

Entomofauna

ZEITSCHRIFT FÜR ENTOMOLOGIE

Band 15, Heft 32: 361-376

ISSN 0250-4413

Ansfelden, 29. Juli 1994

New Data on the *Eupithecia*-Fauna of Chile (Lepidoptera, Geometridae)

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Abstract

Four new species are described from Chile: *Eupithecia cana* sp. nov., *Eupithecia meridiana* sp. nov., *Eupithecia procerissima* sp. nov. and *Eupithecia demissa* sp. nov. The name *Eupithecia ronkayi* nom. nov. is introduced for *Eupithecia inepta* VOJNITS, 1979.

Zusammenfassung

Vier neue *Eupithecia*-Arten werden aus Chile beschrieben, nebst einer Namensänderung (siehe Abstract).

Introduction

The most comprehensive and accurate elaboration of the Southern American *Eupithecia* species is the one by RINDGE (1987). He lists 43 species in his publication and it is typical for our present knowledge of the Southern American fauna that among the 43 listed species 29 proved to be new for science.

RINDGE has made an attempt, as well as nearly each research worker dealing with the widely distributed genus *Eupithecia*, to create higher categories establishing species groups, while rejecting former results which were based on the structure of the antennae (VOJNITS 1985).

The following taxa, to be described below, belong chiefly in the subcomplex of "Group A" of "Section 2" created by RINDGE, if we accept his classification without reservation. But, in my opinion, RINDGE's concepts also have some weaknesses. His classification is not as deeply established as the problem requires. We can not acknowledge any phylogenetic importance to his sections and groups, the structure of his classification is not consistent and satisfying, the same as the examined material also is insufficient for such inferences.

RINDGE lists in "Section 2-Group A" of *Eupithecia* CURTIS, 1825 six taxa, namely *oenone* BUTLER, 1882, *grappleri* RINDGE, 1987, *physocleora* PROUT, 1922, *valdivia* RINDGE, 1987, *nahuelbuta* RINDGE, 1987 and *halosydne* PROUT, 1922. Of these the genitalia of both sexes are known only for one species (*oenone*), only the ♀ genitalia are known in three cases (*physocleora*, *valdivia*, *halosydne*), only the ♂ genitalia for another species (*nahuelbuta*) and there is one taxon whose genitalia are unknown, because the single type specimen has lost its abdomen (*grappleri*). Thus the classification given by RINDGE, based mainly on the configuration of the genitalic characters, is hardly applicable and interpretable.

The species to be described in this paper superficially resemble to the genus *Euphyia* in many aspects. The genitalia of the taxa are rather uniform. The considerable similarities between the everted aedeagus and the vesica of the Southern American *Eupithecia* species are rather conspicuous.

Corrigendum

Eupithecia ronkayi nom. nov. for *Eupithecia inepta* VOJNITS, 1979 nec *Eupithecia inepta* PROUT, 1922.

Eupithecia ? *inepta* PROUT, 1922 in: Carl SKOTTSBERG, The Natural History of Juan Fernandez and Easter Island, Vol.3., Zoology, Uppsala.

Eupithecia inepta VOJNITS, 1979 - Acta Zool. Hung., 25: 208-209. Secondary homonym.

Remarks: I dedicate the new species to my friend and colleague Dr. L. RONKAY, renowned specialist in several families of Noctuidae, who gave many useful comments on my papers.

New Taxa from Chile.

Eupithecia cana sp. nov.

(Derivation of specific name: canus = greyish white)

Specific Differences: Based on RINDGE (1987), the new taxon is remarkably similar to *Eupithecia oenone* BUTLER, 1822, but the antennae of the ♂♂ and the shape of segment VIII bear different characters.

Diagnosis: Palpi brown or yellowish brown, 1.1 times diameter of eyes (♂♂), or 1.2. times (♀♀). ♂ antennae with asymmetrical basal pair of processes, rounded and apparently shagreened on one side, elongated and slender on other side. ♀ antennae shortly ciliate. Length of forewings in ♂♂ 7.5 - 9mm, average 8.5 (based on 5 specimens). Forewings moderately broad, an isosceles triangle, apex moderately pointed. Hindwings broad. forewings ground colour white, sometimes greyish white or yellowish white, brown

in one specimen. Submarginal white with a dark grey suffusion along its innerside. Discal dots marked, black and round. Hindwings ground colour silky white with many greyish brown transverse lines, discal dots obsolescent. Fringes striated brown and white on forewings, white on hindwings (Plate 1, Fig. 1-2). Undersides grey on forewings with a wide postmedian and a narrow; white submarginal stripe. Discal dots black. Hindwings grey with grey transverse lines and rod-shaped discal dots.

♂ Genitalia: Valves moderately expanded with slightly broken ventrum and obtuse apex (Plate 2, Fig.1). Uncus biapical, dorsal more pointed, ventral remarkably wider, terminally strongly flattened. Clavulus rather short with long setae. Ampullae 2.5 times longer than wide with short spines and scarce pilosity (Plate 2, Fig.2). Aedeagus cylindrical and bulky. Vesica wedged with a sclerotized cymbiform formation and a semicircular shaped body at base (Plate 2, Figs 3-4).

Sternite VIII: Basally wide with weakly convergent sides, twice longer than base portion, arms inwardly curved, $1/3 - 1/4$ as long as sternite (Plate 2, Fig.5).

