

## Hungarian Eupitheciini studies (No. 2) Records from Nattán's collection (Lepidoptera: Geometridae)

Imre Fazekas

**Abstract:** Data on 37 species collected in Hungary are given. Additional data on faunistics, taxonomy and zoogeography of certain species are provided by the author, with comments. Figures of the genitalia of some species are included. With 18 figures.

**Key words:** Lepidoptera, Geometridae, Eupitheciini, distribution, biology, Hungary.

**Author's address:** Imre Fazekas, Regiograf Institute, Majális tér 17/A, H-7300 Komló, Hungary.

### Introduction

A detailed account of the Eupitheciini species in Hungary has been given in five previous works (Fazekas 1977ab, 1979ab, 1980, 2012). To date 64 Hungarian Geometridae, tribus Eupitheciini are known.

Present paper contains faunistical data of the Eupitheciini specimens in the Nattán collection (in coll. Janus Pannonius Museum, H-Pécs) that collected outside of the South Transdanubia.

Miklós Nattán (1910–1970) was an amateur lepidopterist who, over nearly six decades, made one of the most significant private collections of Lepidoptera in Hungary. Most of his work was done in this country, but he also collected in France, the Carpathian Mountains in Romania and the Crimean Peninsula.

The present paper is the third about records in the M. Nattán collection. Earlier reports have been on species of Eupitheciini (Fazekas 1977a, b), and on the species of Crambinae and Schoenobiinae (Fazekas 1986). In the present paper, faunistical data on 37 species of Eupitheciini are given.

### Material and methods

Standard techniques of genitalia preparation were used. The abdomen was removed and boiled in

20% KOH solution. Genitalia were cleaned and dehydrated in ethanol and mounted in Euparal between microscope slides and cover slips. Illustrations of adults were produced by a multi-layer technique using a Sony DSC HX100V with a 4x Macro Conversion Lens. The photographs were processed by the software Photoshop CS3 version. The genitalia illustrations were produced in a similar manner with multi-layer technique, using another digital camera (BMS tCam 3,0 MP) and a XSP-151-T-LED Microscope with a plan lens 4/0.1 and 10/0.25. Distribution maps of the species show the hypothetical resident distribution area (grey), combined with localities from which specimens have been examined (black dots). Original data from electronic database of Excel in the Regiograf Institute (Biological Dept.) [H-Komló].

### Systematics

*Gymnoscelis rufifasciata* (Haworth, 1809)

(= *pumilata* Hübner, 1813)

Material: Budapest, Húvös-völgy; Szilvásvárád.

*Chloroclystis v-ata* (Haworth, 1809)

(= *coronata* Hübner, 1813)

Material: Sopron.

*Pasiphila rectangulata* (Linnaeus, 1758)

Material: Mátraszentlászló, Fót.

*Pasiphila debiliata* (Hübner, 1817)

Material: Sopron.

*Eupithecia haworthiata* Doubleday, 1865

Material: Mátra Mts: Kékes, Parád; Sopron.

*Eupithecia tenuiata* (Hübner, 1813)

Material: Bükk Mts: Szilvássvár. In the Bükk mountains very local: Belpátfalva, Cserépfalu, Miskolc, Nagyvisnyó, Répáshuta. According to Vojnits (1993), only single occurrences of this species are known. Found in larger numbers during the last decades, presumably associated with the expansion of *Salix caprea* L.

*Eupithecia inturbata* (Hübner, 1617)

(Figs 1, 2, 17)

Material: Balatonföldvár. Literary data on Hungary: Bakony Mountains; Királyszállás, Ráktanya (Fazekas 1980), Bükk Mountains: Belpátfalva, Cserépfalu, Eger (Almár), Felsőtárkány (Vojnits 1993), Mecsek Mountains; Mánfa, Hosszúhetény-Püspökszentlászló (Fazekas 1979c, 2006), Rezi (Ábrahám et al. 2007), Velence Mountains and Lake Velence; Agárd, Nadap, Pákozd, Pátka, Sukoró (Petrich 2001), Bátorliget (Kovács 1953a), Ropolypusztá (Uherkovich 1981). By Lajos Kovács (manuscript of light-trap, in coll. Regiograf Intézet, Komló): Baj, Budakeszi, Budatétény, Kálólósemlén, Makkoshotyka, Mátraháza, Várgesztes.

