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DESCRIPTIONS OF THREE NEW
SPECIES OF *LITHOCOLLETIS* FEEDING
ON *QUERCUS* IN JAPAN

(Lepidoptera, Gracilariidae)

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Lithocolletis is the largest genus in the family Gracilariidae. Up to the present time, however, only six species including *L. nipponicella* ISSIKI, a leaf-miner of *Quercus*, have been recorded in Japan. In this paper to the genus will be added three new species, all of which are leaf-miners of *Quercus*. All the type-specimens are deposited in the Entomological Institute, Hokkaido University.

On this occasion, the writer wishes to acknowledge his indebtedness to Prof. Dr. T. UCHIDA and Prof. Dr. C. WATANABE for their kind guidance and continuous encouragement. Thanks are also due to Prof. Dr. S. ISSIKI for his helpful suggestions and to Messrs. H. INOUE, H. KUROKO, K. MORIMOTO and M. OKANO for their kindness in arranging the literature.

Lithocolletis nigristella sp. nov. (Figs. 1, A; 2, A; 3, A, A1)

Male and female. Frontal tuft, palpus and face snow-white; antenna grey with apical two or three joints blackish. Patagia, tegula and thorax pure white; thorax with two longitudinal yellowish lines which are rather wide. Leg white; tibia and tarsus except hind leg spotted with blackish brown outside. Body silvery grey with anal tuft yellowish.

Fore wing pale brownish yellow, tinged with metallic lustre, thickened toward apex, with broad three basal, four costal and two or three dorsal streaks pure white. In three basal streaks, first one extending along costa, fused with first costal streak, and narrowly margined with dark dorsally; second, median streak, ending at basal one-third of length of wing, straight, very broad, and margined with dark costally; third running along dorsum, ending a little before first dorsal streak, sometimes fused with median basal streak at apex. Basal three streaks also touching each other at base of wing. Costal and dorsal streaks margined with dark anteriorly. First dorsal streak the largest, originating from basal one-third, obliquely curved outwardly, the dark margin touching second dorsal one. Second dorsal streak situated at basal three-fourths, separated merely by a narrow line of ground colour and a dark margin from first dorsal one, triangular, very large; dark margin obliquely curved, the apex extending near third costal one. First costal streak placed on basal two-fifths,

strongly oblique toward apex; dark margin united with that of costo-basal streak. Second costal streak placed opposite second dorsal one, hook-shaped or long-triangular. First two costal streaks smaller than about half of dorsal streaks respectively, and other costal streaks smaller, wedge-shaped or triangular. A small white dorsal spot, sometimes, situated at opposite portion between fourth and third costal streaks. Wing also with an oval or elliptical blackish spot at apex.

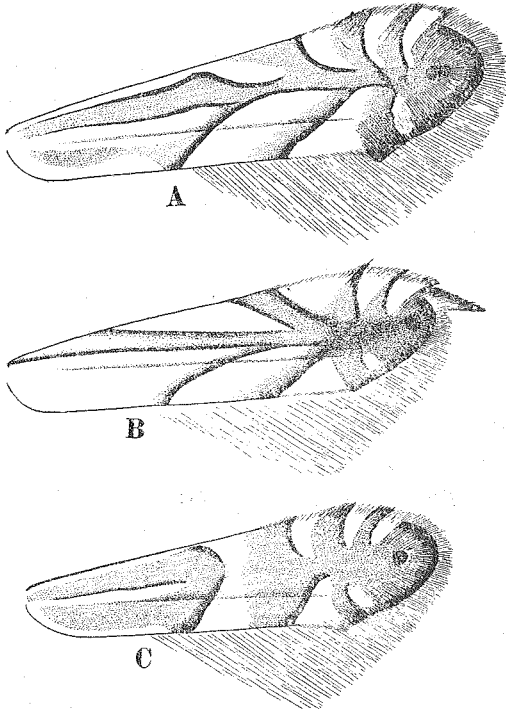


Fig. 1. Fore wing.