♀ Genitalia: Bursa copulatrix lemon-shaped, spinose inside. Ductus bursae sclerotized, 1.5 times longer than wide. Ductus seminalis arising at $1/3$ distance from ductus bursae (Plate 2, Figs 6, 8). Anterior and posterior apophyses relatively short and moderately stout, papillae anales wide (Plate 2, Fig.7).

Biology: First stages and foodplant unknown. Flying period November and December.

Distribution: Coquimbo Prov., Nuble Prov., Osorno Prov., Santiago vic.; Chile. Locous typicus: Fray Jorgé National Park, ca. 70 km W from Ovalle.

Holotype ♂: "CHILE: Coquimbo Prov. Fray Jorgé Nat. Pk. ca. 70 km W. Ovalle, 6-9.Nov. 1981., D. & M. DAVIS", "10 F84 Photo, gen. prep. No. 15520 ♂, det. A. VOJNITS". Paratypes: 13 ♂ ♂ and 4 ♀ ♀, Coquimbo Prov., Fray Jorgé Nat. Park., ca. 70 km W from Ovalle; Coquimbo Prov. Nague, 20 m 11 km N from Los Vilos; R. Colorado, 40 km E from Santiago; Nuble Prov., Alto Tergualem, ca. 20 km SE from Chowellen; ♂ prov., Rio Teno, 800 m, ca. 40 km E from Curico; Osorno Prov., P. N. Puyehue, 600 m, Ag. Calientes to 3 km W; between 6.November and 20. December. Holotype deposited in the USNM, Paratypes in the same Institute and in the Hungarian Natural History Museum, Budapest.

Remarks: Going by the description and the figures given by RINDGE (1987), the new species is hardly distinguishable from *Eupithecia oenone* BUTLER; indeed, to such an extent that I hesitated to describe the specimens as a new taxon. However, I may point out that if RINDGE's figures are correct, there is a remarkable difference in the ♂ antennae which can hardly be acceptable to exist within one species. The difference between segments VIII is also definite, even within the limits of variation of the tergites. In contrast to *Eupithecia oenone*, the sternite of *Eupithecia cana* is shorter as compared to its base while its arms are longer as compared the longitudinal axis at the sternite. The comparison of the aedeagi were possible only if slides of everted genitalia would be available. I could not find any important features distinguishing in the ♀ genitalia, again going by the figures of RINDGE. Superficially the two taxa appear to be closely related, but the fact that the ground colour of the new taxon varies slightly is conspicuous.

If we accept *Eupithecia grappleri* as a distinct species (whose genitalia are unknown and so its description is very unusual in the recent literature on *Eupithecia*), we have to consider it, according to its morphology, as a member of the complex discussed, but the apical area of its forewings has a very characteristic, different pattern. Based again on

RINDGE's figures it seems that the antennae of *grapperli* resemble those of the new species rather than of *oenone*. However, in my opinion the taxon *grapperli* is inuninterpretable.

Slides: Nos 15513, 15514, 15515, 15516, 15519, 15520, 15521, 15522, 15523, 15524, 15525, 15526, 15528 (♂♂); 15527, 15571, 15572, 15573 (♀♀), gen. prep. A. VOJNITS.

Photos: 3 F 84, 4 F 84, 5 F 84, 6 F 84, 8 F 84, 9 F 84, 10 F 84, 11 F 84, 12 F 84, 13 F 84, 14 F 84, 15 F 84, 16 F 84, 17 F 84, 18 F 84.

Eupithecia meridiana sp. nov.

(Derivation of specific name: meridianus = southern)

Specific Differences: Superficially resembling to *Eupithecia physocleora* PROUT (RINDGE 1987), but the configuration of the ♀ bursa copulatrix is different. The ♂ of *physocleora* is unknown.

Diagnosis: ♂ palpi yellowish brown, yellowish white, 1.1 times diameter of eyes. ♀ palpi brown, yellowish brown, 1.2 times diameter of eyes. ♂ antennae broken, but according to a single remaining basal as in *cana*. ♀ antennae shortly ciliate. Length of forewing in ♂♂ 9 and 10 mm (2 specimens known), in ♀♀ 8 and 11 mm (2 specimens known). Forewings moderately broad, an isosceles triangle, apex slightly pointed. Hindwings broad. Forewing base, median field and three marginal spots grey irrorated with brown scales, antemedian, postmedian and area two marginal spots white or greyish white. White stripes with narrower greyish lines. Discal dots longish and black. Veins partly covered with dark scales. Hindwings with wide, wavy transverse stripe greyish white medially with a grey line, otherwise hindwings grey with a brownish suffusion, but lighter, than forewings. Discal dots longish and hardly visible, obsolete. Fringes striated whitish grey (Plate 1, Figs 3-4). Undersides grey with wide grey postmedian, discal dots longish, well marked.

♂ Genitalia: Valves abtusely broken with parallel sides from base to bend, then gradually converging, apex rounded (Plate 3, Fig.1). Uncus terminally flattened, biapical, dorsal pointed and hook-shaped and ventral tooth-shaped. Clavulus short, moderately setose. Ampullae 2.5 times longer than their width and covered with scarce and partly long hairs (Plate 3, Fig.2). Aedeagus cylindrical, 5.5 times longer than its diameter. Vesica lobulate with well separated sclerotized, cymbiform and a semicircular formation (Plate 3, Figs 3-4).

Sternite VIII: Base of sternite wide and slightly concave, converging posteriorad, terminally incised to two-fifths of its whole length, with short and wide arms (Plate 3, Fig.5).