According to Vojnits (1993) associated strictly with *Acer campestre* L., occurring mainly in larger stands of old trees in protected and warm sites in Bükk Mountains.

Remarks: Mironov (2003, p. 79) gave an incomplete and incorrect map of the Hungarian distribution of this species. A corrected version is given here (Fig. 17).

*Eupithecia linariata* (Denis & Schiffermüller, 1775)

Material: Mátra Mts: Galya-tető, Mátraháza.

*Eupithecia pyreneata* Mabile, 1871

Material: Budapest, Fót; Mátra Mts: Galya-tető, Kékes, Mátraháza. The old Hungarian data on *Eupithecia pulchellata* in the literature most probably refer to misidentified specimens of *E. pyreneata*. *E. pulchellata* is said to be a western European species which does not occur in Hungary (Mironov 2003).

Reports of isolated populations in Balaton region await confirmation (Kovács 1953b).

*Eupithecia venosata* (Fabricius, 1787)

Material: Mátra Mts: Galya-tető, Mátraháza.

*Eupithecia dodoneata* Guenée, 1858

Material: Balatonföldvár, Pomáz (Kő-hegy).

*Eupithecia pusillata* (Denis & Schiffermüller, 1775) (= *sobrinata* Hübner, 1817)

Material: Nagybajom, Peszér.

*Eupithecia tripunctaria* Herrich-Schäffer, 1852

Material: Hetes.

*Eupithecia virgaureata* Doubleday, 1861

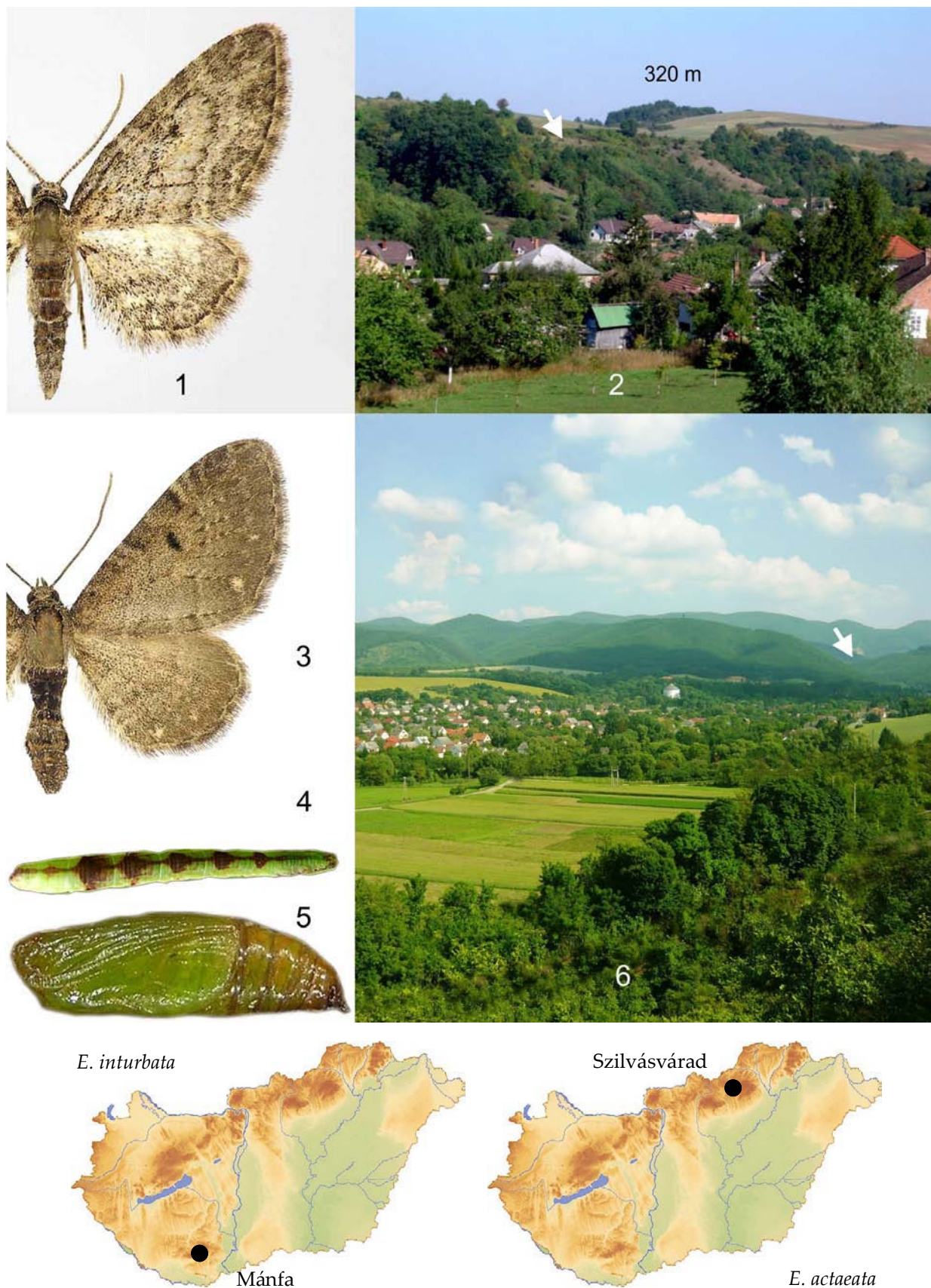
Material: Mátra Mts: Kékes, Szilvássvár.

