

New Taxa in the *Eupithecia haworthiata*-Group (Lepidoptera:
Geometridae)
(Studies on Palaearctic *Eupithecia* Species I.)

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The majority of the species constituting the extensive genus *Eupithecia* hardly differ from one another in the external morphological characters. For the identification of these species, almost every specimen should be dissected and the genital configuration studied. Differences in the structure of the reproductive organs make possible the determination of even the otherwise hardly identifiable species. PETERSEN (1909) wrote with right that "... die Arten der Gattung *Eupithecia* sich in der bei weitem grössten Zahl der Fälle nach den Formverschiedenheiten des Sexualapparates beim Männchen sowohl wie beim Weibchen mit voller Sicherheit unterscheiden lassen". He later found, however, that the above statement will refer to the males rather than to the females ("... sind die spezifischen Charaktere des Sexualapparates bei den Männchen stärker ausgeprägt, als bei den Weibchen"), although there exist also exceptions ("doch finden sich hier auch Ausnahmen"). He inferred from this—in my view incorrect—estimation the conclusion that "... in der Gattung *Eupithecia* bei der Artdivergenz der Regel nach das Männchen vorgeht". He designated the peculiar phylogenetical trend as "männliche Praeponderanz".

A similar differentiation is often encountered in zoological—systematical literature, even without a theoretical substantiation. Authors establishing a new taxon by basing it on the diagnosis of "only" the female sex are often severely criticised, but there are few examples of the opposite case, as witnessed by the designation in the majority of cases of a male specimen as the holotype.

It is not within the scope of the present paper to discuss this problem, though I should like to point out at least so much that we are confronted here with a methodical process fixed as usage, occasionally appearing as a theory but originating from mere practice. And the systematics of the genus *Eupithecia* is an excellent example of showing that there may be lepidopterous groups wherein it is the study of the female reproductive apparatus which yields taxonomic results. The male genital organ of species removed from one another do show striking differences, but it is not the delimitation of these species which is problematic for the taxonomist. The male organs of nearly related and highly similar species constituting specific groups are frequently corresponding to each other, or exhibit several transitions between the meagre differences. On the other hand, the female apparatuses display well expressed and constant differences. As emphasized also by КОСН (1961): "neuerdings erstrecken sich die Untersuchungen teilweise auch die Genitalien der Weibchen, die bei manchen Gruppen (viele Zygaeniden und Geometriden) günstige Unterscheidungsmerkmale bieten". This is the situation in the taxa constituting also the species-group discussed hereunder.

In the discussion of the new forms, I propose to point out the differences extant between them and the species *Eupithecia haworthiata* DBL.

Eupithecia gozmanyi sp. n.

Measurements. Both sexes of the new species are slightly bigger than those of *E. haworthiata* DBL. Alar expanse of fore wings: Males (based on 7 specimens) 16.2 mm, extreme values 14–17 mm—Females (based on 5 specimens) 15.6 mm, extreme values 15–16.5 mm.

Shape. The wings, especially the hind wings, are less rounded than in *E. haworthiata* DBL.

Colour and pattern. Highly similar to *E. haworthiata* DBL. Antennae darkly ringed, palpi dark, slightly longer than diameter of eyes. Basic colour of wings brownish grey, striae of fore wings strongly marked and densely arranged, median dot