- A. *Lithocolletis nigristella* sp. nov.
 B. *L. leucocorona* sp. nov.
 C. *L. cretata* sp. nov.

A black line in cilia passing around apex from last costal streak to hind angle. Cilia yellowish grey. Hind wing pale silvery grey, with cilia yellowish grey.

Male genitalia symmetrical. Valva rather wide, slightly convex upwardly, with a number of small spines near round apex. Lateral projection of saculus placed on upper corner of saculus, very short; filament reaching to basal one-third of valva. Tergite triangular and long; uncus slender with a few microspines inside. Last sternite gradually becoming narrower toward apex, with

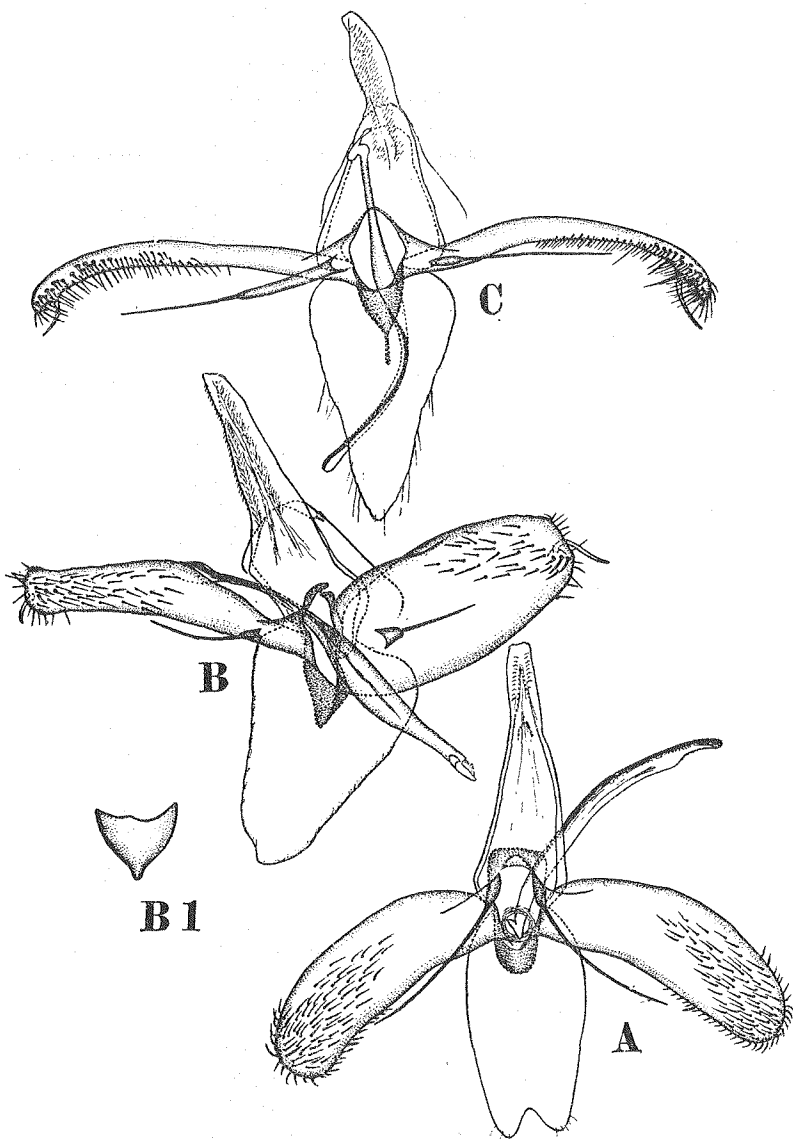


Fig. 2. Male genitalia.

- A. *Lithocolletis nigristella* sp. nov. B. *L. leucocorona* sp. nov.
 B1. Succus of *L. leucocorona* sp. nov C. *L. cretata* sp. nov.