♀ Genitalia: Bursa copulatrix ovoid (potato shaped). Ductus bursae sclerotized, nearly as long as wide. Ductus seminalis arising 1/4 distance from ductus bursae. Two-fifths (towards to ductus bursae) covered with numerous minute and some larger spines, origin of ductus seminalis without spines (Plate 3, Figs 6, 8). Papillae anales large with short and stout anterior and posterior apophyses (Plate 3, Fig.7).

Biology: First stages and foodplant unknown. Flying period Dezember.

Distribution: Aconcagua, Chile. Locus typicus: 38 km from Los Andes.

Holotype ♂: "CHILE: ACONCAGUA: 38 km E Los Andes, 13 Dec. 1982, R. L. BROWN", "26 E 84 Photo, gen. prep. No. 15500 ♂, det. A. VOJNITS". Paratypes: 1 ♂ and 2 ♀♀ with same data. Holotype deposited in the USNM, Paratypes in the same Institute and in the Hungarian Natural History Museum, Budapest.

Remarks: According to RINDGE (1987) the new species is apparently very close to *Eupithecia physocleora* PROUT, 1922, but the structure of its bursa copulatrix is so conspicuously different that the specimens have to represent two distinct taxa. The comparison is based on the lectotype specimen designated by RINDGE. It were worth while necessary to study the other six specimens of PROUT's type series. I could not compare the ♂♂, because only ♀♀ are available. The biology of the two taxa is also different, because the flight periods of the imagos differ.

Slides: Nos 15500, 15503 (♂♂); 15501, 15502 (♀♀), gen. prep. A. VOJNTS.

Eupithecia procerissima sp. nov.

(Derivation of specific name: procerissimus = more robust, larger)

Specific Differences: Superficially resembling to *Eupithecia meridiana*, but there are differences in pattern those of the genitalic characters are much more conspicuous.

Diagnosis: ♂ unknown. ♀ palpi brown, light brown, 1.2 times diameter of eyes. ♀ antennae very shortly and not densely ciliate. Length of forewings in ♀ 11.5 mm (based on the single known specimen). Forewings expanded, dorsum longer than termen, apex attenuate. Hindwings slightly expanded. Forewings ground colour white with some greyish brown basal spots, outer part of median field and marginal part greyish brown basal spots, outer part of median field and marginal part greyish brown; submarginal narrow and white. Postmedian wide and white, strongly jutting to submarginal under apex. Discal dots oblong, black. Veins covered with dark scales. Hindwings ground colour white, greyish white transverse lines pale fuscous and small discal dots minute. Fringes brown, brownish grey on forewings, respectively brownish yellow, greyish yellow on hindwings (Plate 1, Fig.5). Wing undersides with developed markings, ground colour silky greyish brown with prominent wide and yellowish white postmedian and sinuous submarginal. Discal dots large, dark brown. Hindwings lighter grey with deeper coloured transverse lines, discal dots oblong and dark brownish black.

♀ Genitalia: Bursa copulatrix large, membraneous, sacculiform, densely padded with small spines. Ductus bursae a bit longer than wide, heavily sclerotized. Ductus seminalis arising at two-fifths bursae axis from ductus bursae (Plate 4, Figs 1-2). Anterior and posterior apophyses short and moderately stout, papillae anales cap-shaped (Plate 4, Fig.3).

Biology: First stages and foodplant unknown. Flying period October.

Distribution: Santiago Province, Chile. Locus typicus: 40 km SE from Santiago, Rio Colorado, 1100 m.

Holotype ♀: "CHILE: Santiago Prov., Rio Colorado, 1100 m, ca. 40 km SE Santiago, 29-31 Oct. 1981., D. & M. DAVIS", "*Eupithecia* 7 F 84 Photo, gen. prep. No. 15517 ♀, det. A. VOJNTS". Holotype deposited in the USNM.

Remarks: At first sight it seems that the specimen represents a somewhat larger ♀ of *Eupithecia meridiana*. Actually, however, the specimen shows differences already as to external morphology: the forewings of *procerissima* are larger, the coloration of the wings is lighter in its totality, the postmedian and marginal area of the forewings are also different. The underside of the wings also considerably differ. The ♀ genitalia have characters which preclude that the specimens represent the same taxon.

Slide: No. 15517 (♀), gen. prep. A. VOJNTS.

Photo: 7 F 84.

Eupithecia demissa sp. nov.

(Derivation of specific name: demissus = humble)

Specific Differences: Superficially resembling to *Eupithecia cana*, but the ♀ genitalia differ.

Diagnosis: ♂ unknown. ♀ palpi yellow with brown, 1.2 times diameter of eyes. ♀ antennae ciliate with short and very fine cilia. Length of forewings in ♀ 7 mm (based on the single known specimen). Forewings slightly expanded with shorter termen and longer dorsum. Termen curved, conspicuously convex. Hindwings short. Forewings ground colour white with a bright yellowish sheen. Termen with black and dark brown spots. Margin grey, submarginal white. Discal dots oblong, black. Hindwings ground colour bright chalky white with obsolete transverse lines. Discal dots small, dark grey. Fringes white (Plate 1, Fig.6). Underside with whitish median field, markings grey or brownish grey, discal dots black. Pattern of hindwings absent, only small and black discal dots observable.

