# A revision of the "Eupithecia innotata group", I. (Lepidoptera, Geometridae)\*

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Abstract. — A taxonomic treatment, of Asian (mainly Central Asian) materials, of *Eupithecia recentissima* sp. n., *E. omnigera* sp. n., *E. sclerata* sp. n., *E. paupera* sp. n. (= ab. *paupera* DIETZE), *E. fulgurata* sp. n. (= fulgurata DIETZE in litt.), *E. inexplicabilis* sp. n. (= concoloris DIETZE in litt.), *E. proprivata* sp. n. (= ab. privata DIETZE); *E. relaxata* DIETZE sp. inquirenda; *E. costisignata* DIETZE, 1913, nec 1903; *E. innotata* HUFN. contracta DIETZE = gen. aest.; *E. parallelaria* BOHATSCH, *E. mitigata* DIETZE, *E. praesignata* BOHATSCH, *E. corroborata* DIETZE, *E. omniparens* DIETZE, bonae spp.; *E. ochridata* PINKER from Asia. Woth 24 figures.

The fact that a lepidopteran group is extremely rich in species and concurrently also widely distributed is regarded, simultaneously, as either advantageous or deplorable. Such a group is also the Eupithecini. It goes without saying, of course, that an appraisal like the above one springs wholly from practical and not at all from scientific considerations. It is generally advantageous to be able to study zoogeographical and systematical problems within a taxonomic unit, while, on the other hand, it is rather difficult to keep these voluminous groups "under control".

The several examples\*\* given below belong among the simplest cases occurring in the group Eupithecini, and they still cause grave difficulties in the course of classificatory elaborations.

I. Conforming or nearly conforming external morphology, but entirely dissimilar genitalic configurations:

Eupithecia infecta Vojnits, 1981, appears to be indistinguishable from E. lasciva Vojnits, 1981, yet their genitalic structures are totally different.

Eupithecia dura Vojnits, 1981, would, by its external features, belong in the "selinata group", but the genitalia are wholly alien to it.

Eupithecia recens DIETZE, 1903, and E. repentina VOJNITS, 1978, are externally highly similar; the male genitalia differ conspicuously while those of the females are utterly alien\*\*\*.

Eupithecia vivida Vojnits, 1978, would, by its external morphology, be doubtless assigneable to the "innotata group" under discussion, but the male genitalia are wholly different, the femalegenitalia and sternite VIII of the males show basically different patterns.

Eupithecia irreperta Vojnits, 1978, can hardly be separated from E. vivida Vojnits, 1978, by external features, but the valvae, aedoeagi, sternites VIII and the bursae copulatrices display differences nearly warranting generic separation!

If only the external characteristics are taken into consideration, *Eupithecia eximia* VOJNITS, 1978, belongs unequivocally in the "innotata group". However, the male genitalia preclude any such relegation. The same holds for *E. fatigata* VOJNITS, 1978: externally similar, but the genitalia are of a special type.

Extreme morphological similarities may cause endless confusion. While, for instance, the series of type-specimens of *Eupithecia melanochroa* Wehrll, 1927, was supposed to consist of uniformly

<sup>\*</sup>Studies on Palaearctic Eupithecia species, XV.

<sup>\*\*</sup>The examples are taken from my papers discussing Asiatic (mainly Chinese and Nepalese) species.

<sup>\*\*\*</sup>The problems involved in identifying such morphologically similar species are occasionally rather trying. H. INOUE, an excellent specialist, believed that *E. recens* occurs in Japan, that *E. repentina* is a junior synonym of *recens*, and that the drawing of genitalia I published of *recens* represents a still unknown species. Studies of the type-specimens proved, however, that *repentina* is a good species, the figure in question does in fact represent *recens*, and that *recens* does not occur in Japan.

"conforming" exemplars, revision demostrated a composition made of two species. The male genitalia of the two species are easily distinguishable and those of the females are not even similar to each other\*.

II. Agreeing genitalic features and greatly dissimilar external morhological characteristics. Dozens of examples could be put forth — one should, however, suffice.

Eupithecia otiosa Vojnits, 1981, appears to be much removed from E. lasciva Vojnits, 1981, as to external features; the configuration of the genitalia is nearly the same\*\*.

It has not succeeded so far — with the exception of some mainly European and North American groups — to harmonize the "systems" elaborated on the basis of external morphological features\*\*\* and on the configuration of the genitalia. In this respect, the Asian species are in a profound state of confusion at the present stage of elaboration. In addition, interconnections concerning the structure of the genital components are far from being clarified: if valval and aedoeagal forms, or those of the ventral plates and the bursae copulatrices, are regarded separately, there is not much hope for the evolvement of parallel series.

It follows that at the present time I cannot but regard as unfounded all subgenera, claimed as phylogenetically established groups, within the tribe Eupithecini and especially in the genus *Eupithecia*. All subgenera described so far have, in the last analysis, been erected for wholly practical purposes. For a verisimilar classification all, or the great majority, of the Asian, African and other species must first become known. A systematic evaluation or interpretation of a large taxonomic group is manifestly impossible without due consideration of the totality of the given unit.

It is also from these same practical considerations that I have used and still use such "group" designations; the invariable application of the quotation-marks indicate that at the present stage of investigations no systematical — phylogenetical significance is attributed to them. It were equally precipitate, especially in a group still as chaotic as the present one, to talk about subspecies, super- or semispecies. To do that, basic nomenclatorial and systematical mistakes must first be clarified.

#### Eupithecia omnigera sp. n.

Derivation of specific name: a label name of the holotype

D i a g n o s i s . Of considerable stature; length of fore wing 12.5 mm; wings as elongated as in E. corroborate Dietze. Fore wing fuscous, transverse stripes yellow, discal spot long, dark brown. Hind wing whitish, discal spot minute, transverse lines obsolete. Underside of wings whitish, pattern elements yellowish brown. Cilie medium long, shiny yellowish brown.

Genitalia.  $\mathcal{I}$ : Greatly resembling those of the related species, but aedoeagus with the dentiform cornuti emergent from a heavily sclerotized lamella (Fig. 1.).  $\mathcal{I}$  unknown.

Biology. First stages and foodplant unknown. Flight period of imagos also unrecorded. Distribution. Described from Central Asia. – Locus typicus: Korla.

Specific differences. Externally, the new species resembles a very large and extremely light *E. ochridata* PINKER; the structure of the aedoeagus is different.

Remarks. The label name "omnigera" is probably the result of a confusion with the nominate species Eupithecia omniparens Dietze; the name "omnigera" has never appeared in print.

Holotype of: "innotata form. omnigera; übergang zu parallelaria Korla" "Zool. Mus. Berlin" "gen. prep. No. Dr. A. Vojnits No. 13549 of".—Holotype deposited in the Zoologisches Museum in der Humboldt Universität, Berlin.

Slide: No. 13549 (5), gen. prep. A. Vojnits.

<sup>\*</sup>Another argument for the examination of all specimens composing the original series and not merely that of the holotype or of some paratypes.

<sup>\*\*</sup>Statements like this and the preceding ones can of course be made only on the basis of series at hand.

<sup>\*\*\*</sup>Much has been written about the so-called classical morphological features — e.g. the coloration and pattern in Lepidoptera — and a general emphasis, especially lately, has been put on the "valuelessness" of these characteristics as against the "merits" of the anatomical (genitalic) features. However, an evaluation from systematical — phylogenetical points of view of these character complexes is still wanting.

## Eupithecia recentissima sp. n.

Derivation of specific name: recentissimus = the latest

Diagnosis. Fore wing length\* of the three known female specimens 12, 12.5 and 13 mm. Wing shape agreeing with that of the spring brood of *E. innotata* Hufn. Fore wing dark grey with a brownish sheen. Transverse stripes, characteristic of the "innotata group", yellowish, discal spot elongate, black. Hind wing less brownish, rather grey. Underside of wings fuscous with a yellowish sheen, pattern elements indistinct. Cilia rather long, fuscous on fore wing, striated grey and yellowish grey on hind wing.

