

***Eucrostes indigenata* in the collection of  
the Hungarian Natural History Museum  
(Lepidoptera: Geometridae)**

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**Abstract** – Altogether 103 specimens of *Eucrostes indigenata* (Villers, 1789) (Lepidoptera: Geometridae: Geometrinae: Comostolini) are deposited in the Hungarian Natural History Museum. The species was found in the Carpathian Basin in 1895 for the first time, and the latest record dates back to 1974. Although the first record from Grebenac (Serbia) was mentioned in several references around the turn of the 19th and 20th centuries, apparently it was forgotten later, and it was neglected by most authors of the recent decades. The voucher specimen of the first Hungarian record is illustrated. A case of mislabelling in Imre Frivaldszky's collection is documented. The first record of the species from the Dodecanese Islands (Rhodes), Greece, is presented.

**Key words** – dispersal, Frivaldszky collection, Greece, mislabelling, new record, Serbia

## INTRODUCTION

The geometrid moth *Eucrostes indigenata* (Villers, 1789) (Lepidoptera: Geometridae: Geometrinae: Comostolini) (type locality: “In antico Rhodani alveo vulgo le Content” (VILLERS 1789) [= “old Rhône valley near Lyon”] (HAUSMANN 2001)), is a Holo-Mediterranean species, distributed along the coasts of the Mediterranean Sea and some inlands of the Iberian and Balkan Peninsulas, as well as in the Carpathian Basin. Populations of the latter area represent the northernmost occurrence of the species, apparently in complete isolation from the continuous coastal range (HAUSMANN 2001).

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The species is divided into two subspecies. *Eucrostes indigenata lanjeronica* Hausmann, 1996 (type locality: Southern Spain, Lanjeron) is restricted to the Western Mediterranean, and it has been recorded from the Iberian Peninsula, Morocco and Algeria. The nominotypical subspecies occurs in the remaining parts of the area of the species, including the Carpathian Basin, where it is confined to dry grasslands on sand in the Great Hungarian Plain. Due to its distribution pattern this species is a natural heritage of Hungary, which is expressed by its protected status by law.

In spite of its importance in the viewpoint of nature conservation, the species has barely been studied in Hungary, and no confirmed record is available from the last nearly 50 years. It is absent from the Hungarian Red Data Book (VARGA 1989). The aim of this paper is to publish the data of all *Eucrostes indigenata* specimens deposited in the Hungarian Natural History Museum, Budapest (HNHM) and compare them with literature in order to summarise our knowledge on the populations of the Great Hungarian Plain.

## MATERIAL AND METHODS

All studied specimens are deposited in the Lepidoptera Collection of the HNHM. Locality data are provided verbatim, with additional explanatory notes in square brackets where necessary.

Selected specimens and their labels were photographed using an Olympus Camedia C 7070 digital camera. The images were digitally adjusted using the software Adobe Photoshop CS6.

## RESULTS AND DISCUSSION

Catalogue of specimens of *Eucrostes indigenata* deposited in the HNHM:

**Bulgaria:** Melnik: 1978.VII.21, L. Ronkay (1 male); 1981.IX.24, L. Ronkay (1 male). Pirin Mts., Melnik-Rozen: [no additional data] (1 male). Pirin, Rozelski man. [= Rozhen Monastery]: 1976.VII.13, I. Balogh (1 male).

*Remarks* – In the 1970-80s Bulgaria was a popular destination amongst Hungarian lepidopterists, with faunistic explorations and migrant Lepidoptera in focus (MÉSZÁROS *et al.* 1984).

**Croatia:** Gravosa [= Gruž]: 6/VI [= 6.VI, year unknown], Krone (1 male). Sućurac D. [= Dalmatia]: 1925.VII.5, Novak (1 female); 1926.IX.15, Novak (2 males, 1 female). Zadar co. [= county], Pag Island, Miškovići, ul. [= ulica] Put Mlinarice: 2016.VIII.1, B. Tóth (1 male).

*Remarks* – The first Croatian record was based on specimens collected in Dalmatia by Georg Dahl (1769–1831) (TREITSCHKE 1827).