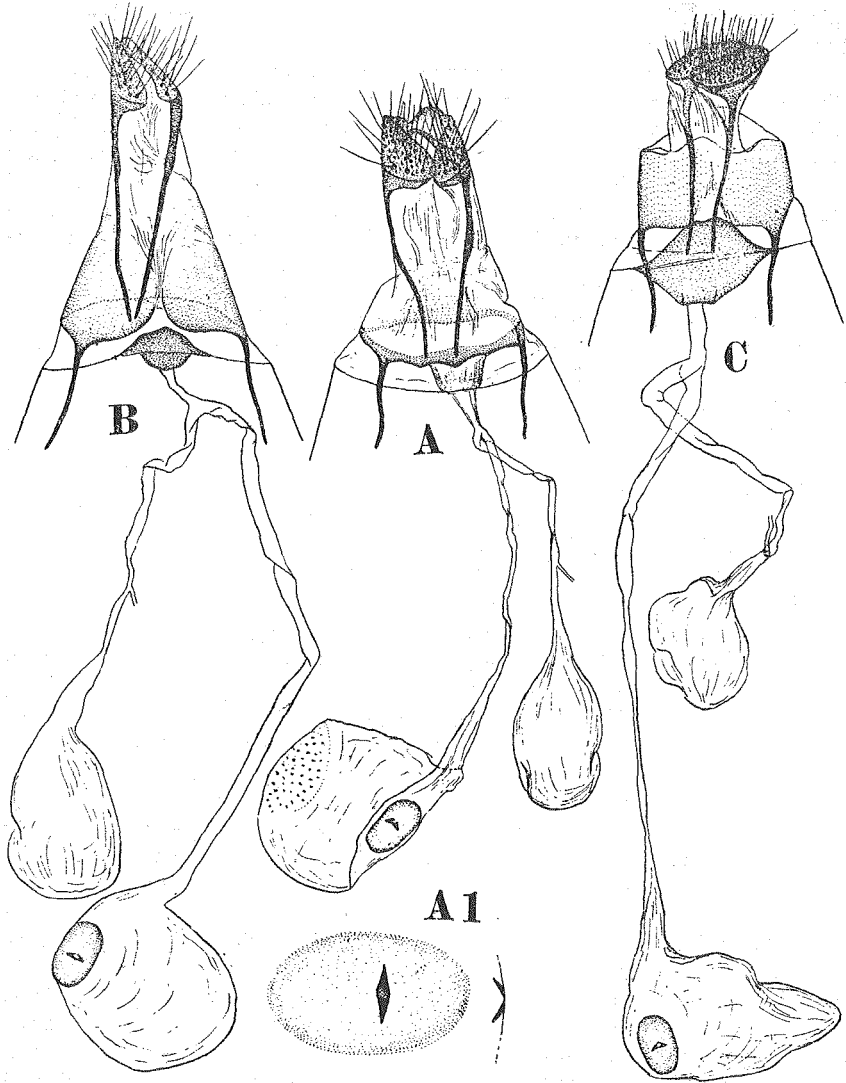


Fig. 3. Female genitalia.

- A. *Lithocolletis nigristella* sp. nov.
- A1. Signum of *L. nigristella* sp. nov.
- B. *L. leucocorona* sp. nov.
- C. *L. cretata* sp. nov.

apical margin strongly concave. Succus small, triangular, rounded apically. Aedoeagus long, bar-shaped, with an apical projection.

Female genitalia relatively membranous. Papillae anales united each other on dorso-meson, with some setae and numerous micro-spines. Sternite of eighth abdominal segment sclerotized narrowly, with cephalic margin sinuate. Lamella antevaginalis absent. Ductus bursae very long, with basal part weakly chitinized and ostium broadly opening. Corpus bursae placed in fifth abdominal segment, with a signum, which is a sclerotized elliptical plate bearing two cone-shaped projections inside, and with an elliptical area dusted with numerous micro-spines.

Wings expanse: 7-8 mm.

Holotype (♂): Sapporo, 31. I, 1956; allotype (♀): Kenebetu, Nemuro, 2. II, 1956; paratypes: 1 ♂, Sapporo, 31. I, 1956; 1 ♂, Kenebetu, Nemuro, 6. II, 1956; 7 ♂♀, Kenebetu, Nemuro, 15-17. II, 1957, bred by T. KUMATA.