Genitalia  $\widehat{\mathbb{Q}}$ : Bursa copulatrix elongated pyriform, padded with small chitinous spines. Anterior and posterior apophyses short. Papillae anales small, elongate (Fig. 2).  $\bigcirc$  unknown.

Biology. First stages and foodplant unknown. Flight period of imagos also unrecorded.

Distribution. Occurring in Central Asia. - Locus typicus: Iuldus, Ili.

Specific differences. Externally near Eupithecia innotata HUFN., yet genitally satisfactorily different. The female Senitalia resemble those of E. omniparens DIETZE.

Remarks. A part of the specimens had been relegated to the *innotata* alliance in the Dietze Collection (Berlin), labelled as "perturbata" and "perturbatra". Assumably a confusion with the

species Eupithecia peturbatrix DIETZE.

Holotype ♀: "No. 486 Übergang Juldus, Ili. perturbatra [= in another handwriting]" "perturbata" "Zool. Mus. Berlin" "gen. prep. No. Dr. A. Vojnits No. 13537 ♀". — Paratypes \$\times\text{\$\te

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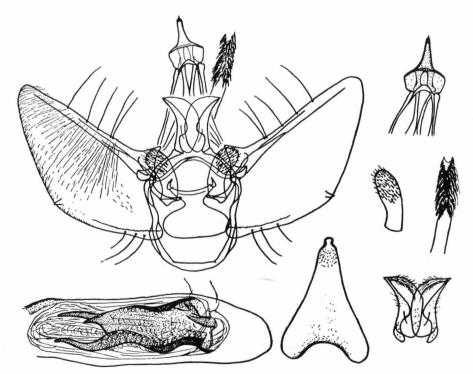


Fig. 1. Male genitalia and sternite VIII of Eupithecia omnigera sp. n.

<sup>\*</sup>Deviating from my earlier papers, I omit the data of the alar expanse and give the measurements of the fore wing only, from base to apex, because most of the cited authors, and principally DIETZE hismelf, submitted these latter data.

## Eupithecia sclerata sp. n.

Derivation of specific name: scleratus = calous

Diagnosis. Fore wing length of the single known male specimen 11 mm. Wings elongate, but hind wing comparatively wide. Fore wing an isosceles triangle, basic dolour a pale brownish ochreous. Transverse stripes yellow, pale. Costa and venation with minute spots of brown scales. Fore wing without a discal spot, suggested only on underside of wing. Hind wing a pale brownish yellow. Discal spot brown, minute. Underside of wings with obsolete pattern elements, discal spot present on both fore and hind wings. Cilia relatively long, striated brown and brownish yellow.

Genitalia. or: Valva rather short, dorsum straight, ventrum slightly arcuate, apex pointed. Uncus strikingly long, vinculum wide. Aedoeagus short, thick, cylindrical, with a robust and arcuate chitinous tooth and several irregularly shaped chitinous formations. Sternite VIII wide (Fig. 4); Q unknown.

Biology. First stages and foodplant unknown. Flight period of imagos in May.

Distribution. A Central Asian species. - Locus-typicus: Lop Nor. Specific differences. Externally unequivocally distinguishable from all related

species by the pattern of the fore wings, the absence of the discal spot, and anatomically by the long uncus and the stout sternite VIII.

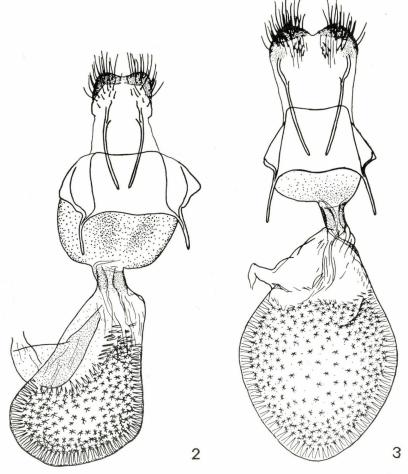


Fig. 2. Female genitalia of Eupithecia recentissima sp. n. - Fig. 3. Female genitalia of Eupithecia paupera sp. n.

Holoty pe of: "Asia centr. Lob-Noor E. Mai 1904 RÜCKBEIL [hardly decipherable] relaxata Dietze of v. R. Tancré 5.03" "Zool. Mus. Berlin" "gen. prep. No. Dr. A. Vojnits No. 13588 of "\*. Holotype deposited in the Zoologisches Museum der Humboldt Universität, Berlin.

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#### Eupithecia paupera sp. n. (nec Dietze, 1913)

Eupithecia innotata Hufn. ab. paupera Dietze (Biologie d. Eupithecien, 1913, p. 127, Pl.75, Fig. 488 and Pl.85, Fig. 955)

Eupithecia innotata Hufn. paupera Dietze (Prout, L. B.: Eupithecia, in: Seitz, 1915, IV, p. 294) Eupithecia paupera Dietze, 1908 (sic!) (VIIDALEPP, J.: Ént. Obozr. 1978, 57:755)

Diagnosis. A large species. Fore wing lengths of the three known males 12, 12.5, and 13 mm; that of the single female 12 mm. Wings elongate, resemling wing shape of *Eupithecia mitigata* DIETZE, but apex of fore wing slightly more explicit. Basic colour of wings grey, fore wing darker that hind wing. One paratype specimen slightly brownish. Pattern elements obsolete, transverse stripes evanescent on most specimens, absent in one male paratype. Discal spots always well discernible. Underside of wings fuscous, discal spots marked. Cilia medium long, fuscous.

Genitalia largely resemling those of *E. mitigata* Dietze. Valvae of some specimens with primordia of a dentiform projection, robust and characteristic in all related species. Aedoeagus thick, cylindrical, with a larger and arcuate and with a smaller and nearly straight dentiform chitinous spine, in addition to a long and narrow chitinous plate and a twisted chitinous formation. Aedoeagus of *mitigata* considerably bigger, though imagom proper hardly attaining normal size of *paupera*, and shape of spines also somewhat different. Sternite VIII more slender (Fig. 5). -  $\bigcirc$ : bursa copulatrix oval, largely padded with minute and rather sparsely arranged chitinous spines. Both anterior and posterior apophyses short, papillae anales flat (Fig. 3).

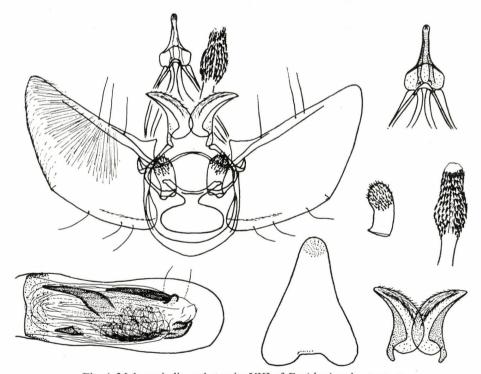


Fig. 4. Male genitalia and sternite VIII of Eupithecia sclerata sp. n.

<sup>\*</sup>In several cases I had to apply the remark ,,hardly decipherable". This stems partly from the fact that research wor kers remove the labels when studying the specimens and then attach them again to the pins, boring them through in always new places so that owing to the innumerable holes the script often becomes illegible.

Biology. First stages and foodplant unknown. Flight period in June. Distribution. Occurring in Central Asia. – Locus typicus: Kuldja.

Specific differences. Near Eupithecia mitigata Dietze. Externally distinguishable by the basic colour and the obsolete pattern. Differences concerning the male genitalia see in the diagnosis of the genitalia.

