TRANSACTIONS
OF THE
ROYAL SOCIETY OF NEW ZEALAND

ZOOLOGY

VOL. 1 NO. 31 FEBRUARY 13, 1962

[Continued from *Transactions of the Royal Society of N.Z.*, Volume 88, Part 4.]

Parectopa leucocyma (Meyrick) (Lepidoptera: Gracillariidae) Rediscovered as a Leaf-miner of Kauri (*Agathis australis* Salisb.)

By K. A. J. WISE,

Plant Diseases Division, Department of Scientific and Industrial Research, Auckland

[*Received by the Editor, September 6, 1961.*]

Abstract

Parectopa leucocyma (Meyr.), previously only known from the unique holotype specimen, is recorded as a leaf-miner of kauri (*Agathis australis* Salisb.). A description of the species is given with information on the life-history. Larvae form linear epidermal mines and cause petiole galls which they leave to pupate elsewhere.

THE first mined kauri leaf (Pl. 1A), discovered by the author, was on the ground at Little Barrier Island, in the Hauraki Gulf, in November, 1954. A few years later some mined kauri leaves were observed in an exhibit in the Auckland War Memorial Museum and subsequently some were found on a young tree at the Plant Diseases Division, Mt Albert, Auckland, in March, 1958. Observations recorded here have been confined to the Mt Albert infestation, although mined kauri leaves have since been found in the Waitakere Ranges. It is surprising that such obvious leaf damage to such a "popular" tree has not previously been recorded.

Adult moths have been reared from larvae in leaf-mines and were identified by the author as *Parectopa leucocyma* (Meyrick), a species previously only recorded by the original description of a unique female specimen, which, according to Hudson (1928) was collected by Meyrick himself. A specimen sent to the Commonwealth Institute of Entomology, London, England, has been compared with the type by Mr W. G. Tremewen, British Museum (Natural History), London, and the above identification confirmed.

Parectopa leucocyma (Meyrick)

1889. *Gracilaria leucocyma* Meyrick, *Trans. Proc. N.Z. Inst., 21*: 184.
1907. *Macarostola leucocyma* Meyrick, *Proc. Linn. Soc. N.S.W., 32*: 62.
1909. *Macarostola leucocyma* Meyr. Meyrick, *Trans. N.Z. Inst., 41*: 14.
1912. *Parectopa leucocyma* Meyrick. Meyrick, *Genera Insectorum, Fasc. 128*: 21.

Published by the Royal Society of New Zealand, c/o Victoria University of Wellington, P.O. Box 196, Wellington.

1915. *Parectopa leucocyma* Meyr. Meyrick, *Trans. Proc. N.Z. Inst.*, *47*: 228.
1920. *Parectopa leucocyma* Meyr. Watt, *Trans. Proc. N.Z. Inst.*, *52*: 440.
1928. *Parectopa leucocyma* Meyr. Hudson, *Butterflies & Moths of New Zealand*, 322.