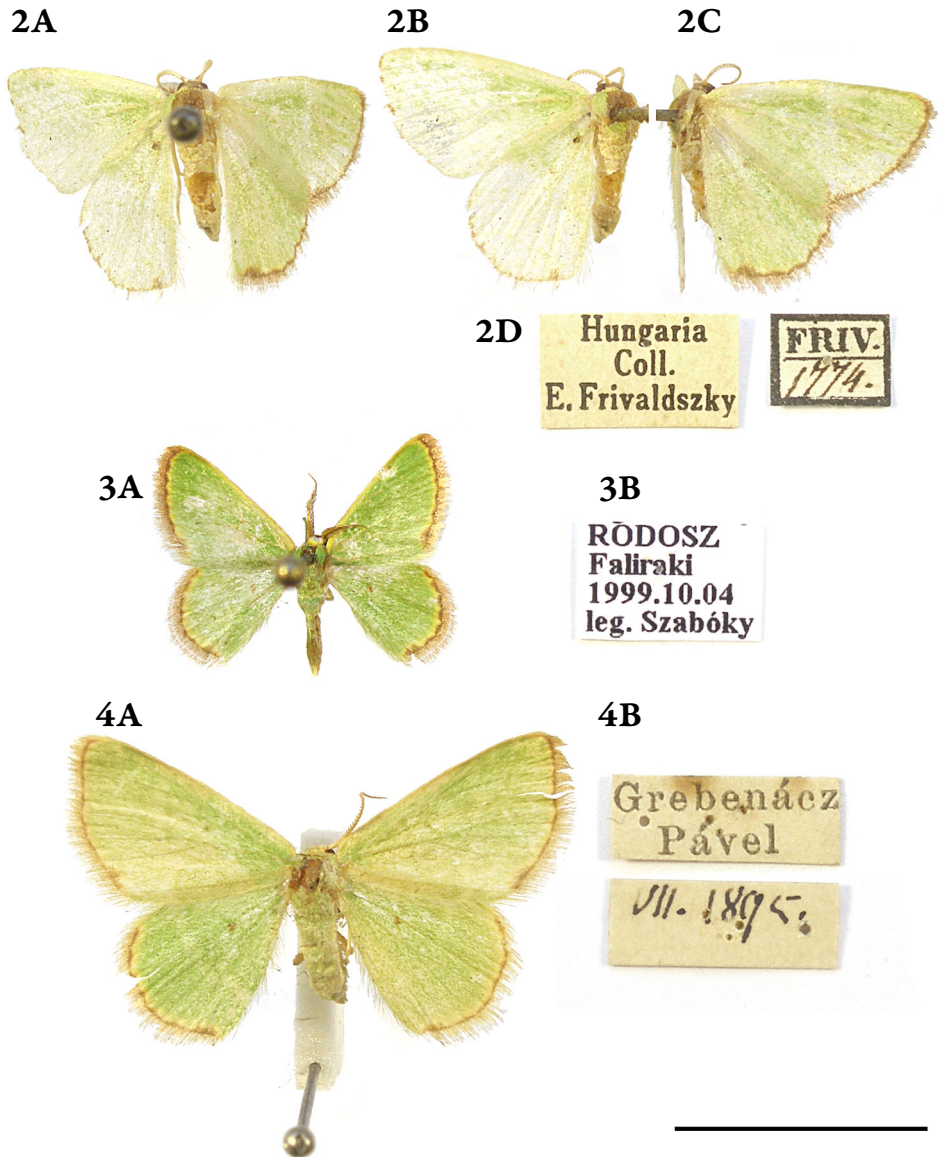
**France:** Gal. mer., Alp. marit. [= Gallia meridionalis, Alpes maritimes]: V. Bartha (1 male). [Indecipherable locality]: 1911.VII.11–20, V. Bartha (1 male).  
**Hungaria,** coll. E. [= I.] Frivaldszky, No. 1774 (1 female) [erroneous locality, actually: Gallia meridionalis, see Remarks below].

*Remarks* – The extensive Lepidoptera collection and library of colonel Viktor Bartha of Dálnokfalva (1879–1941) were purchased by the HNHM prior to World War II. Because of the difficult circumstances the collection was not catalogued properly at the time of the purchase, and later the specimens, including many valuable ones (see BÁLINT & BENEDEK 2013), were incorporated into the main collection of the HNHM.

The oldest specimen of *Eucrotes indigenata* of the HNHM originates from the collection of Imre Frivaldszky (1799–1870), and it was collected certainly before 1864. It has an original label with hand-written catalogue number “1774”, and an additional, printed one with the text “Hungaria | Coll. | E. Frivaldszky”. The checking of Frivaldszky’s original catalogue (FRIVALDSZKY 1864) revealed that the locality of specimen No. 1774 was not “Hungaria” but actually “Gall. m.” [= Gallia meridionalis] (Fig. 1), which implies mislabelling of the specimen. The specimen (Figs 2A–D) most probably originates from Pierre André Latreille (1772–1833) or from Jean Baptiste Boisduval (1799–1879), whom Frivaldszky was in a regular correspondence and exchanged specimens (BÁLINT & FRIVALDSZKY 2009, BÁLINT & PYRCZ 2020).