Remarks. Dietze (1913) described this form as *Eupithecia innotata* Hufn. ab. *paupera*; as a characteristic, he emphasized the blackish (grey) basic colour, the nearly absent pattern, the appearance of the discal spots. He mentioned four male and one female specimens, deriving from the Mts. Iuldus (Ili region) and Kuldja (Ferghana region). He also recorded a "transitional form", tending towards praesignata, captured at the Issyk-Kul. In essence, Prout (1915) reiterated these observation in the Seitz work. In my opinion, the specimens described by Dietze as "ab. *paupera*" represent a distinct species, however, this name is not "protected" under the Code. Still, when I am now describing this species as new, I retain the "original" name, thereby referring to the circumstance that Dietze, as far as information and knowledge of his time permitted, still elaborated correctly the material at his disposal.

Holotype of: "innotata form: praesignata ab. paupera Gouldja, Ferghana 8.6.05" "Fast genau so, etwas langfransiger ist verglichene Type der praesignata!" "Gouldscha Ferghana 1905. Korb 8.VI.05" "Zool. Mus. Berlin" "gen. prep. No. Dr. A. Vojnits No. 13548 of". – Paratypes; 1 of "forma: paupera of" "Juldus" "Zool. Mus. Berlin" "gen. prep. No. Dr. A. Vojnits No. 13547 of"; "innotata forma praesignata ab. paupera. Typ. Juldus Ili" "Zool. Mus. Berlin" "gen. prep. No. Dr. A. Vojnits No. 13546 of"; 1 of "paupera of Juldus Ili" "Zool. Mus. Berlin" "gen prep. No. Dr. A. Vojnits No. 13555 of". – Holotype and paratypes deposited in the Zoologisches Museum der Humboldt Universität, Berlin.

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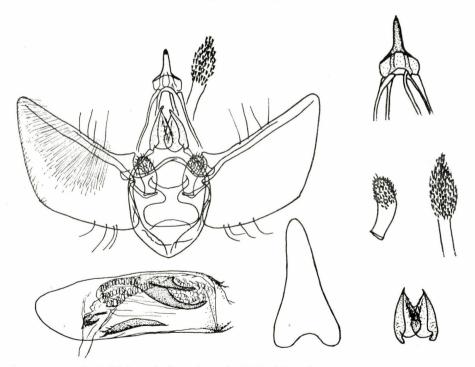


Fig. 5. Male genitalia and sternite VIII of Eupithecia paupera sp. n.

# Eupithecia fulgurata sp. n.

(Derivation of specific name: fulguratus = an unpublished label name) Eupithecia innotata HUFN. forma corroborata DIETZE forma fulgurata DIETZE in litt.

Diagnosis. Fore wing length of the single known female specimen 11 mm. A species of wider wings than the rest of the species group. Basic colour of fore wing a ferrugineous grey, discal spot elongate, very marked, black, transverse stripes wide, yellow and black, respectively. Hind wing paler grey, discal spot minute, rounded, marginal field darker grey. Underside of wings light, pattern elements well discernible. Cilia medium long, striated grey to greyish white.

Genitalia.  $\mathcal{P}$ : Bursa copulatrix elongate, padded in its entirtey with chitinous spines. Both anterior and posterior apophyses thin and short. Papillae anales rounded (Fig. 6);  $\mathcal{T}$  unknown.

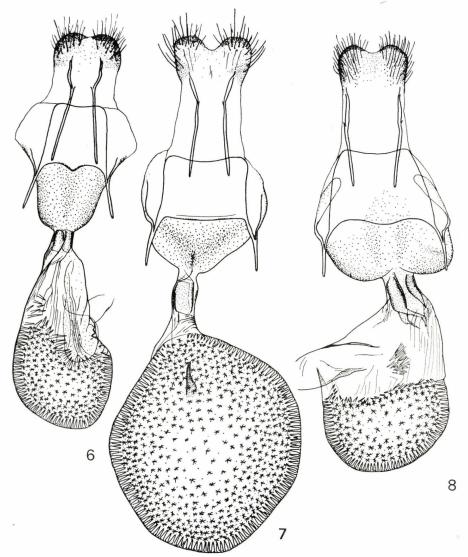


Fig. 6. Female genitalia of *Eupithecia fulgurata* sp. n. – Fig. 7. Female genitalia of *Eupithecia inexplicabilis* sp. n. – Fig. 8. Female genitalia of *Eupithecia proprivata* sp. n.

Biology. First stages and foodplant unknown. Flight period also unrecorded.

Distribution. Occurring in Central Asia. - Locus tyoicus: Iuldus, Ili.

Specific differences. Compared with the other species of the group, the new species is chiefly characterized by the relatively short wing, the iron grey basic colour and the very marked and conspicuous pattern.

R e m a r k s. The specimen had been labelled as "fulgurata" by DIETZE, but, as far as I know,

this name was never published.

Slide: No. 13544 (♀), gen. prep. A. VojNits.

# Eupithecia inexplicabilis sp. n.

(Derivation of specific name: *inexplacabilis* = inexplicable)

Eupithecia innotata HUFN. concoloris DIETZE in litt.

Diagnosis. Fore wing length of the single known female specimen 12 mm. Fore wing considerably elongated, hind wing extraordinarily short. Basic colour yellowish brown, that of hind wing quite light. Discal spots—narrow and elongate on fore wing, bacilliform on hind wing—well discernible if not marked. Transverse stripes obsolescent. Underside of wings yellowish brown, pattern elements obsolescent. Cilia medium long, yellowish brown.

Genitalia. Q: Entire rotund bursa copulatrix padded with minute and very desely arranged chitinous spines. Both anterior and posterior apophyses short. Papillae anales oval (Fig. 7);

d unknown.

Biology. First stages and foodplant unknown. Flight period of imagos unrecorded.

Distribution. Occurring in Central Asia. - Locus typicus: Issyk-Kul.

Specific differences. Configuration of bursa copulatrix unequivocally different from that of all related species.

Remarks. The name "concoloris" written in Dietze's fist on the label has never been published according to my informations. The name itself must have originated in two phases: originally it must have been "concolor", then, assumably to distinguish it from an earlier denomination (Eupithecia satyrata Hübner forma concolor Dietze, 1913 = juldusi Bang—Haas in litt.: Biologie d. Eupithecien, p. 85), the suffix "is" must later had been added.

Holotype ♀: "innotata forma concoloris Karagai-tau Issyk-kul" "Zool. Mus. Berlin" "3" "266" "gen. prep. No. Dr. A. Vojnits No. 13554 ♀".— Holotype deposited in the Zoologisches Museum der Humboldt Universität, Berlin.

Slide: No. 13554 (♀), gen. prep. A. Vojnits.

#### Eupithecia proprivata sp. n.

Eupithecia costisignata DIETZE ab. privata DIETZE, 1913 (Biologie d. Eupithecien, 1913, p. 137, Pl.75, Fig. 545).

Eupithecia costisignata DIETZE (?spec.?) privata DIETZE (PROUT, in: SEITZ, 1915, IV., p. 294).

Eupithecia costisignata Dietze (?) privata Dietze (Prout, L. B.: Eupithecia, in: Seitz, Suppl. ad IV. 1934–39, p. 203).

Eupihtecia relaxata Dietze privata Dietze, 1911 (sic!) (subsp.?) Viidalepp, J.: Ént. Obozr., (1978 57:753).

Diagnosis. A taxon rather laconically treated in previous publications (Dietze 1913; Prout 1915, 1939). The meagre and obsolete pattern of the wings is characteristic. Fore wing fuscous. Ante- and postmedian more or less straight, evanescent towards costa. No discal spot present. Hind wing paler, with a yellowish sheen, transverse stripes discernible only near upper margin. Underside of wings uniform and pale yellowish brown, patternless, hind wing lighter; fore wing with an elongate discal spot. Cilia long, darker on fore wing, a lighter yellowish brown on hind wing.

