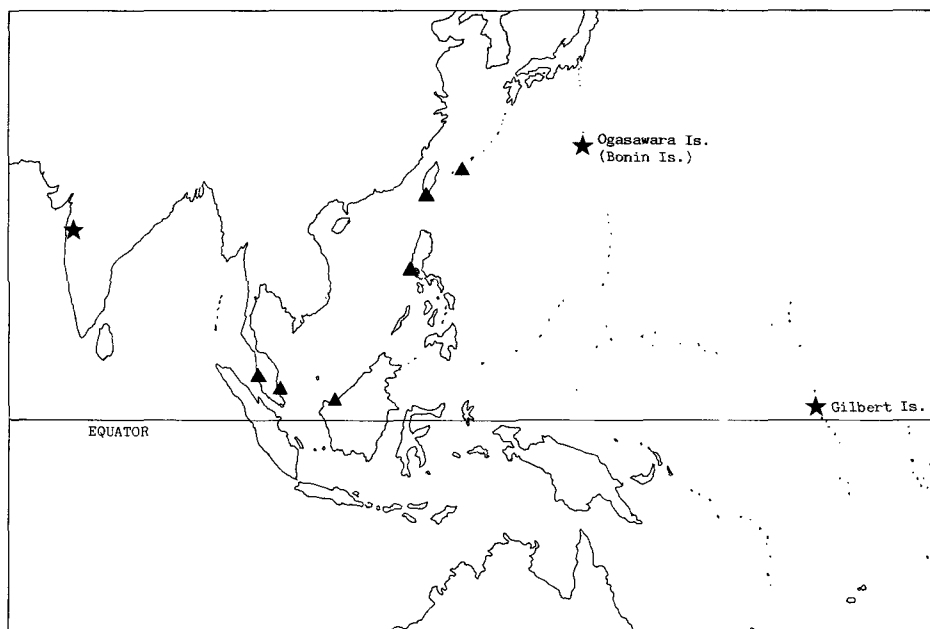


Fig. 4. Distribution map of *Ketapangia leucochorda* (★) and *K. regulifera* (▲).

Sc+R₁ at the basal part. So far as adult characters are concerned, however, it is rather isolated from other genera of the subfamily in the simple venation of the hind wing and the peculiar hair-tufts situated at anterior segments of the male abdomen.

Ketapangia is well distinguished from the genus *Parectopa* and its allies (*Parectopa*-group) by the female ostium bursae opened on the intersegment between the seventh and eighth abdominal segments in addition to the characters mentioned above, whereas the type-species, *K. leucochorda*, has long been treated as a member of the genus *Parectopa*. It is also distinguished from the genus *Acrocercops* and its related genera (*Acrocercops*-group) by the long anal vein of the fore wing and by the smooth-scaled hind tibia, in spite of the fact that the other species, *K. regulifera*, was described under the genus *Acrocercops*. Further, it is separated from the *Gracillaria*-group (including the genera *Gracillaria*, *Caloptilia*, *Aspilapteryx*, *Calybites*, *Ectropina*, *Eucalybites*, *Aristaea*, *Cupedia*, *Neurostrota*, *Neurolipa* and *Systoloneura*) by the simple seventh and eighth abdominal segments without coremata in the male in addition to the simple venation of the hind wing and the two or four pairs of the anterior coremata of the male abdomen.

On the other hand, the larval body chaetotaxy of the type-species is more similar to that of the *Gracillaria*-group than to that of the *Parectopa*-group and of the *Acrocercops*-group as follows: — In the mesothorax and metathorax the lateral group comprises of three setae (L1, L2 and L3); in the first to eighth abdominal segments the seta D1 is located anterodorsally of the seta D2; and ventral prolegs have uniordinal crochets which are arranged in a penellipse plus a transverse row. These characters are seen in common in all members of the *Gracillaria*-group so far as examined (Kumata, 1977, '79 and '82; Triberti, 1985; Davis et al., 1991). Moreover, the character that the seta L1 on the abdomen is longer than the seta L2 or L3 suggests that the genus *Ketapangia* should be placed near to the *Aristaea*-subgroup (probably including the genera *Aristaea*, *Cupedia*, *Neurostrota*, *Neurolipa* and *Systoloneura*) among the *Gracillaria*-group. Except for *Neurostrota* which is a stem-borer in the late larval instars (Davis et al., 1991), these genera are leaf-miners throughout the larval period as in the new genus *Ketapangia*.