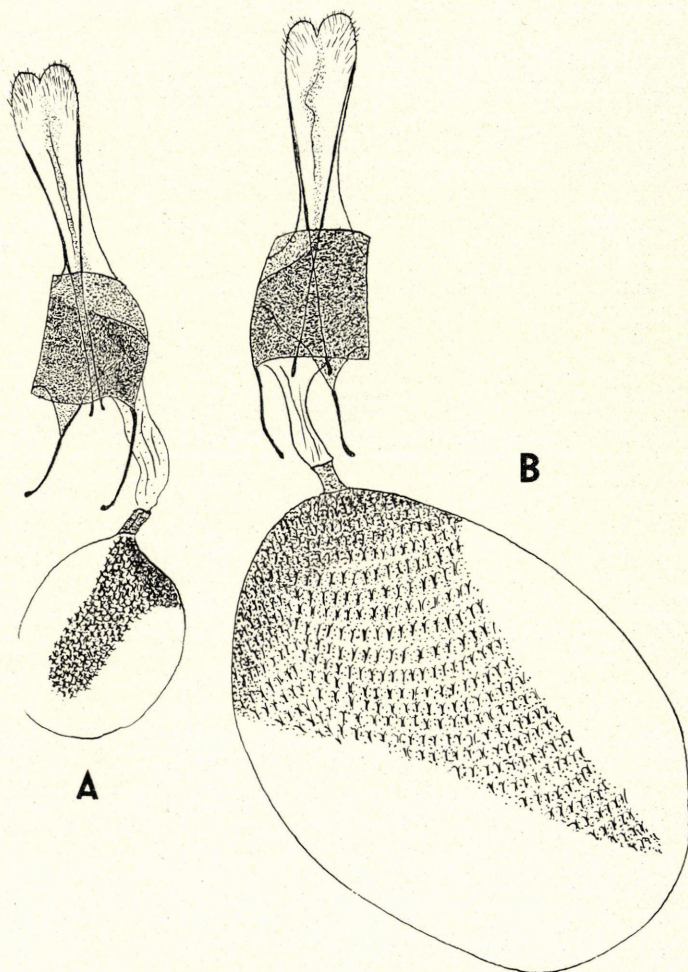


Fig. 1.: Female genital organ of A: *Eupithecia haworthiata* DBL., (slide No. 526, VOJNITS) and B: *E. gozmanyi* sp. n. (slide No. 547, VOJNITS).

absent. Thorax and anterior portion of abdomen without orange spot (an important characteristic of *E. haworthiata* DBL.).

Genital organs. The configuration of the male genital organ shows hardly any, while that of the female exhibits definite, specific features.

Males. Basically corresponding to that of *E. haworthiata* DBL. vinculum wide, medially impressed, valvae elongate, uncus small, aedoeagus small, slightly

clavate. However, the valvae of *E. haworthiata* DBL. are shaped like an orange-slice, the margins of the new species are nearly parallel and hardly arcuate.

Females. Bursa copulatrix strikingly characteristic by its flatly elliptic shape and the minute spines arranged into a broad zone. Even the naked eye can differentiate between the female genital organs of *E. haworthiata* DBL. (Fig. 1A) and *E. gozmanyi* sp. n. (Fig. 1B); the bursa copulatrix of this latter one being 2.5–3 times larger.

Phenology. Whereas *E. haworthiata* DBL. flies in May–June, in colder situations also in July, all exemplars of the new species had been collected in the first half of July.

Range. Specimens are only known from Bulgaria. The Far East exemplars which should, on the basis of the genital structure, belong to this species, differ in their external habit and thus represent a geographic subspecies (described below).

Holotype female: "Bulgaria c., Stanimaka, 1–10. VII. 39, E. PFEIFFER, München leg.", deposited in the Zoologisches Forschungsinstitut und Museum A. Koenig, Bonn.

Paratypes: 7 males and 4 females: "Bulgaria c., Stanimaka, 1–10. VII. 39, E. PFEIFFER München leg.", deposited in the above institute and the Zoological Department of the Hungarian Natural History Museum, Budapest.

Eupithecia gozmanyi ussuri ssp. n.

Measurements. A form even bigger than the nominate one, and with greater fluctuations also in its dimensions. Females (based on 6 specimens) 16.4 mm, extreme values 13.5–17.5 mm.

Shape. Wings, especially hind wings, somewhat wider.

Colour and pattern. Antennae lighter, palpi black and hardly or not reaching diameter of eyes. Basic colour of wings dark grey, brownish tinge hardly apparent. Pattern marked, transverse fasciae expressed not only on fore but also on hind wings, their enclosed lighter bands standing out sharply from basic colour; the minute, rounded, black median dot obscure in one specimen only, but conspicuous in all other exemplars, and also on the underside of the wings. Thorax and abdomen dark grey, without any trace of a lighter spot.

Genital organs. The configuration of the male reproductive organ is unknown, that of the female is identical with the female apparatus of *E. gozmanyi* sp. n.

Phenology. Only three specimens bear label data referring to the time of capture. According to these, the exemplars representing the new subspecific taxon fly rather late, in August.

Owing to the identical configuration of the genital organs and the strongly marked difference in the external features, this Far East form is to be regarded as a subspecies evolved by isolation from the nominate form.

Range. With one exception, all available specimens were caught in the Ussuri area; one exemplar was captured considerably further southward, near Shanghai, China.

Holotype female: "Sutschanski-Rudnik, Wladiwostok occ., Ussuri, August.", deposited in the Zoologisches Forschungsinstitut und Museum A. Koenig, Bonn.

Paratypes: 2 females: "Sutschanski-Rudnik, Wladiwostok occ., Ussuri, August."; 1 female: "Sutschanski-Rudnik, Ussuri"; 1 female: "Sutchan, Ussuri"; female: "Shanghai, China", deposited in the above institute and in the Zoological Department of the Hungarian Natural History Museum, Budapest.

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