Genitalia. Q: Bursa copulatrix slightly elongate, irregular in form. Anterior part padded with rather densely arranged minute chitinous spines, posterior half with a small, discrete chitinous

field, its spines thin, long and very densely arranged. Anterior and posterior apophyses short, comparatively stout, papillae anales broad (Fig. 8); of unknown.

Biology. First stages and foodplant unknown. Flight period of imagos unrecorded.

Distribution. A Central Asian species. - Locus typicus: Tura.

S p e c i f i c d i f f e r e n c e s. There can be no doubt about its specific distinctness. Beside the external morphological features the main characteristic of the female genitalia, namely the two distinct chitinous fields of the bursa copulatrix, is very striking.

Remarks. In his rather taciturn description DIETZE (1913) — though pointing out the doubled oblique transverse lines, decurrent without essentially widening from the middle of the nearly patternless fore wing to the dorsum — appears to have been uncertain about assigning a definite taxic rank to the form, and finally diagnosed it as an aberration, a decision precluding the availability of the name under the Code. — PROUT (1915) had first reiterated DIETZE's statements and remarked only later (1939) that *privata* had never been studied anatomically and that DIETZE himself had originally been dissatisfied with the systematic status of the taxon.

Examined material.  $1 \circlearrowleft$ : "Asia centr. (Tura) Eup. praesignata Bohatsch  $\circlearrowleft$  (als insignata Stgr. von Stgr. 3.93)" "Type privata Dietze  $\circlearrowleft$  Püng." "Zool. Mus. Berlin" "gen. prep. No. Dr. A. Vojnits No 13586  $\circlearrowleft$ ". — Type deposited in the Zoologisches Museum der Humboldt Universität, Berlin.

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#### Eupithecia relaxata Dietze, 1903, sp. inquir.

Eupithecia unedonta MAB. var. relaxata DIETZE (Dt. ent. Z. Iris, 1903, 15: 357, Pl. 5, Fig. 17). Eupithecia costisignata DIETZE var. relaxata DIETZE (Biologie d. Eupithecien, 1913, p. 136, Pl. 75, Fig. 543).

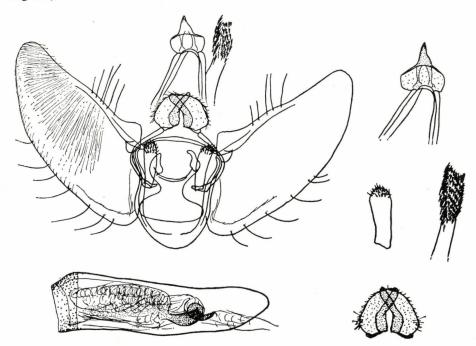


Fig. 9. Male genitalia of Eupithecia costisignata DIETZE

Eupithecia costisignata Dietze relaxata Dietze (Prout, L. B.: Eupithecia, in: Seitz, 1915, IV, p. 294). Eupithecia relaxata Dietze (Prout, L. B.: Eupithecia, in: Seitz, Suppl. ad IV, 1934–39 p. 203). Eupithecia relaxata Dietze, 1904 (sic!) (VIIDALEPP, J.: Ént. Obozr., 1978, 57:755).

Diagnosis. See Remarks. - Genitalia. ♂ and ♀ unknown.

Biology. First stages and foodplant unknown. Flight period of imagos unrecorded.

Distribution. Assumably occurring in Central Asia. - Locus typicus: Schahkuh.

R e m a r k s. Dietze (1903) described "var." relaxata as the "Grundform" (!), "aus welchem die nächst beschriebene (costisignata) hervorgeht, oder Rückbildung derselben". A light, pale silvery grey animal, its pattern nearly vanished from both upperside and underside of wings, discernible only in fine traces; transverse stripes not widened at costa. — A form described on the basis of a single female collected at Schahkuh in Central Asia; the type-specimen ought to be preserved in the Dietze Collection. — Subsequently, Dietze (1913) mentioned two further specimens, allegedly preserved in Bohatsch's Collection, collected also by Funke at Schahkuh, on "1.8.1898". These specimens differ from costisignata only by their larger size. According to Dietze therefore, the form under discussion is a form of Eupithecia costisignata Dietze and not the other way round.

Later, Prout (1915) was of the same opinion, but subsequently (Prout 1939) changed his position.\* Concurrently, he referred the characterization of the genitalia by Petersen (cit. Dietze 1913) unequivocally to *relaxata*, a wholly incorrect standpoint. In a group as difficult as the present one — Prout (1939) himself declared it to be a "komplizierte Gruppe" — this "grandiose" interpretation of Petersen's presumption is inadmissible.

In my opinion, the name "relaxata" is unavailable, save a future reappearance of Dietze's type. And even if it were to be found, it is not at all certain that Prout's (1939) concept is the right one: if we are in fact dealing with distinct taxa (relaxata and costisignata), relationships of wholly different in rank may also be assumed.

#### Eupithecia costisignata DIETZE, 1913 (nec DIETZE, 1903)

Eupithecia unedonta Mabille, var. relaxata Dietze ab. costisignata Dietze, 1903 (Dt. ent. Z. Iris, 16: 367–369, Pl. 5, Fig. 18, 19).

Eupithecia costisignata Dietze, 1913 (Biologie d. Eupithecien, p. 136, Pl. 75, Fig. 542, and Pl. 85, Fig. 960)

Eupithecia costisignata DIETZE (PROUT, L. B.: Eupithecia, in: SEITZ, 1915 IV, p. 294, Pl. 25, Fig. e). Eupithecia relaxata DIETZE ab. costisignata DIETZE (PROUT, L. B.: Eupithecia, in: SEITZ, Suppl., ad IV, 1934–39 p. 230).

Diagnosis. Dietze (1903) gave a detailed description of the external features.

Genitalia.  $\bigcirc$ : Valva rather short, dorsum straight, ventrum evenly arched. Uncus uniapical (!), short, stout, very characteristic. Aedoeagus rather long, finely tapering, with a long chitinous plate and a short, twisted chitinous formation (like a snail-shell). Sternite VIII not found in examined specimen (Fig. 9);  $\bigcirc$ : bursa copulatrix oval in cross-section, its 4/5 padded with short, evebly but rather sparsely arranged chitinous spines. Anterior section of bursa with merely a few scattered spines and a highly characteristic recurving chitinous plate which ends in two sharp points. Both anterior and posterior apophyses comparatively short and thick. Papillae anales wide (Fig. 10).

Biology. First stages and foodplant unknown. Flight period of imagos also unrecorded. Distribution. Occurring in Central Asia. — Locus typicus: Schahkuh.

Specific differences. Sharply differring by both the male and female genitalia from all other members of the "innotata group".

Remarks. DIETZE (1903) mentions this taxon as the more frequent "accessory form" of "unedonata var. relaxata". He contended as especially characteristic the light silvery grey basic colour, the conspicuous black costal spot, and the discal spot of the fore wing.

<sup>\*</sup>Prout (1939) gave, incorrectly, the date of publication of volume XVI of the Iris as 1904.

He also called attention to the fact that the palps are "visibly" shorter than in *Eupithecia unedonata* MAB. In its totality, he characterized it as a "well developed" form, "approaching" *E. euphrasiata* H.—Sch. of broader wings, and as less "dusty" and yellowish than the usually larger *E. parallelaria* Bohatsch. The taxon was based on 11 specimens, deposited in the collections of Bohatsch, Dietze, Püngeler and Tancré.