*Eupithecia actaeata* Walderdorff, 1869

(Figs 3, 4, 5, 6, 13, 14)

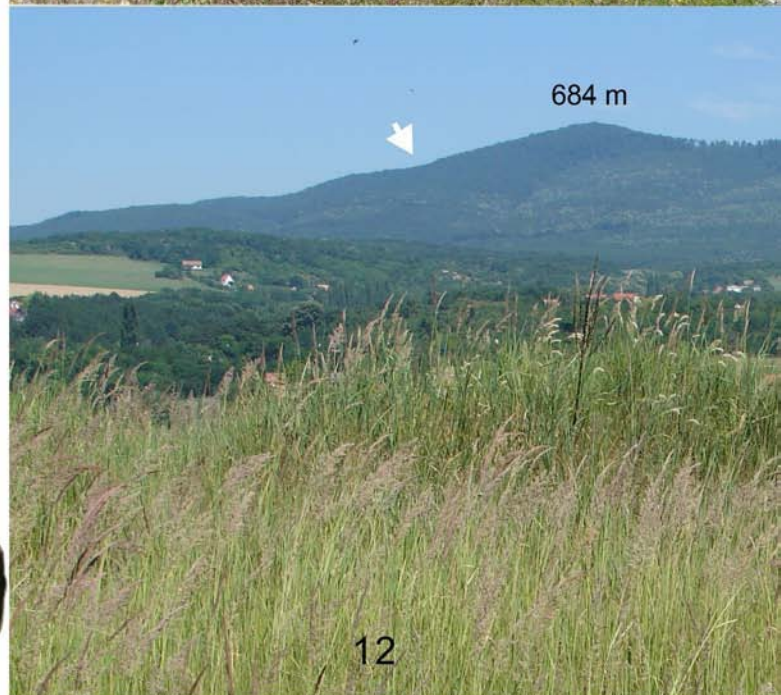
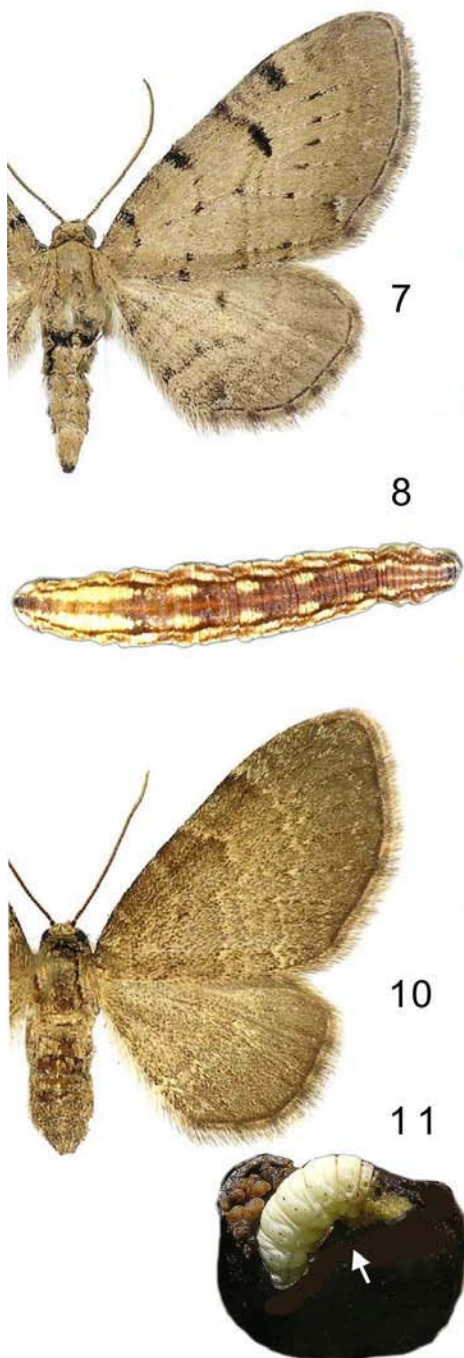
Material: Szilvássvár (gen. prep. Fazekas, No. E-517). It has only very old records from the vicinity of Budapest (see Fazekas 1977). Previous published records from Budapest were considered doubtful by Kovács (1953b, 1958) who deleted the species from the Hungarian *Eupithecia* fauna. The first confirmed Hungarian records were published by Fazekas (1977) and Gyulai, Vojnits (1977) from the Bükk Mountains: Jávorkút (660 m), Máriatorrás (685 m), Szilvássvár. According to Varga (1989, 2010) known in Mátra Mountains. Confirmed records from Hungary are known only from the Bükk Mountains. The species is reported from the Hungarian Red Data Book from Mátra Mountains, but the present author has not seen any voucher specimen.

Present distribution is weakly known, but it is surely one of our rarest eupitheciids. The species is protected in Hungary from 2012 and is in the Hungarian Red Data Book. Larva found on *Actaea spicata* L. and *Thalictrum aquilegiifolium* L. (Forster & Wohlfahrt 1981, Weigt 1990). According to Varga (1989) and Erlacher et al. (2008) the species is monophagous on *Actaea spicata*. Larva oligophagous or disjunct polyphagous in Europe. Preferred host plants: *Actaea spicata* L., *Thalictrum aquilegiifolium* L., *T. flavum* L. and *Viburnum opulus* L. All these plants are widely distributed in Hungary but even so the moth is very rare and local,