I, therefore, conclude that *Ketapangia* should be placed in the *Gracillaria*-group of the subfamily Gracillariinae. It is characterized by the absence of veins M₃ and Cu_{1b} on both the fore and hind wings, by the presence of coremata on anterior segments of the male abdomen, and by the presence of seta L2 and the absence of seta L3 on abdominal segments of the last instar larva.

Key to the species of the genus *Ketapangia*

1. Male hind wing uniformly greyish; male abdomen with four pairs of coremata [Fig. 2 (C)]; male valva elongately tongue-shaped, tapering apically, with moderate slender setae which becomes shorter and thicker around apex of valva; stringlike sclerites on female ductus bursae capitated at their cephalic ends; a sclerous ring absent at conjunction of ductus and corpus bursae. *K. leucochorda* (Meyrick)
- Male hind wing with a yellowish median patch; male abdomen with two pairs of coremata [Fig. 2 (D)]; male valva ellipsoidal in outline, with several kinds of setae as shown in Fig. 7 (B); stringlike sclerites on female ductus bursae united with a sclerous ring at conjunction of ductus and corpus bursae. *K. regulifera* (Meyrick)

Ketapangia leucochorda (Meyrick), comb. nov.

[Figs. 1 (A-C), 2 A & C), 3 (A-B), 5, 6]

Macarostola leucochorda Meyrick, 1908, Journ. Bomb. nat. Hist. Soc. 18: 826.

Parectopa leucochorda: Meyrick, 1912, Gen. Ins. 128: 21; *ibid.*, 1934, Exotic Microlep., 4: 473.

Original description. "♀. 9 mm. Head white. Palpi white, second joint smooth-scaled, with upper edge dark grey, terminal joint longer than second, with anterior edge blackish. Antennae dark fuscous, beneath white. Thorax dark bronzy grey, posterior extremity white. Abdomen grey, beneath ochreous-whitish. Legs white, banded with grey and blackish. Forewings very narrowly elongate, parallel-sided, moderately pointed; dark bronzy-grey; an evenly