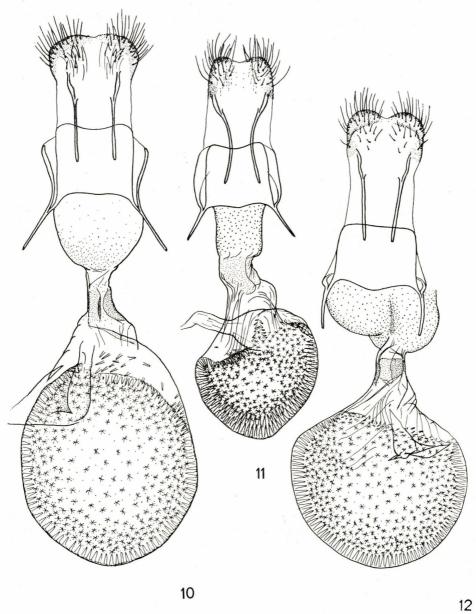


Fig. 10. Female genitalia of Eupithecia costisignata DIETZE — Figs. 11–12. Female genitalia of Eupithecia innotata HUFN. contracta DIETZE

PETERSEN (i.l.) examined the specimens and found, on the basis of the anatomical results, that they represent a distinct species. He stated that both the male and female genitalia are peculiarly formed, especially those of the female and in this connection he emphasized the long ductus seminalis and the shape of the bursa.\* Inferences led to a relationship with *E. euphrasiata* H.Sch. again. After these considerations DIETZE himself treated it subsequently (1913) as a distinct species, too.

PROUT (1915) first relegated *relaxata* DIETZE under *E. costisignata* DIETZE, then (PROUT 1939) reversed this combination. He wanted to point out that though DIETZE described *relaxata* and *costisignata* on the same page, *relaxata* was diagnosed first. And in vain did DIETZE remark "correctly" that "*relaxata* so (biologisch) nur eine sekundäre Form von *costisignata* ist, nicht umgekehrt", he forgot that "es unmöglich ist, ein bestehendes Prioritätsgesetz von Namen zugunsten des Standpunktes der Phylogenie zu ändern".\*\*

Irrespective of the above considerations, the nomenclature followed in the present paper should be used, the more so as *relaxata* DIETZE can at present be regarded as only a species inquirenda.

Examined material. 1 ♀ (= paralectotype): "subspec: relaxata var. costisignata Original (Dietze)" "Hyrcania (Schahkuh) 1898 relaxata Dietze var. costisignata Dietze ♀ spec. Typ von E. Funke 1998 (sic!)" "Cotype v. costisignata Dietze ♀" "Zool. Mus. Berlin" "gen. prep. No. Dr. A. Vojnits No. 13585 ♀"; 1 ♂ (= paralectotype): "Subspec: relaxata var. costisignata Original Dietze" "Asia centr. Saichin-Kette nördl. v. Korla Rückbeil 1902 relaxara var. costisignata ♂ Type (v. R. Tancré) 11.026" "Cotype v. costisignata Dietze ♂" "Zool. Mus. Berlin" "gen. prep. No. Dr. A. Vojnits No. 13584 ♂".

Slides: Nos. 13584 ( $\nearrow$ ), 13.585 ( $\stackrel{\frown}{Q}$ ), gen. prep.  $\stackrel{\frown}{A}$ . Mészár and  $\stackrel{\frown}{A}$ . Vojnits.

# Eupithecia innotata Hufn. contracta Dietze, 1913 = gen. aest.

(Biologie d. Eupithecien, p. 126, Fig. 530).

R e m a r k s. As already DIETZE himself assumed (1913), the "taxmon" represents merely the summer generation of *Eupithecia innotata* HUFN. Incidentally, the female genitalia display — depending on the imbedding — such a varying picture that at the first glance they seem actually to represent a new (or even more!) species (Figs. 11–13).

Examined material. 1  $\Q$  (=lectotype, here designated): "innotata-Form contracta Type Syr Darja K. Dietze" "A-Ata" "Zool. Mus. Berlin" "gen. prep. No. Dr. A. Vojnits No. 13533  $\Q$ "; 1  $\Q$ ": "Goultscha Osch" "Zool. Mus. Berlin" "gen. prep. No. Dr. A. Vojnits No. 13535  $\Q$ "; 1  $\Q$ ": "Gultscha Osch" "Zool. Mus. Berlin" "gen. prep. No. Dr. A. Vojnits No. 13536  $\Q$ " "contracta"; 1  $\Q$ : "Gouldscha Osch." "Zool. Mus. Berlin" "contracta" "gen. prep. Dr. A. Vojnits No. 13534  $\Q$ ". The specimens are preserved in the Zoologisches Museum der Humboldt Universität, Berlin.

Slides: Nos. 13535 ( $\bigcirc$ '); 13533, 1533, 1534, 13536 ( $\bigcirc$   $\bigcirc$ ), gen. prep. Á. Mészár and A. Vojnits.

#### 'Eupithecia parallelaria Bohatsch, 1893

Eupithecia unedonata Mab. var. parallelaria Bohatsch, (Dt. ent. Z. Iris, 1893, 6:22.)
Eupithecia innotata Hufn, var. parallelaria Bohatsch (Draudt, M.: Dt. ent. Z. Iris, 1905, 18:316).
Eupithecia innotata Hufn. var. parallelaria Bohatsch (Dietze, K.: Biologie d. Eupithecien, 1913 p. 127, Pl. 75, Figs. 534–540).
Eupithecia innotata Huff. ?unedonata Mab. ?var. parallelaria Bohatsch (Petersen, W.: Dt. ent.

Z. Iris, 1909, 22:272).

<sup>\*</sup>It is of interest that Petersen did not mention the striking chitinous formation in the bursa but rather emphasized its form, the least reliable anatomical feature.

<sup>\*\*</sup>This brief sketch of the problem concerning relaxata and costisignata also reflects the peculiarity of the species concept of the authors.

Eupithecia innotata Hufn. var. parallelaria Bohatsch Prout, L. B. Eupithecia, in: Seitz IV, 1915, p. 294).

Eupithecia parallelaria Bohatsch (Prout, L. B.: Eupithecia, in Sertz, Suppl. ad IV, 1934–39 p. 202, Pl. 18, Fig. e.)

Eupithecia parallelaria Bohatsch (VIIDALEPP, J.: Ént. Obozr. 1978, 57:755).

Eupithecia parallelaria Bohatsch (Viidalepp, J.: Ént. Obozr., 1978, 57: 755).

Diagnosis. See Bohatsch (1893); also very large-sized specimens occur, with 24-25 mm long fore wings.

Genitalia.  $\bigcirc$ : Belonging in the alliance of *E. innotata* HUFN. (Fig. 14);  $\bigcirc$ : also resembling innotata (Fig. 16).

Biology. Larva, pupa and foodplant unknown; description of egg see DRAUDT (1905). Most flight period data are rather early, mainly from April.

Distribution. Known since long from Central Asia; PROUT (1939) gives also a wider range, but these data need checking. I have seen a specimen from "Palestine".