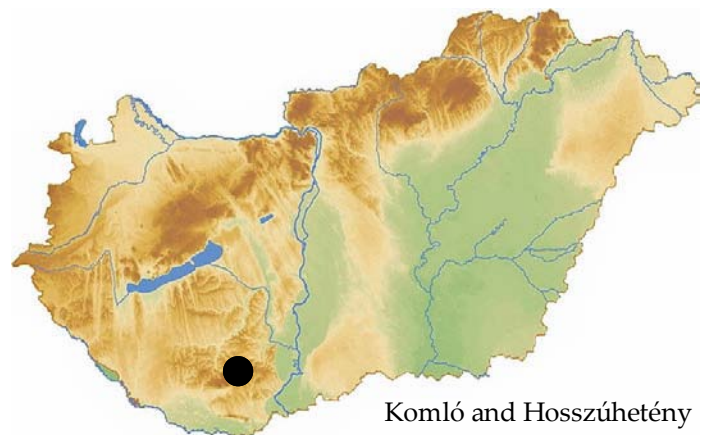


**Figs 1–6.** Adults, larva, pupa and habitats of *Eupithecia* spp.: – *E. inturbata*, adult (1), habitat in Mecsek Mountains at Mánfa (2); – *E. actaeata*, adult (3) larva (4), pupa (5), habitat in Bükk Mountains at Szilvásvár (6).

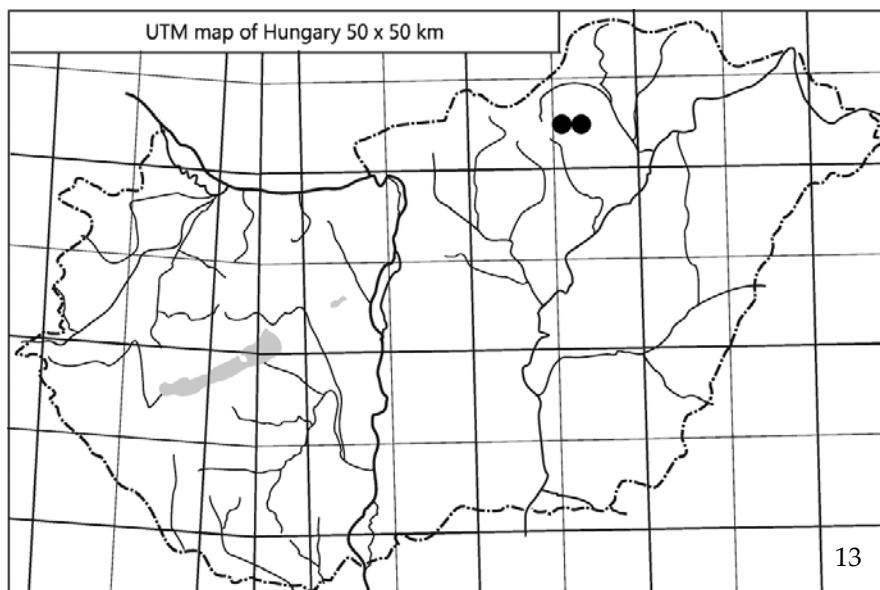




**Figs 7–12.** Adults, larva, pupa and habitats of *Eupithecia* spp.: – *E. expallidata*, adult (7), larva (8), habitat in Mecsek Mountains near Komló (9); – *E. immundata*, adult (10), larva (11), habitat at Hosszúhetény-Püspökszettelászló behind the Zengő Mount, 682 m (12).



Komló and Hosszúhetény



**Fig. 13.** Distribution of *Eupithecia actaeata* observations in Hungary (Bükk Mountains)

for reasons unknown. According to Erlacher et al. (2008) in Germany „*E. actaeata* ist stenök und stellt sehr hohe Ansprüche an Standortfaktoren und Kleinklima“.

Remarks: There are no confirmed specimens from Hungary in the collection of the Hungarian Natural History Museum. *E. actaeata* is a protected species in Hungary, the cash value of each specimen is 10 000 HUF on the basis of the 100/2012. (IX.28.) Decree of the Ministry of Rural Development. Mironov (2003, p. 175) published a map of the European distribution of this species, but it is quite slipshod for Hungary. An updated map for Hungary is given here.

***Eupithecia pimpinellata*** (Hübner, 1813)

Material: Szilvásvárad.