Num	Genus	Stemata	Species	Locality	Count	Remarks
1771	Emmotos Fr.	Signaria St.	St.	Geom	3.	6900.
42		Scenoparia Ev	Ev	Sup.	4.	
40	Geometra D.	Lepulana Ev	Ev	St.	2.	
41	"	Imagidina Ev	Ev	St.	3	
42	"	v. Presmana Ev.	Ev.		1.	
43	"	Pantlionaria L.	L.	St.	4.	
→ 44	"	Indigenaria Vill.	Vill.	Gall. m.	1.	
45	"	Aethwana Ev	Ev	St.	4.	

**Fig. 1.** Scanned text from the catalogue of Imre Frivaldszky’s collection, the entry for the specimen of *Eucrotes indigenata* (Villers, 1789) (No. 1774) is indicated by arrow.



**Figs 2–4.** Adults of *Eucrostes indigenata* (Villers, 1789) from the collection of the HNHM, 2A = the specimen from the Frivaldszky collection, erroneously labelled as “Hungaria” (actually from Southern France), 2B = left wings of the previous specimen in plain, 2C = right wings of the previous specimen in plain, 2D = labels of the previous specimen, 3A = the specimen collected on Rhodes Island, Greece, 3B = labels of the previous specimen, 4A = the first specimen found in the Carpathian Basin (Grebenac, Serbia, July 1895), 4B = both sides of the label of the previous specimen. Scale bar = 10 mm (photos by Gergely Katona)

**Greece:** Central Greece region, Parnassos Mts. [= Mountains], 2 km E [= east] of Arachova, 800 m: 2008.VI.25, B. Tóth, J. Babics (1 male). Korfós (Peloponnes [= Peloponnese]), 0–50 m, 37,76°N 23,06°E: 1986.VI.1–18, D. Stengel (7 males, 1 female). Lakonia, Monemvasia (Peloponnes [= Peloponnese]), MV [= mercury vapour]: 1979.VI.5, L. Gozmány (3 males, 1 female); 1979.VI.12, L. Gozmány (1 female); 1979.VI.14, L. Gozmány (1 male); 1979.VI.17, L. Gozmány (6 males, 2 females); 1979.VI.18, L. Gozmány (3 males). Lakonia, Taygetos, 1000–1200 m: 1979.VI.17, L. Gozmány (1 male). Rodosz [= Rhodes Island], Faliraki: 1999.X.4, Cs. Szabóky (1 male). Thraki region, Sapka Mts. [= Mountains], 4 km N [= north] of Nea Sanda, 400 m: 2008.VI.27, B. Tóth, J. Babics (1 female).

*Remarks* – The late curator László Gozmány (1921–2006) extensively collected Lepidoptera in Greece, and identified materials from light traps operated by Greek colleagues (see GOZMÁNY 2012). Greece is a popular target of the Hungarian lepidopterists for faunistic explorations (TÓTH *et al.* 2013, TÓTH 2017). Among the specimens collected outside the Carpathian Basin, the male from Rhodes Island (Figs 3A–B) represents perhaps the most interesting record. HAUSMANN (2001) wrote: “Present (...) even on Crete but not yet recorded from the other Greek islands”; however on the distribution map Rhodes is also marked with grey, indicating that the species is present there. According to the map of RENNWALD (2022) no data are known from Rhodes; according to Fauna Europaea (OLAFFSON *et al.* 2013) it is absent from Dodecanese Islands. Therefore, this record represents the first validated occurrence from Rhodes Island.

**Hungary:** Ágasegyháza, homokbuckás [= sand mounds]: 1951.VIII.31, Gy. Éhik (1 male, 1 female: gen. TB345f); 1951.IX.2, Gy. Éhik (1 male); 1953.VIII.26, L. Gozmány (1 male); 1956.VIII.1, L. Gozmány (1 male); 1958.IX.18; L. Gozmány (1 male). Bugacz [= Bugac]: 1901.V.29, K. Kertész (1 female). Királyhalom [= Szeged]: 1933.VII.19–29, L. Kolb (2 males, 1 female, 1?); 1933.VII.20–31, A. Schmidt (7 males, 1 female). Kunfehértó: 1967.IX.7, light trap (1 male). Kunszentmiklós: 1911.IX.8, A. Schmidt (1 male). Orgovány, homokbuckák [= sand mounds]: 1948.VII.25, I. Balogh (3 males, 2 females); 1948.VII.26, I. Balogh (1 male). Orgovány, nádas [= reeds]: 1974.VII.17, I. Balogh (2 females). Pest megye [= Pest county]: [no date], Ulbrich (1 female). Peszér [= Kunpeszér]: 1951.VIII.31, I. Balogh (6 males: gen. TB15m). Tabdi, erdő [= Tabdi forest]: 1950.V.26, Z. Kaszab (1 female).