R e m a r k s. Bohatsch (1893) described the form as a variety of *Eupithecia unedonata* Mab., and unequivocally delimited also its geographic range. Staudinger named the same form as *magnaria* (in litt.) ,but as already Bohatsch pointed out the name was preoccupied by Millière. Alphéraki (in litt.) found the same form in Kuldja and considered it a variety of *E. innotata* Hufn. From that time, it was treated as a taxon belonging either to *innotata* or to *unedonata*. According to Draudt (1905), it is referable to *innotata* by the sculpture of the eggs; in this he was followed also by Dietze (1913). Petersen (1909) studied the female genitalia and found no difference between the taxa. His opinion was rather peculiar: "Auch die v. *parallelaria* Bohatsch (♀ Dietze) kann ich weder von *unedonata* noch von *innotata* unterscheiden, so dass meiner Meinung nach beide nur als Lokalvarietäten von

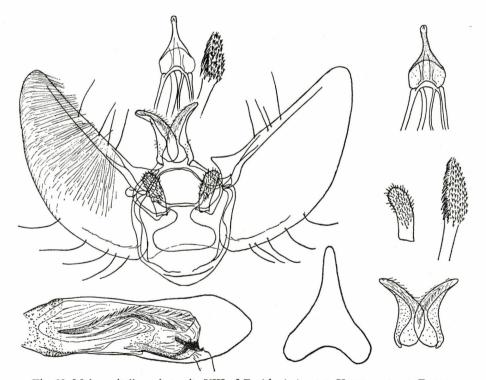


Fig. 13. Male genitalia and sternite VIII of Eupithecia innotata HUFN. contracta DIETZE

innotata zu behandeln sind". Prout (1915) had first assigned it to innotata, then he found that Dietze (1913) had already remarked as follows: "…hat parallelaria den Wendepunkt überschnitten und sich im Aussehen der unedonata genähert. Und zwar so, dass es insbesonders die  $\neg \neg$  sind, die sich der unedonata am meisten nähern… während die  $\bigcirc \neg$  der innotata ähnlicher bleiben". In this later work of his Prout gave specific distinctness to the taxon. However, differences against innotata are displayed not only by the females (and here primarily in the shape of the bursa), but also by the males, where mainly the configuration of the aedoeagus differs.

Examined material.  $1 \circlearrowleft (= \text{lectotype}, \text{here designated})$ : "Type  $\circlearrowleft$ : Iris 1893 v. parallelaria Bohatsch" "Origin" "Zool. Mus. Berlin" "gen. prep. No. Dr. A. Vojnits No. 13574  $\circlearrowleft$ ";  $1 \circlearrowleft$  "Unedonata var. Magnaria Stgr. besser var. Parallelaria (Boh)." "Prov. Samarkand [hardly decipherable] 81" "172" "Zool. Mus. Berlin" "gen. prep. No. Dr. A. Vojnits No. 13575  $\circlearrowleft$ ";  $1 \circlearrowleft$ . "Eupithecia innotata Hufn.  $\circlearrowleft$  von R. Tancré 4.98 Asia centr. (Ili) 1897" "parallelaria Boh. coll Püng." "Zool. Mus. Berlin" "gen. prep. No. Dr. A. Vojnits No. 13581  $\circlearrowleft$ ";  $1 \circlearrowleft$  "Palestina Jordanthal Paulus 1901 unedonata  $\circlearrowleft$  [hardly decipherable]" "Zool. Mus. Berlin" "gen. prep. No. Dr. A. Vojnits No. 13583". All specimens preserved in the Zoologisches Museum der Humboldt Universität, Berlin.

Slides: Nos. 13.575, 13.581 (♂♂); 13.574, 13.583 (♀♀), gen. prep. A. Mészár and A. Vojnits.

# Eupithecia mitigata DIETZE, 1908

Eupithecia mitigata Dietze (Dt. ent. Z. Iris, 1908, 21: 168–169, Pl. 2, Figs. 18, 19). Eupithecia costisignata Dietze mitigata Dietze (Biologie d. Eupithecien, 1913, p. 137, Pl. 75, Figs. 546, 547).

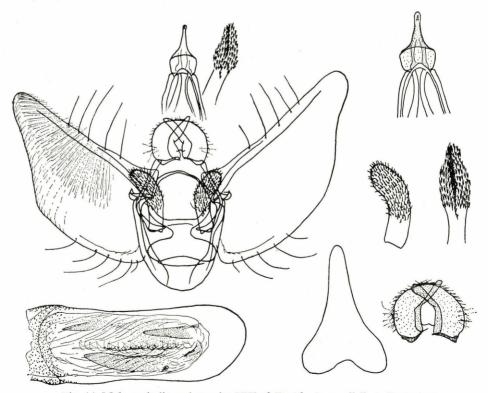


Fig. 14. Male genitalia and sternite VIII of Eupithecia parallellaria BOHATSCH

Eupithecia costisignata Dietze mitigata Dietze (Prout, L. B.: Eupithecia, in: Seitz, 1915, IV, p. 294.). Eupithecia costisignata Dietze (?) mitigata Dietze (Prout, L. B.: Eupithecia, in: Seitz, Suppl. ad IV, 1934–39, p. 203).

Diagnosis. Dietze (1908) gave a detailed and very good description of the external morp-

hological features.

Genitalia. ♂: Valva medium long, dorsum slightly arcuate, basal part of ventrum nearly parallel with dorsum, apical half largely straight to apex; ventrum medially finely projecting. Uncus long, thin. Aedoeagus short, stout, among its chitinous formations most characteristic are a large and arcuate as well as a short and straight dentiform spine. Sternite VIII wide, attenuating, terminally obtusely biapical (Fig. 15); ♀: unknown.

Biology. First stages and foodplant unknown. Flight period in May. Distribution. Occurring in Central Asia. – Locus typicus: Lop Nor.

Specific differences. The fine pattern on the peculiar beige basic colour already distinguish the species from all near relations, but the male genitalia also offer distinguishing characters.

Remarks. Dietze (1908) had at first described this form as a distinct species. Thus it is the more striking when he enumerated it later (1913) among the forms of *Eupithecia costisignata* Dietze. This was first accepted also by Prout (1915), but later pointed out (1939) that the systematic relegation of the taxon is unsatisfactory; however, this is referable only to the later (Dietze 1913; Prout 1915) and not to the earlier (Dietze 1908) standpoints.

DIETZE wrote of four males and one female, preserved in the PÜNGELER and DIETZE collections; he mentions further specimens from DRAUDT's collection.

Examined material. 1 of (=lectotype, here designated): "Asia centr. Lob-Noor E. Mai 1904 Rückbeil sen. 4/05 v. Tancré" "Cotype mitigata Dietze of mitigata cotype K. Dietze"

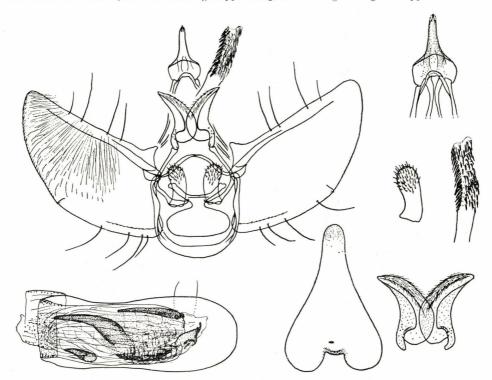


Fig. 15. Male genitalia and sternite VIII of Eupithecia mitigata DIETZE

"Zool Mus. Berlin", "gen. prep. No. Dr. A. Vojnips No. 13587 of". – Lectotype deposited in the Zoologisches Museum der Humboldt Universität, Berlin. Slide: No. 13587 (of) gen. prep. A. Vojniss.

# Eupithecia praesignata Bohatsch, 1893

Eupithecia praesignata Bohatsch (Dt. ent. Z. Iris, 1893, 6. 21–22).

Eupithecia innotata HUFN. forma praesignata Bohatsch (Dietze, K.: Biologie d. Eupithecien, 1913, 127, Pl. 29, Figs. 860, 861).

Eupithecia innotata HUFN. praesignata BOHATSCH (PROUT, L. B.: Eupithecia, in: Seitz, IV, 1915, p. 294).

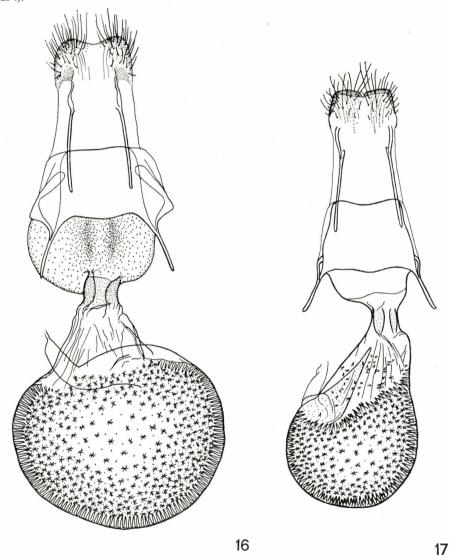


Fig. 16. Female genitalia of *Eupithecia parallelaria* Вонатscн — Fig. 17. Female genitalia of *Eupithecia praesignata* Вонатscн

Eupithecia praesignata Bohatsch (Prout, L. B.: Eupithecia, in: Seitz, Suppl. ad IV, 1934–39,p. 202). Eupithecia praesignata Bohatsch, 1893 (Viidalepp, J.: Ent. Obozr., 1978, 57: 753).