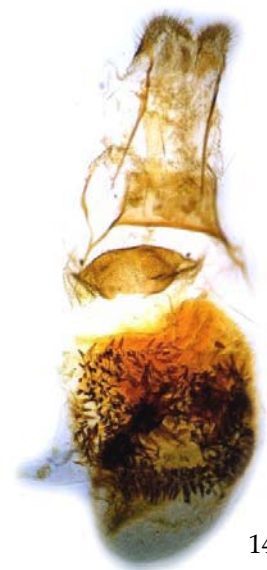
***Eupithecia simpliciatata*** (Haworth, 1809)

(= *subnotata* Hübner, 1813)

Material: Budapest.

***Eupithecia innotata*** (Hufnagel, 1767)

Material: Budapest. The specimen in the collection was originally given as *Eupithecia unedonata* Mabille, 1868. Records of several Hungarian specimens are based on misidentification or erroneous or unreliable locality data. Specimens reported as *E. unedonata*, from the Szécsény (North Hungarian



**Fig. 14.** Female genitalia of *Eupithecia actaeata*, Bükk Mts, Szilvásvárad, 13.08.1964, leg. M. Nattán (gen. prep. Fazekas, No. E-517)

Mountains) were misidentified (Vojnits 1973) and are *E. innotata* (Hufnagel, 1767). It is not known whether genital-preparations of these specimens have been made. The genitalia of both sexes of *E. unedonata* are very similar to those of other species of the *E. innotata* group. All closely examined Hungarian specimens have been determined as *E. innotata*. Therefore *E. unedonata* has to be removed from the fauna list of Hungary (Fazekas 2012).

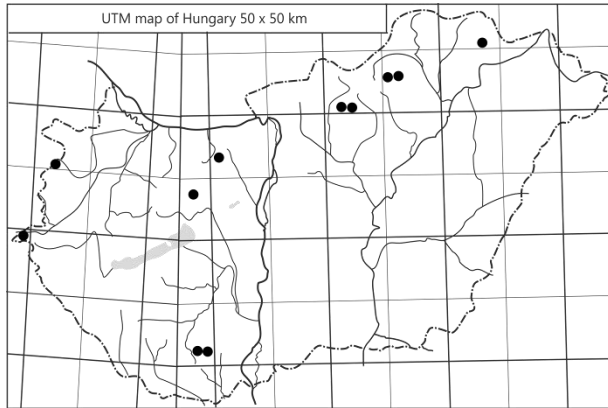
***Eupithecia graphata*** (Treitschke, 1828)

(Fig. 18)

Material: Budapest (Odvas-hegy), Budakeszi, Pilisvörösvár. *E. graphata* is a protected species in Hungary, the cash value of each specimen is 5 000 HUF on the basis of the 100/2012. (IX.28.) Decree of the Ministry of Rural Development. The species rare and very local in Hungary; it is characteristic of the open, short-grass dolomitic plateaux and slopes of the Hungarian Middle Mountains. The larvae are monophagous on the protected *Jurinea mollis* (L.) Rchb. The distributional map shown for Hungary is very deficient (see Mironov 2003, p. 207). A corrected and updated map for Hungary is presented here (Fig. 18).

***Eupithecia extraversaria*** Herrich-Schäffer, 1852

Material: Mátra Mts: Kékes, Sopron.



**Fig. 15.** Distribution of *Eupithecia expallidata* observations in Hungary

*Eupithecia gueneata* Millière, 1862  
Material: Budapest, Budakeszi.

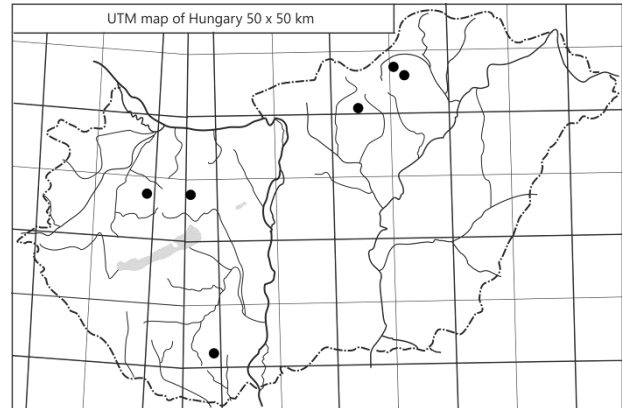
*Eupithecia satyrata* (Hübner, 1813)  
Material: Mátra Mts: Galya-tető, Kékes.