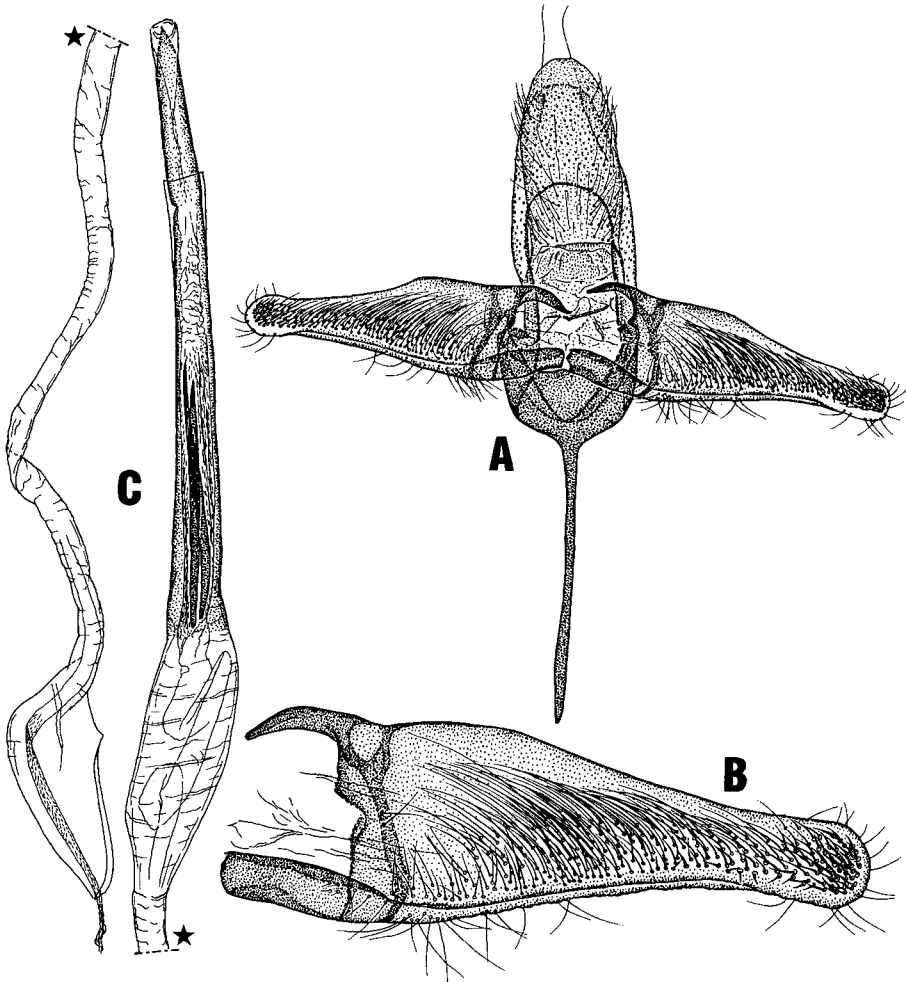


Fig. 5. *Ketapangia leucochorda*. A: Male genitalia in caudal view, aedeagus omitted [Grc-5779, Titizima, Ogasawara Is., Japan, ex *Terminalia catappa* (2479)] — B: Right valva enlarged [ditto] — C: Aedeagus [ditto].

broad snow-white streak along dorsum from base almost to apex, its upper edge narrowly incised about middle of termen, its extremity dilated into a triangular projection, edged above by a short black anteriorly white margined costal mark close before apex of wing; three fine longitudinal white lines from about 2/5 to opposite incision of dorsal streak, uppermost costal, second curved up to costa anteriorly, lowest obsolescent anteriorly: cilia grey, white at base round apex and on a small spot below apex, at apex with a blackish hook. Hindwings rather dark grey; cilia grey.

N. Coorg, 3,500 feet, in June (Newcome); one specimen."

Additional description. ♂ ♀. Expanse of wings: 7.1-8.2 mm (mean: 7.76 mm, n=13; 8.2 mm in holotype). Length of fore wing: 3.4-3.8 mm (mean: 3.61 mm, n=16; 3.8 mm in holotype).

Head white, with a rather wide, transverse bronzy band between antennae in most specimens examined, especially in specimens from the Ogasawara Islands. Labial palpus as described originally; maxillary palpus white, porrect, one-second to one-third length of labial palpus. Thorax white, with tegulae bronzy grey. Legs whitish, but all tibiae infuscated apically, and tarsi dark fuscous, with three narrow, white rings. Fore wing with dorsal stripe snow-white in the holotype and the specimens from the Gilbert Islands, while light ochreous in most specimens from the Ogasawara Islands; other colourations as described originally. Hind wing evenly dark grey in both male and female; cilia grey.

Male abdomen [Fig. 2(C)] with four pairs of hair-tufts on dorsal side, invaginated from intersegments between second to sixth segments (i.e., second/third, third/fourth, fourth/fifth, and fifth/sixth), the third pair from front being thickest, and the others slender and slightly incurved. Male genitalia as in Fig. 5. Valva elongately tongue-shaped, gradually tapering towards round apex, with moderate slender setae on inner surface near ventral margin, the setae becoming shorter and thicker around apex of valva; no other types of setae on inner surface of valva. Vinculum U-shaped, with saccus slender, and slightly longer than valva. Aedeagus about twice as long as valva, tubular, with two cornuti about half as long as aedeagus. (Six slides examined.)

Female genitalia as in Fig. 6. Papilla analis rather thickly setose on caudal half and very sparsely spinulose along caudal margin. Ostium bursae moderate; antrum short, cup-shaped, with caudal area spinulose; ductus bursae with a pair of long, narrow, stringlike sclerites occupying about cephalic third, the sclerites somewhat capitate at their cephalic ends. Corpus bursae moderately large, weakly sclerotized and spinulate on cephalic area, with a minute, spine-like signum situated in centre of a round sclerite. (Five slides examined.)