Diagnosis. As is to be seen from the description, Bohatsch assigned (1893) a darker and a ligher form to this taxon; also Dietze (1913) mentioned this circumstance. The species is represented by the darker specimens; they were the first ones mentioned by Bohatsch and they also supplied the type.

Genitalia.  $\bigcirc$ : Compared to the species of the "innotata group", the main characteristics are: valva short, ventrum slightly sinuous with alternating convex and concave stretches. Uncus long. Vinculum semicircular. Aedoeagus with even the usually larger chitinous spine also small, the smaller one quite thin. Sternite VIII wide (Fig. 18);  $\bigcirc$ : Bursa copulatrix piriform, nearly 2/3 padded with chitinous spines. Anterior and posterior apophyses rather short and thin, papillae anales angular. Ductus seminalis originating in midline of bursa, wholly different from the situation observable, for instance, in Eupithecia paupera Voinits (Fig. 17).

Biology. First stages and foodplant unknown. Flight period in July. Distribution. Occurring in Central Asia. — Locus typicus: Transalai.

Specific differences. Eupithecia paupera Vojnits appears to be the nearest relation, so that the two species are not easily distinguishable by external features alone. It is more or less the discal spot which differs in site and shape. The differences in the genitalic configurations are given above.

Remarks. Prout (1915) assumed the distinct specificity of the taxon quite early, though he first treated it as a form of *Eupithecia innotata* Hufn. Dietze (1913) thought similarly, mentioning that the systematic position will be decided by anatomical studies. Subsequently, Prout (1939) considered it unequivocally as a distinct species\*.

Examined material.  $1 \circ (= \text{lectotype}, \text{here designated})$ : "Type  $\circ (= \text{Iris 93})$  Praesignata BTSCH" "55" "Origin" "Zool. Mus. Berlin" "Gen. prep. No. Dr. A. Vojnits No. 13571  $\circ (= \text{Iris 93})$ ";

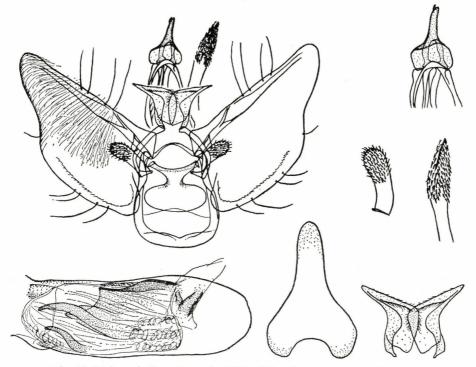


Fig. 18. Male genitalia and sternite VIII. of Eupithecia praesignata BOHATSCH

<sup>\*</sup>Prout's decision rested mainly on his,, feeling", because he himself never studied the actual specimens!

1 of (= paralectotype): "innotata, form.: praesignata Boh. Issyk-kul. In Coll. Staudegr. Typen unten sich verschieden." "Issyk Kul" "Zool. Mus. Berlin" "gen. prep. No. Dr. A. Voinits No 13545 of"; 1 ♀ (abdomen lost): "Type ♀: Iris 1893 Praesignata Btsch" "praesignata, Cotype. Die frischen Typen in der Sammlung Staudinger gehören 2 anderen Formen, nicht dieser an" "Asia Tokke [hardly decipherable]" "34" "Zool. Mus. Berlin". — The types are deposited in the Zoologisches Museum der Humboldt Universität, Berlin.

Slides Nos. 13545 ( $\sigma$ ); 13571( $\mathcal{Q}$ ), gen. prep. Á. Mészár and A. Vojnits.

# Eupithecia corroborata DIETZE, 1908

Eupithecia innotata Hufn. forma corroborata Dietze (Dt. ent. Z. Iris, 1908, 21: 170-171, Pl. 3, Figs. 5-6).

Eupithecia innotata Hufn. forma corroborata Dietze (Biologie d. Eupithecien, 1913, p. 127, Pl. 75, Figs. 483, 484).

Eupithecia innotata Hufn. corroborata Dietze (Prout, L. B.: Eupithecia, in: Seitz, 1915, IV, p. 294). Eupithecia nanata Hübner (?) corroborata Dietze, (Prout, L. B.: Eupithecia, in: Seitz, Suppl. ad IV, 1934–39, p. 201).

Eupithecia corroborata DIETZE (VIIDALEPP, J.: Ént. Obozr., 1978, 57: 755).

D i a g n o s i s. As in Dietze (1908) with the remark that the biggest female species of also the lightest pattern is rather deviating from the other specimens of the type-series.

Genitalia. ♂: Largely resembling those of *Eupithecia mitigata* Dietze, but valvae narrower, and shape of sternite VIII also somewhat different (Fig. 19); ♀: Bursa copulatrix more or less elongate, about its half densely padded with minute chitinous spines; some spines in a discrete patch, removed from the contigous field of spines, in anterior half of bursa. Anterior apophyses short, posterior ones very short. Cross-section of papillae anales a right-angled triangle (Fig. 21).

B i o l o g y. First stages and foodplant unknown. Flight period in June and July.

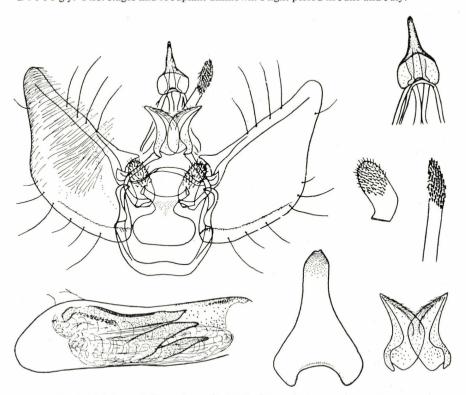


Fig. 19. Male genitalia and sternite VIII of Eupithecia corroborata DIETZE

Distribution. Occurring in Central Asia. - Locus typicus: Djarkent.

Specific differences. A large-sized form with a conspicuously marked pattern, thereby externally highly different from Eupithecia mitigate Dietzte to which it would stand nearest as regards similarities of the genitalic structure.

Remarks. Already DIETZE (1908) considered it important to emphasize its "robust" stature; however, this characteristic is only partially true, because there are just as large, and even bigger, species in the "innotata group". The pattern is striking indeed.

Slides: Nos. 13543 ( $\circlearrowleft$ ); 13439, 13540, 13541, 13542, ( $\circlearrowleft$   $\circlearrowleft$ ), gen. prep. Á. Mészár and A. Vojnits.

#### Eupithecia omniparens DIETZE, 1908

Eupithecia innotata HUFN. forma omniparens DIETZE, (Dt. ent. Z. Iris, 1908, 21: 171, Pl. III, Figs-9, 10).

Eupithecia innotata Hufn. forma omniparens Dietze (Biologie d. Eupithecien, 1913, p. 127. Pl. 75, Figs. 518, 519).