♀ Genitalia: Bursa copulatrix longish, basally rounded, attenuating towards ductus bursae, padded with small spines at arx of ductus bursae, otherwise with larger ones. Ductus bursae sclerotized, twice longer than wide. Ductus seminalis arising close to ductus bursae at 1/4 of bursal longitudinal axis distance of length of bursa (Plate 4, Figs 4-5). Anterior and posterior apophyses short and slender, papillae anales small but wide (Plate 4, Fig.8).

Biology: First stages and foodplant unknown. Flying period February.

Distribution: Malleco Province, Chile. Locus typicus: Cord. de las Raices, 40 km E from Curacautin.

Holotype ♀: "CHILE: Malleco Province, Cord. de las Raices, 40 km E. Curacautin, 7-8 Feb. 1979, 1650 mtrs, D. & M. DAVIS & A. AKERBERGS", "gen. prep. No. 15570 ♀, det. A. VOJNITS". Holotype deposited in USNM.

Remarks: The specimen designated as holotype is like a small, light coloured worn specimen of *Eupithecia cana*, but it has a brighter ground colour, almost patternless markings and differently shaped wings. The ♀ genitalia differ considerably from those of *cana*.

Slide: No. 15570 (♀), gen. prep. A. VOJNITS.

Plates

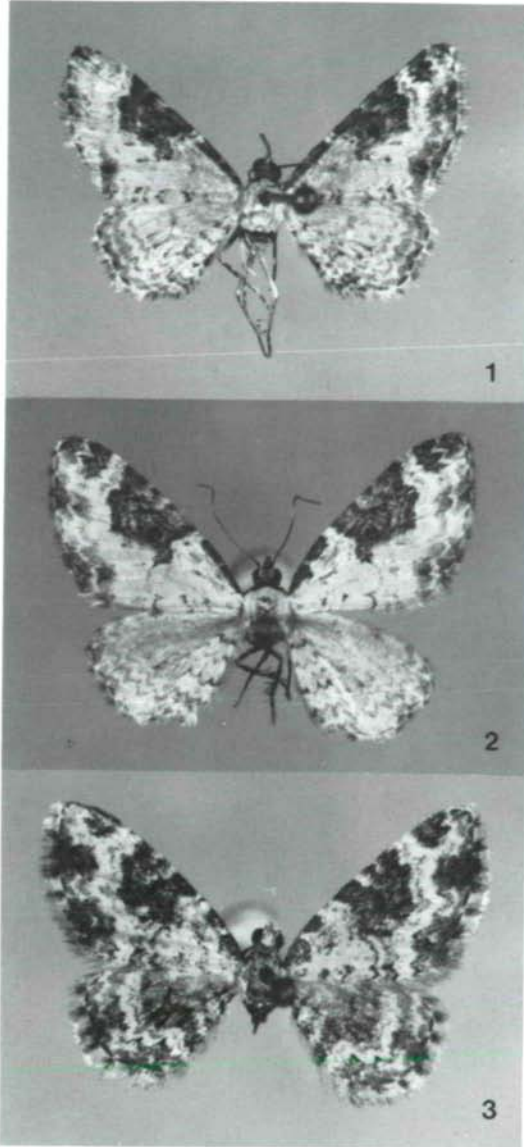


Plate 1, Figs 1-3: 1) *Eupithecia cana* sp. nov., ♂; 2) *E. cana* sp. nov. ♀; 3) *E. meridiana* sp. nov., ♂.

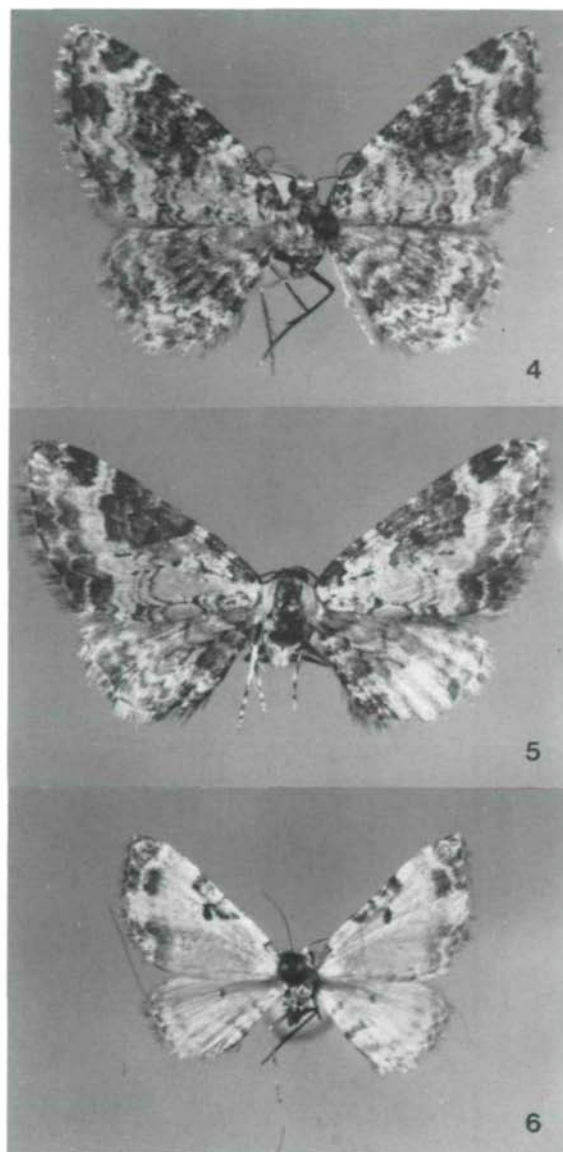


Plate 1, Figs 4-6: 4) *E. meridiana* sp. nov., ♀; 5) *E. procerissima* sp. nov., ♀; 6) *E. demissa* sp. nov., ♀.