Specimens examined. Adults: 24♂ & 26♀. Larvae: 4 exs.

Holotype: ♀, labelled "Holotype; Dibidi, N. Coorg, Newcome, 23.6.06; *Par-ectopa leucochorda* Meyr., E. Meyrick det., E. Meyrick Coll.; *leucochorda* Meyr.; B.M. Genitalia slide no. 28016 (♀)", deposited in BMNH.

Other specimens: JAPAN — 8♂ & 7♀, Titizima, Ogasawara Is., em. 6-22. xi. 1984, ex *Terminalia catappa* (2479), T. Kumata leg., Gen. sl. nos. Grc-5779 (♂), Grc-5780 (♀), Grc-6345 (♂); 12♂ & 16♀, Hahazima, Ogasawara Is., em. 20. xi-3. xii. 1984, ex *T. catappa* (2506), T. Kumata leg., Gen. sl. nos. Grc-3488 (♂), Grc-3489 (♂), Grc-3490 (♀), Grc-3491 (♀), in SEHU. GILBERT IS. (KIRIBATI) — 2♂ & 2♀, Tarawa, 21-26. XI. 1973, H.S. Robinson leg., B.M. Genitalia slide nos. 28012 (♂), 28013 (♀), in BMNH. INDIA — 2♂, Poona, 31, 30. 6. 33, R. Maxwell leg., B.M. Genitalia slide No. 28014 (♂), in BMNH.