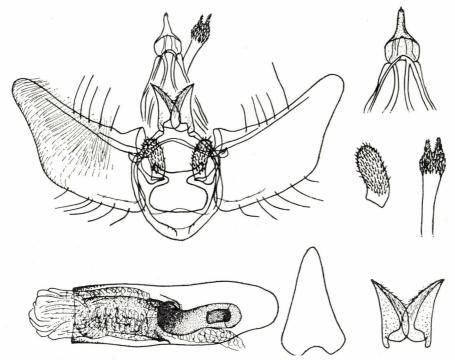


Fig. 20. Male genitalia and sternite VIII of Eupithecia omniparens DIETZE

Eupithecia innotata Hufn. omniparens Dietze (Prout, L. B.: Eupithecia, in: Seitz IV, 1915, p. 294). Eupithecia omniparens Dietze (Viidalepp, J.: Ént. Obozr., 1978, 57: 755).

Diagnosis. With regard to the original (Dietze 1908) and later (Dietze 1913) descriptions,

the definite grey colour of the form should yet be emphasized.

Genitalia of: Extraordinarily similar to those of *E. praesignata* Bohatsch, but uncus slenderer, valva longer; aedoagus considerably longer (Fig. 20); ♀: rathy varying, but also similar to those of *E. praesignata* Bohatsch (Fig. 22).

Biology, First stages and foodplant unknown, Flight period, according to the known labal

data, in May-July.

Distribution. Occurring in Central Asia. - Locus typicus: Sary-ob.

Specific differences. Nearest *Eupithecia praesignata* Bohatsch, but, as regards the main external features, *praesignata* is definitely brownish, omniparens grey. The genitalia are similar in type, and the chief differences appear in details of configuration.

Remarks. Both in his earlier (1908) and later (1913) publications, DIETZE described the taxon as a strikingly large form; though unquestionably big, there still occur similarly large or even larger forms, too. PROUT (1915) was of the same opinion, and both DIETZE and PROUT considered it as

a form "approaching" Eupithecia parallelaria Вонатьсн.

Examined Markett Potathata Bothston.

Examined Markett Potathata Bothston.

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Slides: Nos. 13552 ( $\bigcirc$ 7); 13.550, 13.551, 13.552, 13.553, 13.573, 13.582 ( $\bigcirc$ 9); gen. prep. Á. Mé-

szár and A. Vojnits.

#### Eupithecia ochridata Pinker, 1968 (nec Pinker at Schütze, 1968)

Eupithecia ochridata Pinker et Schütze\* (Geometridae, in: Die Lepidopterenfauna Mazedoniens, 1968, p. 17–18).

Eupithecia szelenyii Vojnits, 1969 (Acta zool. hung., 15: 463–466, Figs. 1–3).

R e m a r k s. The majority of specimens now under study bear the label "grisescens", one is labelled "uliata".\* Petersen, who described (1909) the form "grisescens", examined 15 Eupithecia innotata Hufn. specimens, 10 of them originating from Estland where "grisescens" allegedly occurs. And since he made no allusion to the dentiform projection of the valva — indeed, he stated that "Valva ohne Auszeichnung"— the name, disregarding a nomenclatorial availability, evidently cannot refer to a form with such a valva.

The Asiatic *E. ochridata* PINKER is, incidentally, brownish and not bluish grey like PETERSEN's *grisescens*. The wings are less elongate than those of most Asiatic species of the "*innotata* group". Externally, it seems to stand nearest, among the Central Asiatic species, to *Eupithecia corroborata* DIETZE, but the genitalia of both the male (Fig. 24) and the female (Fig. 23) distinctly differ.

Examined material. 1 %: "(Amur) e. 1. Tyrtyn [hardly decipherable]" "Zool. Mus. Berlin" "gen. prep. No. Dr. A. Vojnits." 13531 %"; 1 %: "imnotata Hufn. form. grisescens Uralsk." "Uralsk 10. V. 07 % Max Bartel" "Zool. Mus. Berlin" "gen. prep. No. Dr. A. Vojnits No. 13527 %"; 1 %: "Uralsk 10. V. 07 % Max Bartel" "Zool. Mus. Berlin" "Grisescens" "gen. prep. No. Dr. A. Vojnits No. 13528 %"; 1 %: "Tibet (Kuku-Noor) Rückbeil 1898 innotata ab. % nach Bohatsch 3.01 4/00 v. Tancré" "zwischen innot. var. unedonata (Dietze 2.06)" "Zool. Mus. Berlin" "Gen. prep. No. Dr. A. Vojnits No. 13589 %"; "uliata Stgr"; 1 \$\nabla: \text{"Amur (Tancré) e. 1. April 1910". "Zool. Mus. Berlin" "grisescens" "Gen. prep. Dr. A. Vojnits No. 13530 \$\nabla"; \text{"Uralsk} "Uralsk

<sup>\*</sup>The taxa "grisescens Petersen", "uliata Staudinger", "kozhantschikowi Wehrli", and "alexandrina Wardikjan" will be discussed in a future paper.

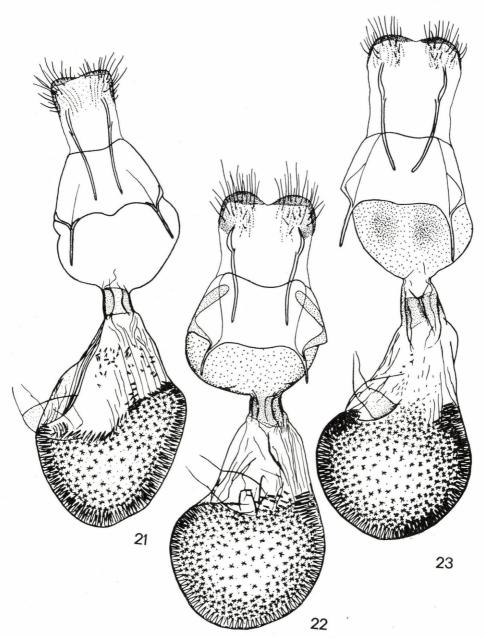


Fig. 21. Female genitalia of *Eupithecia corroborata* Dietze — Fig. 22. Female genitalia of *Eupithecia omniparens* Dietze — Fig. 23. Female genitalia of *Eupithecia ochridata* Pinker

10. V. 07  $\ \$  Max Bartel'' "Zool. Mus. Berlin" "grisescens" "gen. prep. No. Dr. A. Vojnits No. 13529  $\ \$  "; 1  $\ \$  : "Uralsk" "415." "Zool. Mus. Berlin" "grisescens" "gen. prep. No. Dr. A. Vojnits No. 13532  $\ \ \$  " ."

Slides: Nos. 13.527, 13528, 13531, 13589 ( $\bigcirc^{r}\bigcirc^{r}$ ); 13529, 13530, 1353 2( $\bigcirc$   $\bigcirc$ ), gen. prep. Á.

Mészár and A. Vojnits.

\* \* \*

Acknowledgements—In the course of my study I worked up the material and type-specimens of several collections; for making them available I am indebted to Dr. H. J. Hannemann, keeper of the Lepidoptera of the Museum in Berlin, to Dr. R. U. Roessler, at that time keeper of Lepidoptera, Koenig Museum, Bonn, to Dr. W. Forster, at that time Director of the Museum in München. I am especially grateful to the Alexander von Humboldt Foundation for the stipend making my studies possible in these Museums.

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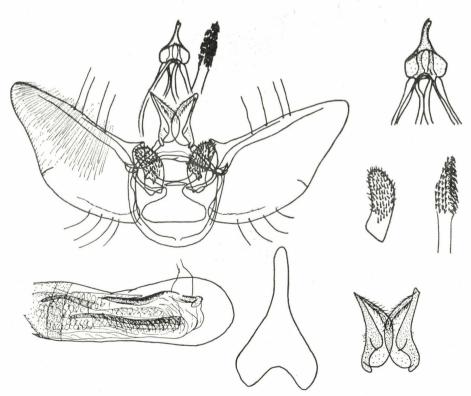


Fig. 24. Male genitalia and sternite VIII of Eupithecia ochridata PINKER

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