*Eupithecia absinthiata* (Clerck, 1759)  
Material: Ócsa.

*Eupithecia expallidata* Doubleday, 1856  
(Figs 7, 8, 9, 15)  
Material: Szilvásvár. The Hungarian distribution of this species is discussed in detail by Fazekas (2006, 2012). Because of earlier taxonomical problems, the exact geographical distribution of the *E. expallidata* / *absinthiata* species pair is only partially known in Hungary. *E. expallidata* appears to be restricted to very isolated colline and mountain populations e.g. in Mecsek Mountains, Bakony Mountains, West Hungarian Borderland, Mátra Mountains and Bükk Mountains, and is absent from the rest of the Great Hungarian Plain and Little Plain. In early 1960 Lajos Kovács (1900–1971) found some specimens in Mátraháza and Makkoshotyka. After his death I read the data on a tag, in Lajos Kovács's diary.

The distribution area of the species is static or perhaps regressive. *E. expallidata* is a k-strategist, adapted to constant environmental conditions. Conservation status in Hungary: species known only in nature reserves, vulnerable and gene flow is uncertain.

**Biology:** The larva and host plant preferences in Hungary are unknown. The preferred habitat types in this country are colline and montane wet degraded grasslands, mesophilous woodland fringes, pannonic oak-hornbeam woodlands, il-



**Fig. 16.** Distribution of *Eupithecia immundata* observations in Hungary

lyrian beech and oak-hornbeam woodlands, pannonic neutral colline and montane beech woodlands. In Hungary mainly silvicolous, meso- to hygrophilous. Moths have been collected from May to August in Hungary, and the populations are probably bivoltine.

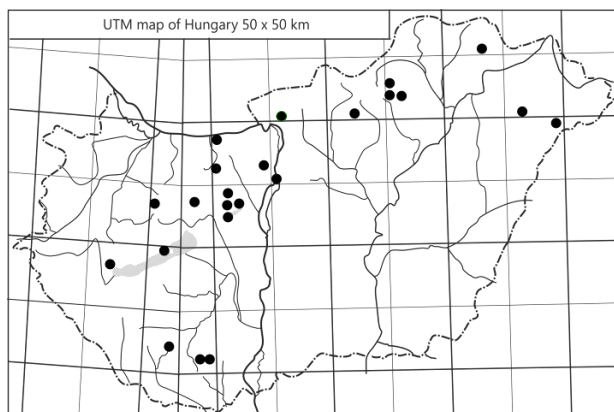
**Remarks:** According to Mironov (2003) this species is known only in North Hungarian Mountains (see in map; p. 282), but his distribution map for Hungary is very incomplete, and he gives no mention of many previous Hungarian publications: Fazekas 1978, 1977, 1979, 1980. Breeding populations were discovered in seven places between 1955 and 1975, although we have no more recent reports. The identity of the specimens and their collectors are authentic, and voucher specimens are preserved in the Hungarian collections.

*Eupithecia assimilata* Doubleday, 1856  
Material: Mátra Mts: Kékes.

*Eupithecia vulgata* (Haworth, 1809)  
Material: Budapest (Hűvös-völgy), Mátra Mts: Galya-tető, Mátraháza.

*Eupithecia immudata* (Lienig & Zeller, 1846)  
(Figs 10, 11, 12, 16)  
Material: Mátra Mts: Galya-tető, Kékes. Literary data on Hungary: Bakony Mountains; Far- kasgyepű, Szömörke-völgy (Fazekas 1980), Mátra Mountains; Kékes (Fazekas 1979), Bükk Mountains: Mályinka, Nagyvisnyó, Répáshuat (Vojnits 1993), Mecsek Mountains; Hosszúhetény–Püspökszentlászló (Fazekas 1977, 2006). Unfortunately, the maps given by Mironov (2003) for Hungary are markedly incomplete, and must be updated.