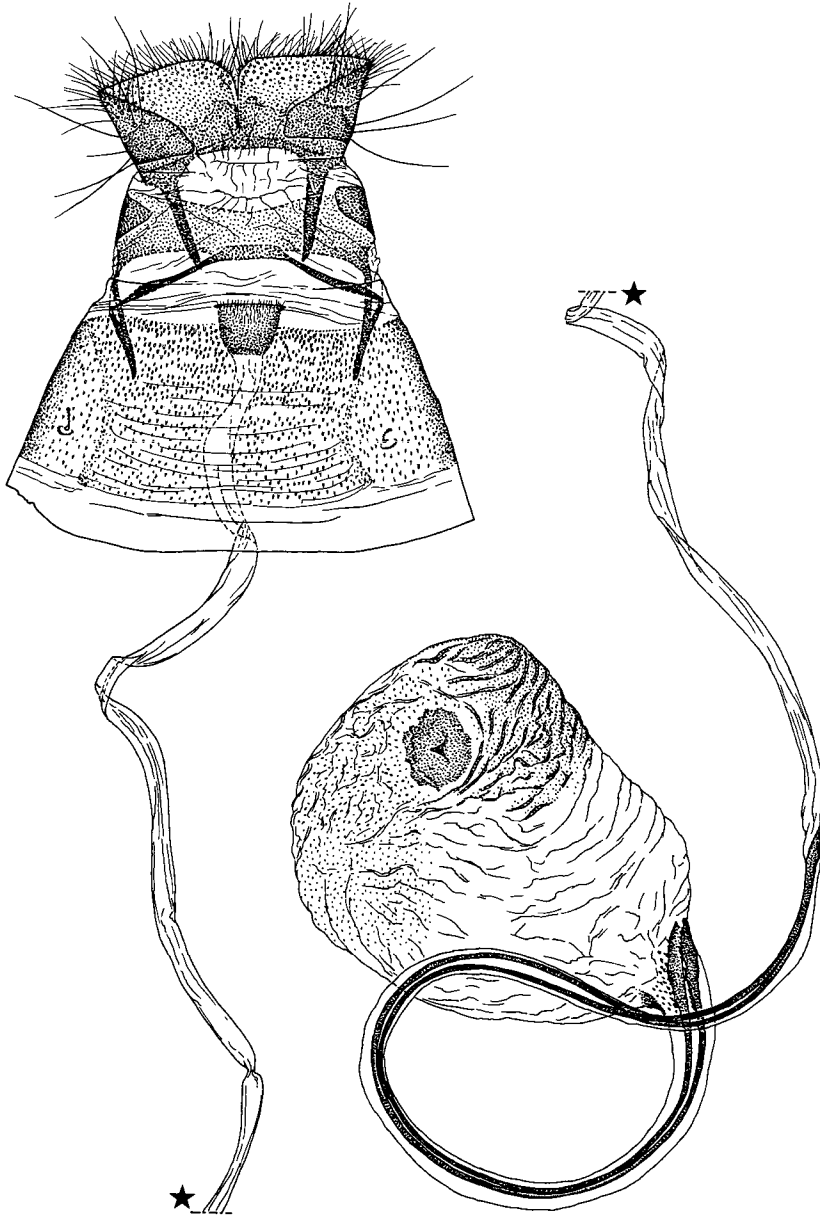


Fig. 6. *Ketapangia leucochorda*, female genitalia in ventral view [Grc-5780, Titizima, Ogasawara Is., Japan, ex *Terminalia catappa* (2479)].

Larvae: 4 exs. of last instar, Hahazima, Ogasawara Is., 1. xi. 1984, ex *Terminalia catappa* (2506), T. Kumata leg., mounted on slides, in SEHU.

Distribution. India (Maharashtra); Japan (Ogasawara Is.); and Gilbert Is.

Food plants. Combretaceae: *Terminalia catappa* in Japan and *T. chebula* in India.

Ketapangia regulifera (Meyrick), comb. nov.

[Figs. 1(D-F), 2(B & D), 3(C), 7, 8]

Acrocercops regulifera Meyrick, 1933, Exotic Microlep. 4: 362.

Original description. "♂. 8 mm. Head, thorax shining white. Palpi slender, white, posterior edge of second joint and both edges of terminal finely blackish. Forewings very narrow; shining bronze; an evenly broad shining white dorsal stripe from base to tornus, occupying nearly half of wing, extremity truncate; a short oblique white strigula from costa at 3/5; a small white elongate subcostal mark above end of dorsal stripe, and a very fine longitudinal strigula between this and stripe, beneath these a small pale golden-metallic transverse mark; a triangular white spot beyond apex of dorsal stripe, not touching it, its apex connected with costa by a white strigula, immediately beyond these a round black spot resting on costa: cilia greyish, at apex a white wedged-shaped basal spot limited by a black transverse bar. Hindwings and cilia grey.

Malaya, bred May from larva mining leaves of *Terminalia catappa* (Combretaceae) (Dickson); 1 ex. (Brit. Mus.)."

The type specimen examined is not male, but female as mentioned in "Specimens examined".

Additional description. ♂ ♀. Expanse of wings: 6.8-8.4 mm (mean: 7.72 mm, n=16). Length of fore wing: 3.3-4.0 mm (mean: 3.68 mm, n=17; 3.6 mm in holotype).

Head white, with a transverse greyish band between antennae in most specimens examined. Labial palpus as described originally, slightly upcurved; maxillary palpus white, porrect or slightly upcurved, about half as long as labial palpus. Antenna fuscous, narrowly whitish ventrally. Thorax white, with tegulae shining bronze. Legs whitish, but tibiae infuscated apically, and tarsi fuscous, with two or three narrow, white rings. Fore wing as described originally, but a very fine, whitish line running on costa from basal three-fifths to four-fifths, thus there are three longitudinal, narrow, short lines above the apical part of the white dorsal stripe as in the preceding species. Hind wing with a yellowish elongate mark occupying nearly median third in male, but evenly grey in female; cilia greyish in both sexes.

Male abdomen [Fig. 2(C)] with two pairs of hair-tufts on dorsal side: the anterior pair invaginated between second and third segments, and the posterior pair between third and fourth, being much thicker and a little longer than the anterior. Male genitalia as in Fig. 7. Valva ellipsoidal in outline, a little longer than tegumen, round apically, with several kinds of setae on inner surface as follows: short fine setae along subventral margin, moderately long slender setae in a row parallel to ventral margin, a group of short spine-like setae at subapex, many minute papillulate setae scattered in disc, and a group of long-stalked scales originated at apex of costal side. Vinculum V-shaped, with saccus about as long as valva. Aedeagus slightly longer than twice length of valva, tubular, tapering, with two cornuti about one-third length of aedeagus. (Six slides examined.)