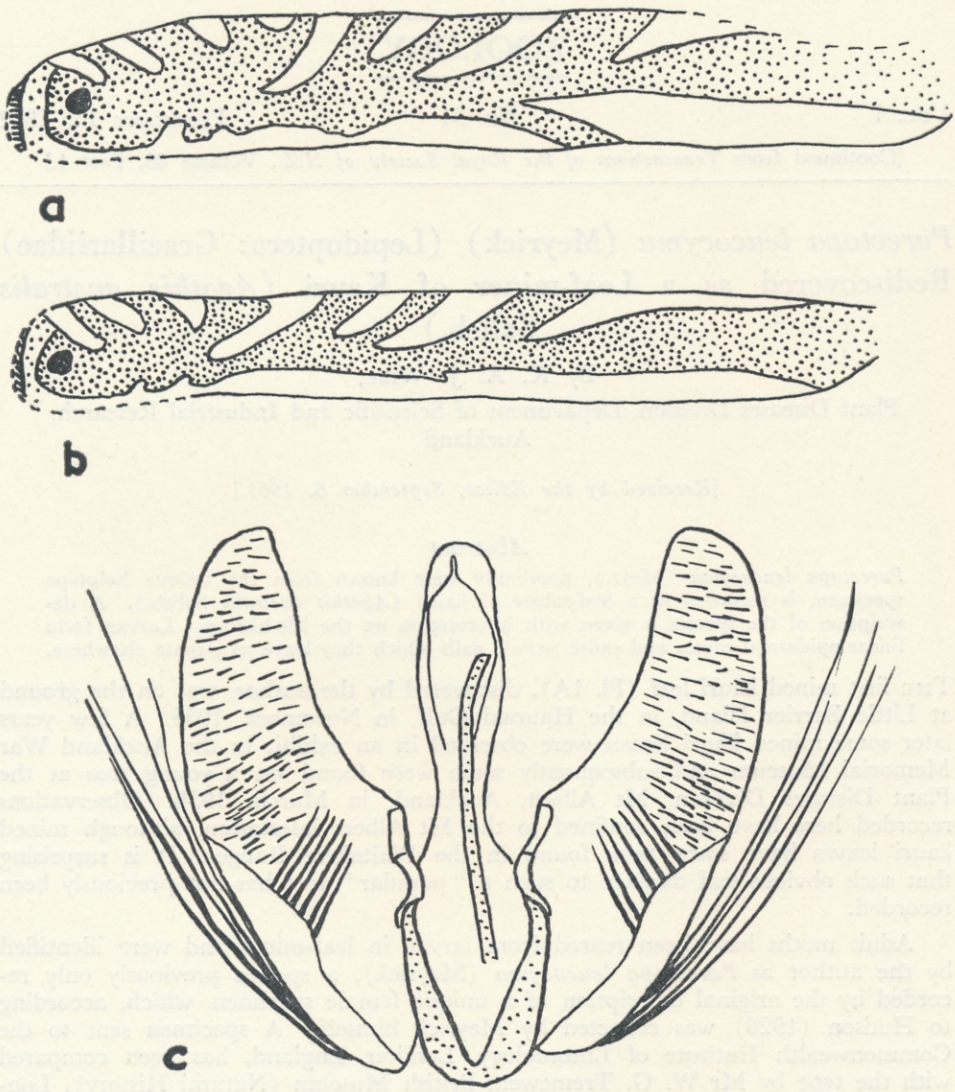
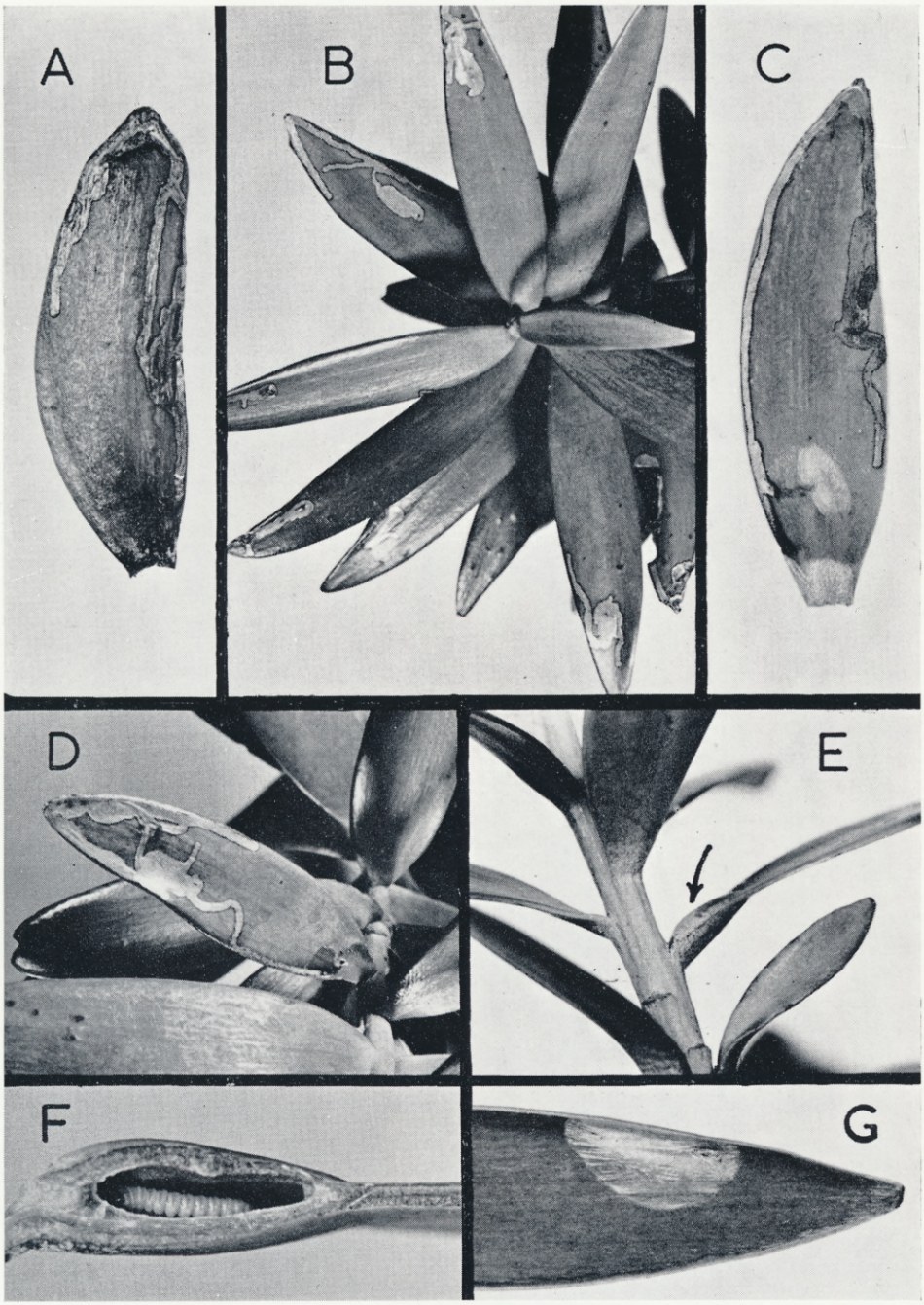


FIG. 1.—*Parectopa leucocyma* (Meyr.). a—Wing markings. b—Aberrant wing markings. c—Genitalia, ♂.