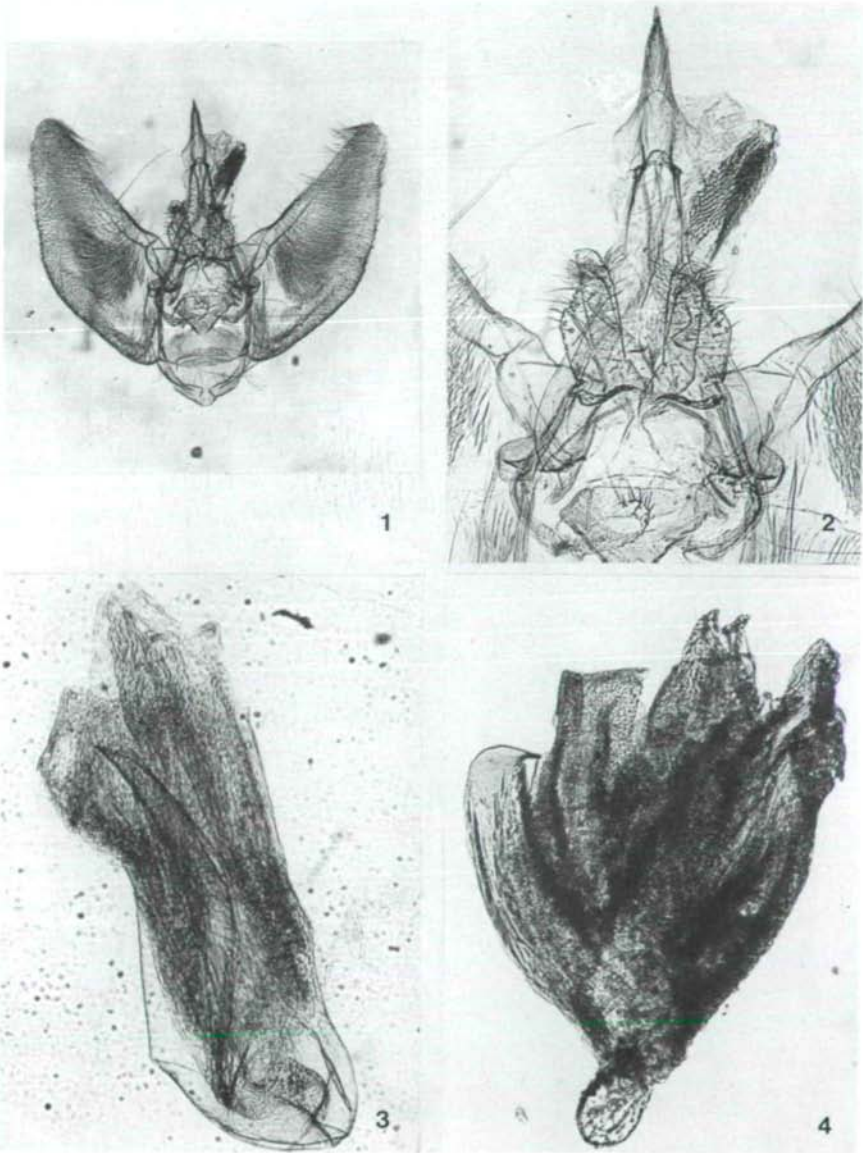


Plate 2, Figs 1-4: *Eupitecia cana* sp. nov.: 1-2) ♂ genitalia; 3-4) aedeagus.

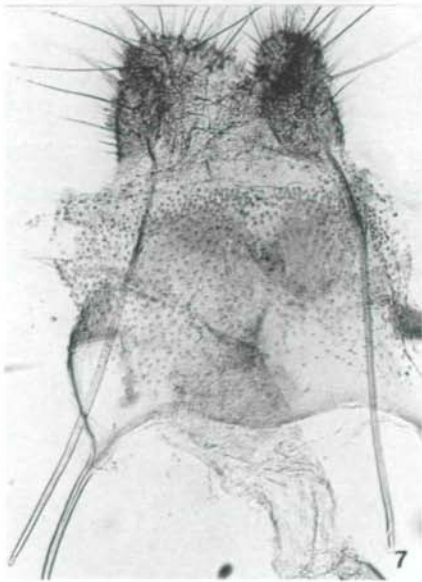
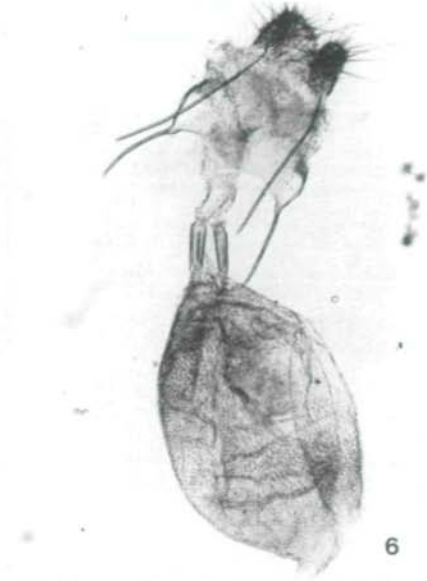
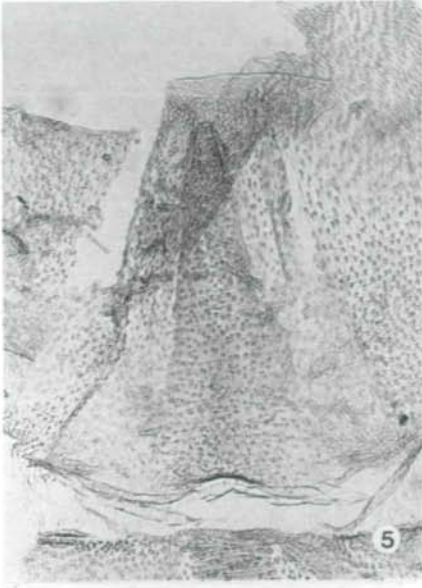