**Fig. 17.** Distribution of *Eupithecia inturbata* observations in Hungary

*Eupithecia denotata* (Hübner, 1813)

Material: Mátra Mts: Kékes, Mátrafüred.

*Eupithecia pauxillaria* Boisduval, 1840

(= *euphrasiata* Herrich-Schäffer, 1861)

Material: Budapest, Budakeszi.

*Eupithecia millefoliata* Rössler, 1866

Material: Mátra Mts: Kékes.

*Eupithecia icterata* (De Villiers, 1789)

Material: Mátra Mts: Kékes.

*Eupithecia succenturiata* (Linnaeus, 1758)

Material: Hetes.

*Eupithecia semigraphata* Bruand, 1851

Material: "Bükk-hegység".

*Eupithecia impurata* (Hübner, 1813)

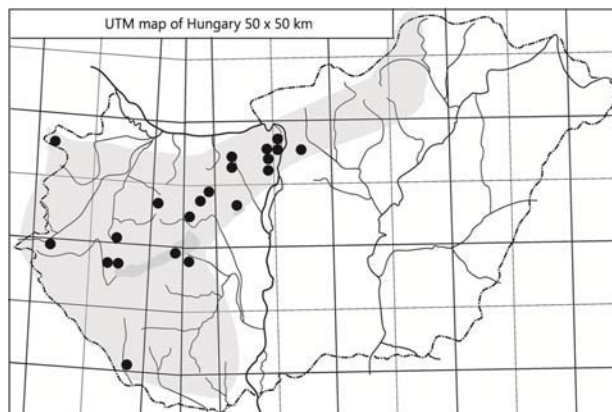
Material: Budapest (Odvas-hegy).

*Eupithecia denticulata* (Treitschke, 1828)

Material: "Budapest", Szilvásvárad. A very rare and local eupitheciid species in Hungary, and known for a long time only near Budapest. Recently, more populations have been discovered in a few calcareous and volcanic rocky places in North Hungarian Mountains.

*Eupithecia orphnata* Petersen, 1909

Material: "Budapest". This species widely distributed in Hungary. The map given by Mironov (2003, p. 333) is very incomplete work from Hungary.



**Fig. 18.** Distribution of *Eupithecia graphata* observations in Hungary

*Eupithecia subfuscata* (Haworth, 1809)

(= *castigata* Hübner, 1813)

Material: Budapest, Mátra Mts: Galya-tető, Kékes, Mátraszentlászló.

**Acknowledgements:** I thank Zs. Bálint and G. Katona (Hung. Nat. Hist. Mus., Budapest) and F. Buschmann (Jász Museum, H-Jászberény) for the information on the geographical distribution of the species. I am grateful to my colleague B. Goater (GB-Chandlers Ford) for the correction of my English.

**Összefoglalás:** A korábbi években a szerző részleges revíziót végzett a pécsi múzeumban elhelyezett Nattányúgytemény Eupitheciini anyagában. Jelen munkájában összesíti a genitália vizsgálatokra alapozott faj azonosításokat. Közli több faj előzetes magyarországi elterjedési térképét, s megállapítja, hogy Mironov (2003) hazánkat is érintő area térképei többnyire hibás ábrázolások, teljes felülvizsgálatra szorulnak. A tanulmány bővebben foglalkozik az *Eupithecia inturbata*, *E. actaeata*, *E. graphata* és az *E. expallidata* fajok bionómiájával és magyarországi elterjedésével. Az *Eupithecia actaeata*-t a szerző mutatta ki először Magyarországról.

Mivel Magyarországon a Fauna Hungariae könyvsorozatban nem készült el az Eupitheciini füzet, a szerző – több kutató bevonásával – megkezdte egy önálló, a magyar fajokat bemutató kötet előkészületeit.

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