Female genitalia are very similar to those of the preceding *K. leucochorda* as

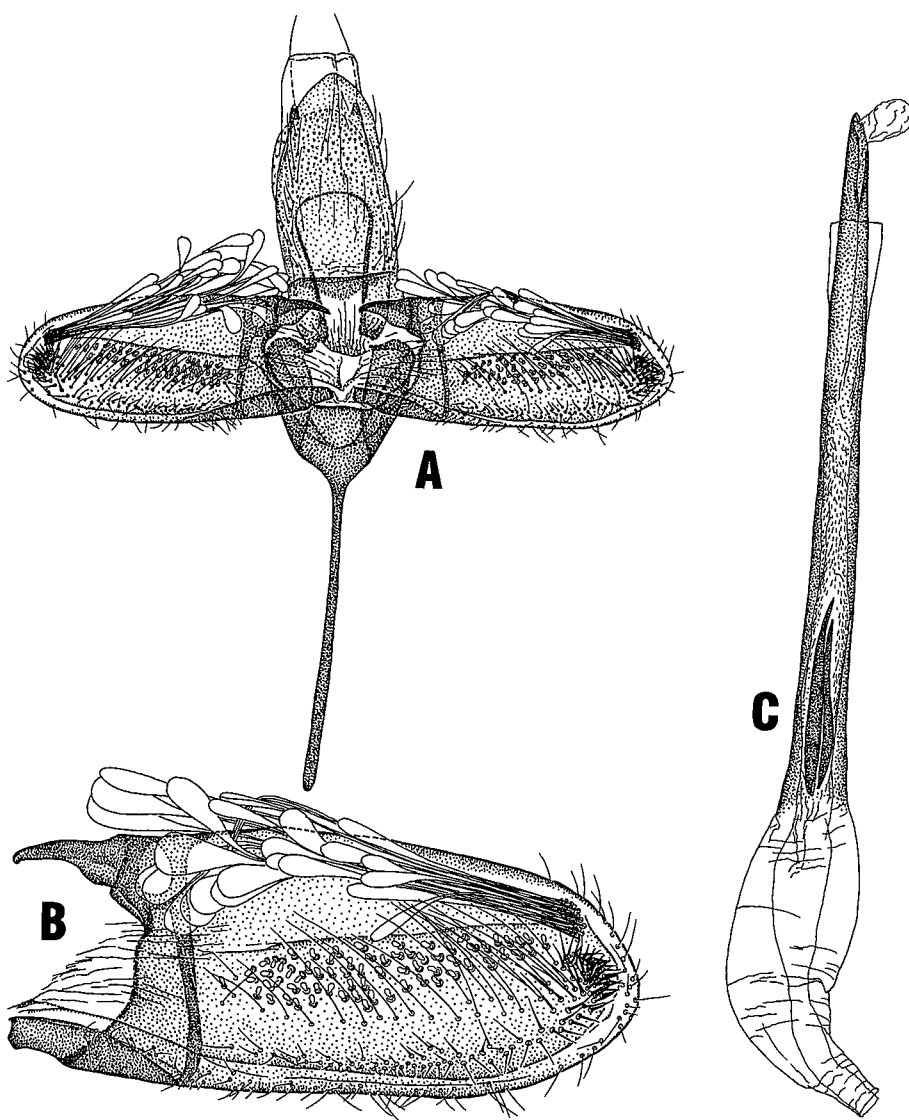


Fig. 7. *Ketapangia regulifera*. A: Male genitalia in caudal view [Grc-5748, Kuching, Sarawak, East Malaysia, ex *Terminalia catappa* (4275)] — B: Right valva enlarged [ditto] — C: Aedeagus, apical part of ductus ejaculatorius omitted [ditto].

shown in Fig. 8, but differ from the latter by the following points. Antrum at ostium bursae a little smaller than that of *K. leucochorda*. Stringlike sclerites on ductus bursae united with a distinctly sclerotized ring at conjunction between ductus and corpus bursae. Signum larger, thronlike, without a round basal plate. (Six slides examined.)