The original description by Meyrick is as follows:—♀ 9 mm. Head and palpi white. Antennae fuscous, beneath white. Thorax light grey. Abdomen whitish. Legs dark grey, ringed with white, posterior tibiae white. Forewings elongate, very narrow, pointed; grey; markings snow-white; a rather broad irregular streak along inner margin from base to apex, interrupted before middle by a very oblique indistinct line of ground-colour; eight short more or less wedge-shaped streaks from costa, first from $\frac{1}{4}$, slenderly produced on costa towards base, first four outwardly oblique, remainder inwardly oblique, second and fourth reaching half across wing, the rest much shorter; a small irregular blackish apical dot, preceded by a white dot: cilia ochreous-grey-whitish, round apex whiter, with indica-



Photos: J. W. Endt (A, G). Photos: S. A. Rumsey (B-F).

Parectopa leucocyma (Meyr.) in kauri leaves.

Fig. A—Typical mine in leaf from Little Barrier Island. Fig. B—Blotch epidermal mines. Fig. C—Linear mine and two basal galls. Fig. D—Ramifying mine and petiole gall with larval exit hole. Fig. E—Petiole gall from the side. Fig. F—Overwintering larva in petiole gall. Fig. G—Coccoon.

tions of two dark fuscous lines. Hindwings whitish-grey; cilia ochreous-grey-whitish.

Auckland, in December; one specimen.

Wing markings of the male specimen (Fig. 1a), which has been compared with the type, are as described by Meyrick except that there is no white dot preceding the blackish apical dot. It is possible that it was the apical portion of the eighth costal spot which Meyrick recorded. The wing of another male specimen (Fig. 1b) has the fifth costal spot apparently merged with the base of the fourth and the oblique streak of ground colour on the dorsum is absent except for a small indentation in the outline of the white dorsal streak. The wings of a female specimen are somewhat rubbed but wing-markings appear to be identical with those of the first male described above.

Legs are white and are not ringed but have grey markings on the outside surfaces as follows:—Forelegs; length of coxa, femur, tibia and outside of spur, and on apical three quarters of each tarsal segment. Mid legs; apex of tibia, base and apex of basal tarsal segment and in varying lengths on remaining tarsal segments. Hind legs; apex of tibia and outside of both outside tibial spurs, apex of each tarsal segment.

Genitalia, ♂ (Fig. 1c). Tegumen long, narrow, slightly dilated before apex. Valvae symmetrical, irregularly setose internally on apical half, row of long spines on distal portion of dorsal edge of sacculus; externally with a tuft of long setae arising from base of valvae, reaching to apex. Aedeagus long, narrow, slightly angled near apex.

SPECIMENS. Auckland: Owairaka, Plant Diseases Division, bred ex leaf-mines in *Agathis australis,* 29.10.1958; imago emerged ex coccoon in jar, —.11.1958, 1 ♂; 21.9.1959, 2 ♂♂ 1 ♀; 12.1.1960, imago emerged by 14.2.1960, 1 (?); 16.1.1960, 1 ♂ (K. A. J. Wise).

The host plant, *Agathis australis* Salisb. (Fam. Araucariaceae), is a large tree, endemic to New Zealand and confined to the northern half of the North Island where, in some areas, it forms dense forests.

Eggs are laid on the upper surface of leaves, usually in the apical half, and hatching larvae bore directly into the epidermis. An obvious "sting", with reddish discolouration around it, is eventually produced, each one indicating the beginning of a mine (Pl. 1B). The young larva usually makes a small blotch epidermal mine from the egg to the leaf edge (Pl. 1B), then a linear epidermal mine around the margin to the base (Pl. 1C), and finally bores deep into the petiole. There it remains for some time, the petiole becoming swollen into a gall (Pl. 1D, E).

There are often variations in the course of the epidermal mines with sometimes aborted passages and/or extensive ramifications in the apical portion of the leaf. Occasionally the first-formed epidermal blotch mine is in the centre of the leaf not extending to the margin. If more than one egg is laid in a leaf usually only one larva survives, but in one case two galls were observed, one in the petiole and one slightly distal to it (Pl. 1C).

The larva overwinters in the petiole gall (Pl. 1F) and vacates the gall to pupate under or in a parchment-like coccoon (Pl. 1G). An obvious exit hole is left at the distal end of the gall on the upper side of the leaf (Pl. 1D). Adults have emerged in November and February but only six have been reared so far.

Additional Note

It is worthwhile to take this opportunity of recording an Australian Gracillariid, *Acrocercops eumetella* Meyrick, in New Zealand. The present author reared an adult from a larva collected in Acacia rust galls at Sunnyvale, Henderson, on January 2, 1958.

REFERENCES

HUDSON, G. V., 1928. The Butterflies and Moths of New Zealand. Ferguson & Osborn, Wellington. 386 pp.

K. A. J. WISE,
C/o. Canterbury Museum,
Christchurch, N.Z.