*Remarks* – On 18 August 1897, one specimen of *Eucrotes indigenata* was collected by Sándor Uhl on a trip to Peszér with his elder brother József Uhl and Lajos Abafi-Aigner (ABAFI-AIGNER 1902). The author emphasized that this was the first known record of the species in Hungary outside Grebenac (see below at Serbia). In his later work on the Macrolepidoptera of Hungary, ABAFI-AIGNER (1907) referred to these two records. The specimen from Peszér cannot be located in the HNHM; perhaps it was deposited in Uhl’s collection and later it

was sold or destroyed. SZENT-IVÁNY (1945) reviewed the Hungarian literature of *Eucrostes indigenata* and listed the data of specimens known from Hungary at that time, deposited in the HNHM. He omitted the eight specimens collected twelve years earlier in Királyhalom by Antal Schmidt. Perhaps these were not in HNHM at that time or were not incorporated into the main collection. After World War II the species was discovered in some additional localities in Hungary, namely Ágasegyháza, Kunfehértó, Orgovány and Tabdi; all of these are in the Kiskunság area. Some specimens were found in atypical habitats such as forests and reeds, perhaps due to dispersive behaviour. The most recent specimen from Hungary in the HNHM was collected in 1974 in Orgovány; no further record has been known for nearly 50 years. The work of GOZMÁNY *et al.* (1986) on the fauna of the Kiskunság National Park repeats only the older HNHM records.

**Italy:** Grimaldi [probably in Liguria Region]: 1926.VIII.5, A. Schmidt (1 male). Sardegna merid. [= Southern Sardinia], Musei, 120 m: 1973.VIII.27, F. Hartig (1 female); 1973.X.4, F. Hartig (1 female). Tivoli (Roma): 1926.VII.9, F. Dannehl (1 male); 28.7., L. Kolb (1 male).

*Remarks* – The late curator Antal Schmidt (1880–1966) collected extensively in Liguria between 1920 and 1935. He was in contact with various Bavarian collectors such as Franz Dannehl (1870–1947) and Lorenz Kolb (?–?). Between 1974 and 1977 Gozmány also took part in a summer expedition on Sardinia (GAEDIKE 1980). We suppose that specimens from Sardinia were donated by count Frederico Hartig (1900–1980) who was the initiator of these collecting events, and was in good relationship with Gozmány.

**Libya:** Tripolitania, Sidi Mesri [= Tripoli] 30 m: 1924.III.8, Romei (1 male); 1924.VIII.5, Ederli (1 female); VIII.12, Ederli (1 male); 1925.VIII.6, Romei (1 male); 1925.VIII.8, Romei (2 males); 1925.VIII.10, Romei (1 male).

*Remarks* – These specimens were received most probably in exchange arranged by A. Schmidt.

**Malta:** [no additional data] (1 female).

*Remarks* – The specimen is on a minuten pin, and the label indicates only the country name. According to the printing style the label was not made earlier than the 1950s.

**North Macedonia:** Prilep, light trap: 1971.IX.1 (1 male); 1971.VII.22 (1 female); 1971.VIII.1 (2 males); 1971.VIII.7 (1 female); 1972.V.26 (1 female); 1972.VII.4 (1 male); 1972.VII.8 (1 male).

*Remarks* – In the early 1970s a light trap was installed in Prilep by Hungarian entomologists for studying migration of Lepidoptera (VOJNITS *et al.* 1971). The collected material was set and identified in the HNHM, and the voucher specimens were also deposited here.