Locality: Japan (Hokkaido).

Host plant: *Quercus dentata* THUNB.

Mine: Large, tentiform, placed between two veins of lower surface of leaf. Leaf slightly contracted. Frass situated behind white cocoon in a mass.

The species is somewhat allied to *L. heegeriella* ZELL., a leaf-miner of *Quercus*, but it is distinguished from the latter by the presence of a white basal streak along the costa of the fore wing and in having two yellowish lines on the thorax.

Lithocolletis leucocorona sp. nov. (Figs. 1, B; 2, B, B1; 3, B)

Male and female. Frontal tuft pure white, scarcely mixed with a few black scales in center; palpus and face white; antenna pale grey, annulated with dark grey, with an apical joint blackish. Thorax snow-white. Leg white; tarsus ringed with black. Abdomen grey, with anal tuft whitish in male and ochreous grey in female.

Ground colour of fore wing pure white, with four costal and two dorsal streaks metallic yellowish brown. Dorsal area of apical one-fourth of wing also metallic yellowish brown; the median area dusted with dark brown scales. First costal streak originating from base, running in parallel with wing-hold, fused with apical yellowish brown area, rather broad, gradually becoming narrower and paler toward apex, conspicuously margined with dark on both edges. First dorsal streak extending from basal one-third, extremely narrow, obliquely curved toward apex, strongly margined with dark posteriorly, the apex fused with first costal one on middle of wing. Second pair of streaks extending from middle, strongly oblique toward apex, fused with first costal one at about basal three-fourths; costal one margined with dark on both edges and dorsal one on posterior edge. Remaining two costal streaks placed between second costal one and apex of wing, straight or slightly oblique toward base, margined with dark posteriorly, triangular in form, which is costally pointed; both streaks fused with apical yellowish brown area, in which, sometimes, a small white spot is placed on hind angle of wing. An apical spot black; hinder apical band in cilia passing

from last costal streak to hind angle, violet-brown; cilia grey. A dark hook in apical cilia extending outwardly. Hind wing silvery grey with cilia pale grey.

Male genitalia unsymmetrical. Right valva larger than the left. Right valva bag-shaped, with a long spine, which is conspicuously curved inwardly, on apex, with numerous small spines on inner area of apical half and with a small lateral projection of sacculus placed on basal median area. Left valva narrower than half of right one, slightly convex upwardly, with spines being similar to those of the right valva. Filament reaching to basal three-fifths of valva. Uncus long-triangular, with a number of micro-spines on inner area. Last sternite triangular, pointed apically. Succus triangular, with a short projection at apex. Aedeagus bar-shaped, the apical half strongly expanding, with a short apical projection.

Female genitalia slightly sclerotized. Papillae anales separated from each other, with some setae and numerous micro-spines. Sternite of eighth abdominal segment sclerotized broadly, with cephalic margin strongly concave. Lamella antevaginalis lip-shaped, rather small. Corpus bursae situated in third abdominal segment, with a signum, which is a sclerotized elliptical plate bearing two cone-shaped projections inside.

Wings expanse: 6.5-7.5 mm.

Holotype (♂): Sapporo, 27. I, 1956; allotype (♀): Sapporo, 24. I, 1956; paratypes: 9♂♀, Sapporo, 18. I, -4. II, 1956; 6♂♀, Kenebetu, Nemuro, 31. I, -4. II, 1956; 2♂♂, Kenebetu, Nemuro, 15. II, 1956, bred by T. KUMATA.

Locality: Japan (Hokkaido).

Host plant: *Quercus dentata* THUNB.

Mine: Very small, tentiform, placed between two veins of under side of leaf. Upper parenchyma almost eaten by larva. Cocoon in mine covered with blackish frass.