Plate 2, Figs 5-8: *Eupitecia cana* sp. nov.: 5) sternite VIII; 6) ♀ genitalia; 7) apophyses and papillae anales; 8) bursa copulatrix.

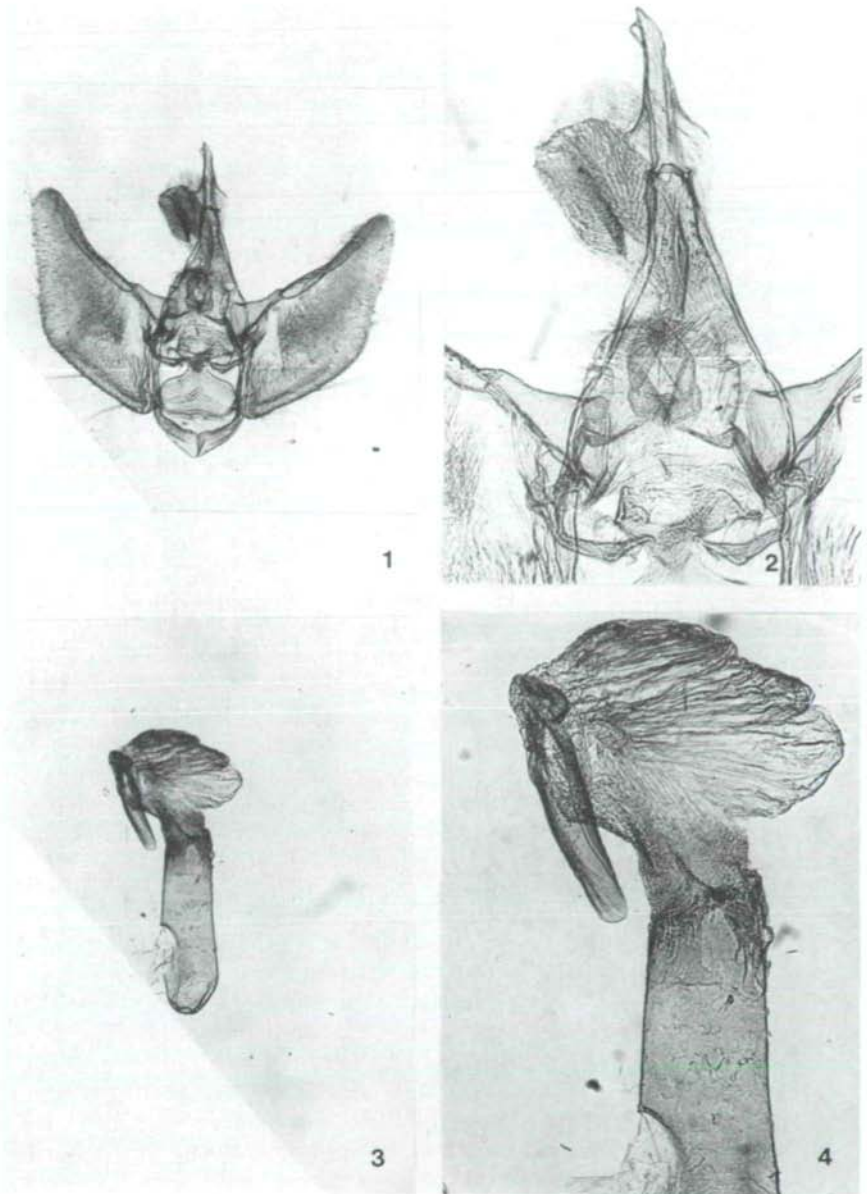


Plate 3, Figs 1-4: *Eupithecia meridiana* sp. nov.: 1-2) ♂ genitalia; 3-4) aedeagus.