Specimens examined. Adults: 25♂ & 14♀.

Holotype: ♀ (not ♂), labelled "Type; Malaya Peninsula, 4.5.'32, Dickson;

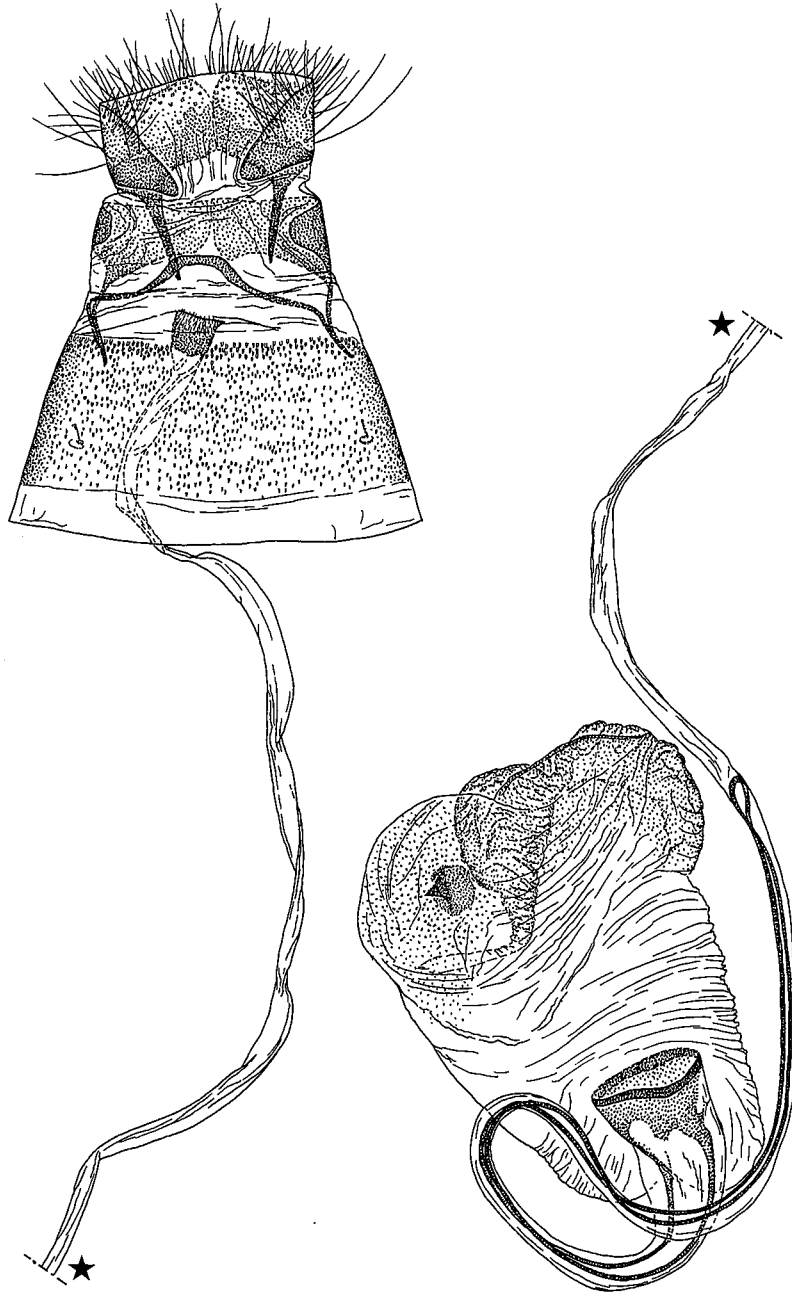


Fig. 8. *Ketapangia regulifera*, female genitalia in ventral view [Grc-5750, Telok Ayer—Yan, Kedah, West Malaysia, ex *Terminalia catappa* (4587)].