**Serbia:** Grebenáč [= Grebenac]: 1895.VII, J. Pável (1 female: Figs 4A–B).

*Remarks* – This specimen represents the earliest record from the Carpathian Basin. This settlement is situated close to the Deliblato Sands, at the southern edge of the Great Hungarian Plain in Serbia. The Deliblato Sands are similar habitats to the Kiskunság area, where most specimens originating from the Carpathian Basin were later collected. The record from Grebenac was published in the monograph “Fauna Regni Hungariae” by ABAFI-AIGNER *et al.* (1896), but later on it fell into oblivion by foreign authors; this might be the reason why it is absent from the monograph of HAUSMANN (2001). TOMIĆ *et al.* (2002) also omitted this record from their review on the Geometridae of Serbia. However, the record from Grebenac remained in the knowledge of the Hungarian lepidopterists (e.g., ABAFI-AIGNER 1898, ABAFI-AIGNER 1907, SZENT-IVÁNY 1945). The species was found again at Deliblat in 1912, when Karl Predota (1872–1962), by the charge of Nathaniel Charles Rothschild (1877–1923), collected it on 17 September. He found both adults and caterpillars (ROTHSCHILD 1913). These specimens are probably deposited in the Rothschild collection (now in the Natural History Museum, London).

**Tunisia:** Sfax: Boughrara, 20 m, MV [= mercury vapour]: 1977.IV.4., L. Gozmány (1 male).

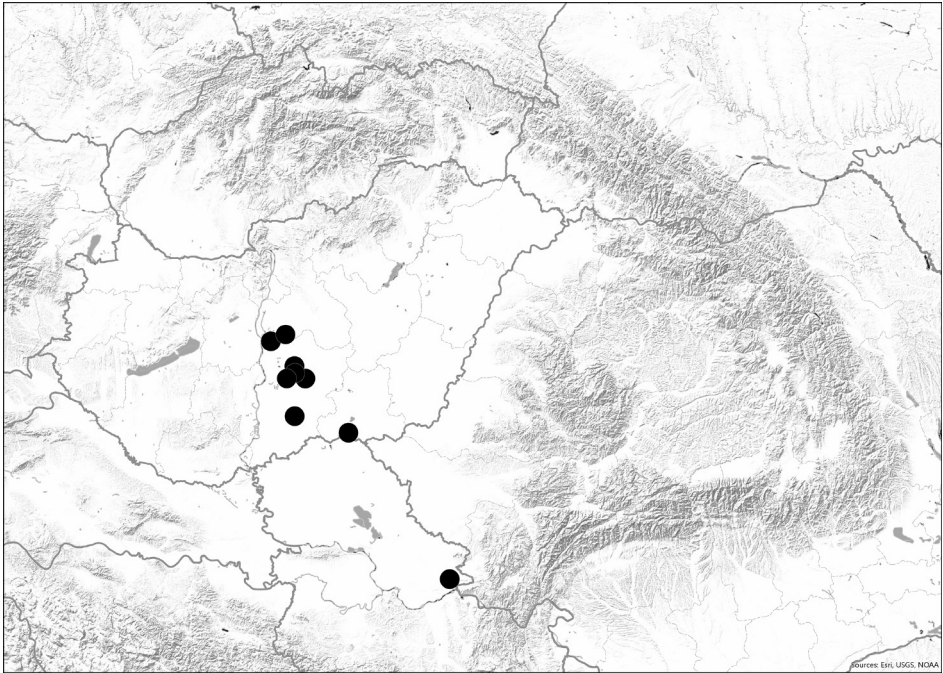
*Remarks* – The specimen originates from the HNHM expedition in Tunisia (GOZMÁNY & MAHUNKA 1977).

**Unknown locality:** Ulbrich (1 male).

## CONCLUSIONS

Altogether 103 specimens of *Eucrostes indigenata* are deposited in the HNHM, among them 74 males, 28 females, and one specimen of undetermined sex. The ratio of females in the collection is 27%, matching well with the “about 30% ratio” of female specimens attracted to light, mentioned by HAUSMANN (2001). Most specimens of the HNHM (39) were collected in Hungary, followed by Greece (29) and North Macedonia (8 specimens).

*Eucrostes indigenata* is restricted to xerothermic habitats (Fig. 5). The last observation of this species in Hungary happened 48 years ago, in 1974; prior to this date several decades had passed without collecting it. The species has always been regarded as rare. It might have a considerable dispersal potential, as several specimens were collected outside the preferred habitat. This hypothesis is also supported by the record from Rhodes Island, representing the first known occurrence of the species on any Greek islands except Crete. We suppose that *Eucrostes indigenata* could perform areal fluctuations, reaching the Carpathian Basin only in an expansive phase.



**Fig. 5.** Collecting localities of *Eucrostes indigenata* (Villers, 1789) in the Carpathian Basin (black dots)

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