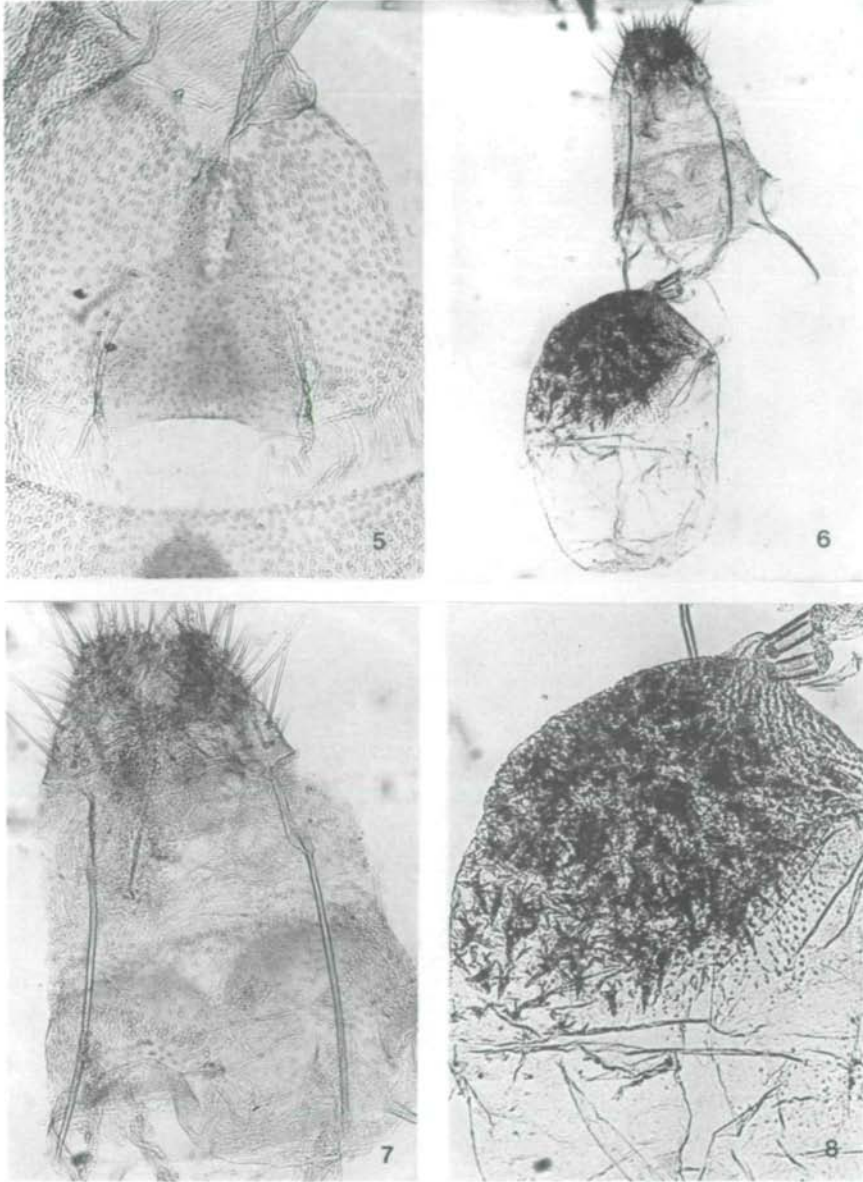


Plate 3, Figs 5-8: *Eupithecia meridiana* sp. nov.: 5) sternite VIII; 6) ♀ genitalia; 7) apophyses and papillae anales; 8) bursa copulatrix.

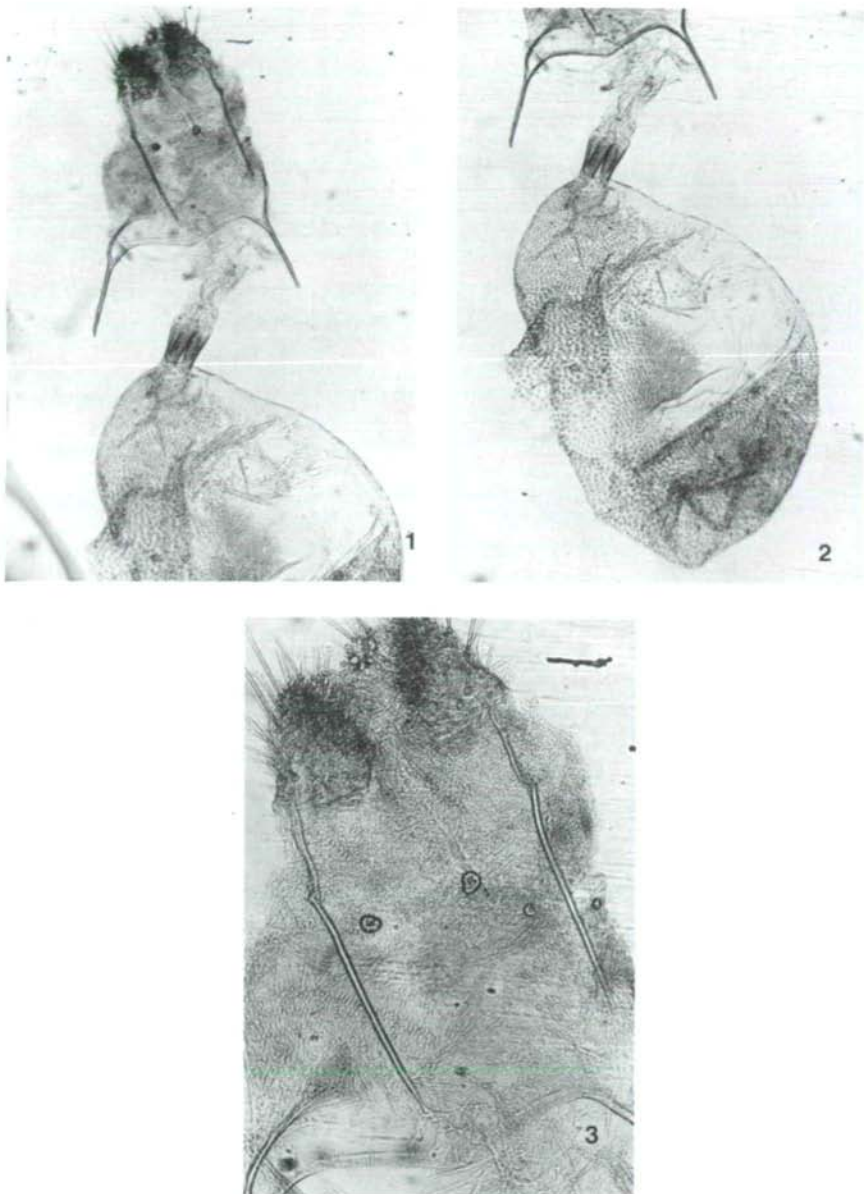


Plate 4, Figs 1-3: *Eupithecia procerissima* sp. nov.: 1) ♀ genitalia; 2) bursa copulatrix; 3) apophyses and papillae anales.