8569, ex leaves of *Terminalia catappa*; Brit. Mus. 1933-430; *Acrocercops regulifera* sp. n., E. Meyrick det.; B.M. Genitalia slide no. 28015 (♀)", deposited in BMNH.

Other specimens: JAPAN — 1♂, Hunaura, Iriomote I., Ryukyus, 24-30, x. 1989, T. Kumata leg., Gen. sl. no. Grc-5485, in SEHU. TAIWAN — 4♂ & 3♀, Oluanpi, Pintung, em. 22-25. vii. 1979, ex *Terminalia catappa* (2009), T. & M. Kumata leg., Gen. sl. nos. Grc-2575(♂), Grc-2576 (♀), in SEHU. PHILIPPINES — 8♂ & 6♀, Bagac, Bataan Prov., Luzon I., em. 2-6. ix. 1994, ex *T. catappa* (5233), T. Kumata leg., Gen. sl. nos. Grc-6295 (♂), Grc-6296 (♀), Grc-6343 (♂), Grc-6344 (♀), 4♂ & 3♀ in UPLB and others in SEHU; 1♀, Philippine Islands, no other data, in BMNH. MALAYSIA — MALAY PENINSULA: 2♂ & 1♀, Telok Ayer — Yan, Kedah, em. 17-20. xi. 1991, ex *T. catappa* (4587), T. Kumata leg., Gen. sl. nos. Grc-5747 (♂), Grc-5750 (♀), 1♂ in FRIM and others in SEHU; 1♀, Pulau Tioman, Pahang, em. 22. ix. 1990, ex *T. catappa* (4075), T. Kumata leg., Gen. sl. no. Grc-5751, in SEHU. SARAWAK (BORNEO): 5♂ & 1♀, Kuching, em. 9-16. x. 1991, ex *T. catappa* (4275), T. Kumata leg., Gen. sl. nos. Grc-5748 (♂), Grc-5749 (♀), 3♂ in FRIM and others in SEHU.

Distribution. Japan (Ryukyus); Taiwan; Philippines (Luzon I.); and Malaysia (Sarawak; Malay Peninsula).

Food plant. Combretaceae: *Terminalia catappa*.

Remarks. This species is rather difficult to distinguish from the preceding *K. leucochorda* in colour pattern except for the presence of a yellowish mark on the male hind wing. It is, however, distinctly separated from the latter by the genital characters of both the sexes as mentioned in the key.

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REFERENCES

- Davis, D.R., Kussulke, R.C., Harley, K.L.S. and Gillett, J.D. 1991. Systematics, morphology, biology, and host specificity of *Neurostrotta gunniella* (Busck) (Lepidoptera: Gracillariidae), an agent for the biological control of *Mimosa pigra* L. Proc. Ent. Soc. Wash. 93: 16-44.
- Kumata, T. 1977. On the Japanese species of the genera *Macarostola*, *Aristaea* and

- Systoloneura*, with descriptions of three new species (Lepidoptera : Gracillariidae).
Ins. matsum. n. s. 9 : 1-51.
- 1979. Discovery of the genus *Ectropina* from India, with description of a new species (Lepidoptera : Gracillariidae). Ins. matsum. n. s. 18 : 1-15.
- 1982. A taxonomic revision of the *Gracillaria* group occurring in Japan (Lepidoptera : Gracillariidae). Ins. matsum. n. s. 26 : 1-186.
- Meyrick, E. 1908. Descriptions of Indian Micro-Lepidoptera, VIII. Journ. Bomb. nat. Hist. Soc. 18 : 806-832.
- 1912. In Wytzman, P., Genera insectorum, 128 (Lepidoptera, Heterocera, Fam. Gracillariidae). 36 pp., 1 pl. Bruxelles.
- 1933 & 1934. 1930-1936 : Exotic Microlepidoptera 4 : 1-642. Second edition and reprinted in 1969. E.W. Classey Ltd., Hampton.
- Triberti, P. 1985. A revision of the genus *Aspilapteryx* Spuler (Lepidoptera, Gracillariidae). Zeit. Arb. Osterr. Ent. 37 : 1-16.