The species is similar to *L. cramerella* F. and *L. abrasella* ZELL., but it differs clearly from the latter two by the unsymmetrical male genitalia and the presence of a costal streak originating from the base of the fore wing. This species also may be distinguished from *L. albanotella* CHAM. by the first brownish dorsal streak completely touching the dorsum of the fore wing.

Lithocolletis cretata sp. nov. (Figs. 1, C; 2, C; 3, C)

Male and female. Frontal tuft yellowish white, laterally mixed with a few brownish scales; palpus, face and antenna white; each joint of antenna spotted above with pale grey, the spots becoming smaller and more indistinct toward apex. Thorax brownish yellow, with a narrow white stripe on middle and two white stripes passing over brownish yellow tegula. Leg white; fore tarsus and tibia spotted with black outside. Abdomen grey with anal tuft yellowish white.

Fore wing golden-brown, with three longitudinal basal lines, a transverse median fascia, three costal and two dorsal blotches pure white. First basal line along costa very slender, reaching to one-third of wing length, sometimes touching median fascia, and slightly margined with dark on costal margin of wing.

Second, median basal streak, ending at basal one-third, narrowly margined with dark costally, with apical one-third of it slightly bending toward costa. Third basal line running along dorsum, expanding toward apex and ending at about basal one-third. Transverse fascia situated at a little before middle of wing, widened on hind and costal margins of wing, strongly edged with dark scales anteriorly; dark edge obtusely angulated outwardly near costa; sometimes the fascia interrupted in angulated portion. First pair of blotches situated at basal two-thirds, triangular or wedge-shaped, straight or weakly oblique toward base, and narrowly margined with dark anteriorly; hinder two costal blotches wedge-shaped, oblique toward base, margined with dark anteriorly; second dorsal blotch placed opposite second costal one, undecided in form. Wing also with a small black spot at apex. A dark line in cilia passing around apex from last costal blotch to hind angle of wing; cilia yellowish pale grey. Hind wing pale grey with cilia yellowish pale grey.

Male genitalia symmetrical in valvae and unsymmetrical in lateral projections of saculi. Valva elongate, bar-shaped, slightly convex upwardly, with a number of small spines on inner area of apical half and with a strong and curved spine a little before apex. Left lateral projection of saculus placed near base of valva, as long as one-third of length of valva; right one smaller than the left. Last tergite triangular; uncus rather slender with numerous micro-spines. Last sternite triangular, pointed apically. Saccus triangular, with a rather long projection at apex. Aedeagus narrow, bar-shaped, as long as length of valva, the apical half expanding, with two apical projections at both sides.

Female genitalia weakly sclerotized. Papillae anales separated from each other, with some setae and numerous micro-spines. Sternite of eighth abdominal segment sclerotized broadly, with cephalic margin straight. Lamella antevaginalis very large, somewhat similar to rhombic shaped in form. Corpus bursae situated in fourth abdominal segment, with a signum which is a sclerotized elliptical plate bearing two cone-shaped projections inside.

Wings expanse: 6.0-6.5 mm.

Holotype (♂): Nopporo, 8. VII, 1956 (from *Q. serrata*); allotype (♀): Teine, 11. VII, 1956 (from *Q. mongolica* var. *grosseserrata*); paratypes: 5 ♂♀, Teine, 10-14. VII, 1956; 1 ♂, Nopporo, 8. VII, 1956; 1 ♂, Sapporo, 2. VII, 1956, bred by T. KUMATA.

Locality: Japan (Hokkaido).

Host plants: *Quercus serrata* THUNE. and *Q. mongolica* FISHER var. *grosseserrata* (BLUME) REHD. et WILS.

Mine: Small, yellowish, tentiform, occurring between two veins of lower surface of leaf. Frass used to cover white cocoon.

The species is very closely allied to *L. nipponicella* ISSIKI, but it is distinguished from the latter by the following characters: Tegula golden-brown; white middle line of thorax narrower than one-fifth of thoracic width; lateral projections of saculi unsymmetrical; valva very elongate with an apical strong spine; last sternite pointed apically; cocoon covered with frass.