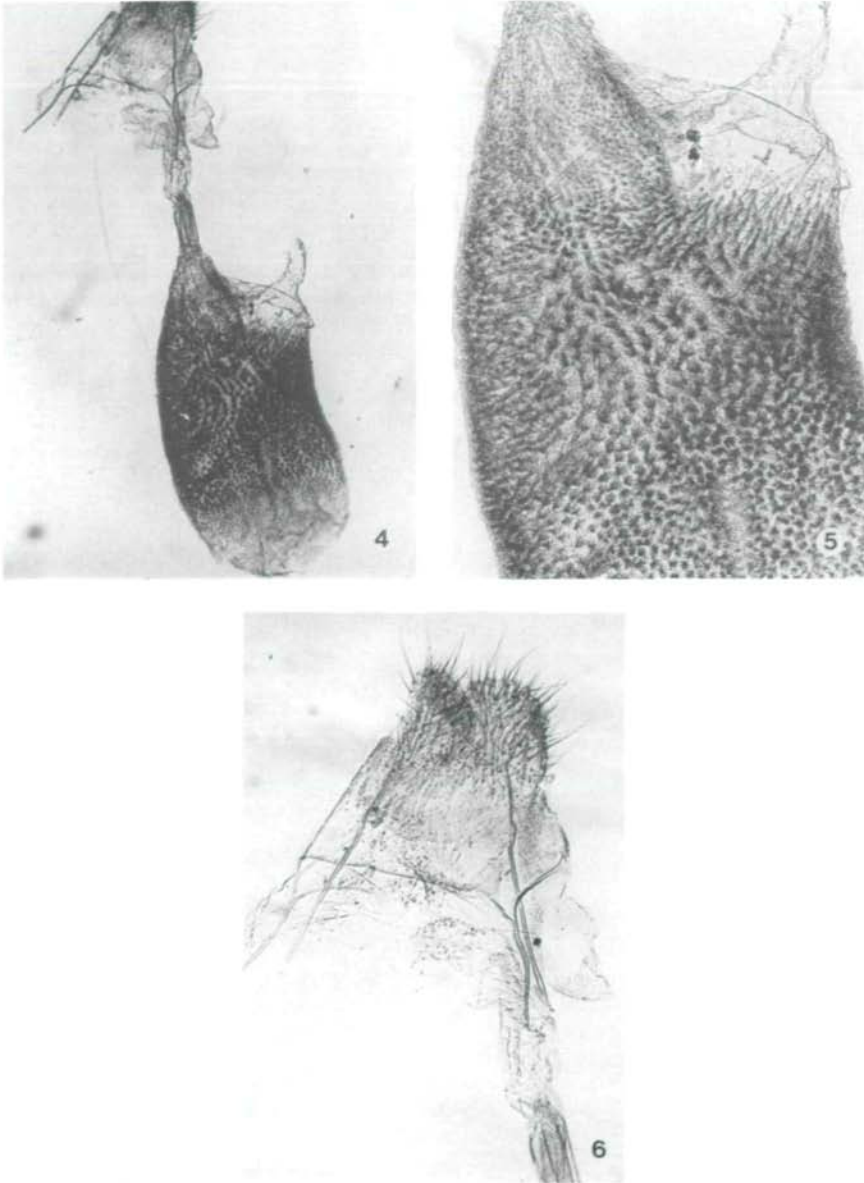


Plate 4, Figs 4-6: *Eupithecia demissa* sp. nov.: 4) ♀ genitalia; 5) bursa copulatrix; 6) apophyses and papillae anales.

Acknowledgements.

I wish to express my thanks to Mr. F.H. RINDGE (New York) and Mr. D.R. DAVIS (Washington) for their kind help. I am also indebted to the Alexander von Humboldt Foundation (Bonn-Godesberg) and the OTKA Foundation of the Hungarian Academy of Sciences (Budapest), for the supporting of my research.

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Druck, Eigentümer, Herausgeber, Verleger und für den Inhalt verantwortlich: Maximilian Schwarz, Konsulent für Wissenschaft der O.Ö. Landesregierung, Eibenweg 6, A - 4052 Ansfelden.
Redaktion: Erich Diller, Münchhausenstraße 21, D-81247 München;
Michael Hiermeier, Allacher Str. 273 d, D-80999 München;
Max Kühbandner, Marsstraße 8, D-85609 Aschheim;
Wolfgang Schacht, Scherrerstraße 8, D-82296 Schönggeising;
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Zeitschrift/Journal: [Entomofauna](#)

Jahr/Year: 1994

Band/Volume: [0015](#)

Autor(en)/Author(s): Vojnits Andras M.

Artikel/Article: [New Data on the Eupithecia- Fauna of Chile \(Lepidoptera, Geometridae\). 361-376](#)