

The first record of *Perigrapha (Rororthosia) rorida* (FRIVALDSZKY, 1835) from Romania (Lepidoptera, Noctuidae) and new data from Bulgaria

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Summary: *Perigrapha (Rororthosia) rorida* (FRIVALDSZKY, 1835) is recorded for the first time from Romania, based on 25 males and 1 female collected near Albești (Constanța County), within the Hagieni Forest Nature Reserve, on the nights of 30 March 2022 and 20–21 March 2026. The habitat is a mosaic of xerothermic sub-Mediterranean woodland, sub-Mediterranean scrub and steppe grassland on sun-exposed calcareous slopes, consistent with the known ecological preferences of the species. The specimens were identified using external morphological characters and genitalia examination. This new record extends the documented range of the species north-eastwards within its southern-European and Balkan distribution and highlights the importance of surveying xerothermic Dobruja habitats during the early flight season of vernal Lepidoptera. New data from Bulgaria and Greece are also presented.

Key words: Noctuidae, Orthosiini, faunistics, first record, Dobruja, xerothermic habitat, *Paliurus spina-christi*.

Introduction

The genus *Perigrapha* LEDERER, 1857 (Noctuidae, Hadeninae, Orthosiini) comprises about 52 species and 56 subspecies, with a Holarctic distribution (RONKAY *et al.* 2001, VOLYNKIN & MATOV 2014). *Rororthosia* BECK, 1999, treated as a subgenus of *Perigrapha* by RONKAY *et al.* (2001), comprises only six species, with a distribution range much more restricted than that of the genus as a whole. Three stenochorous species occur in the Middle East: *P. (Rororthosia) mundoides* (BOURSIN, 1940) in the Levant (KRAVCHENKO *et al.* 2007), *P. (Rororthosia) wolffi* (HACKER, 1988) in eastern Anatolia (HACKER *et al.* 1988) and *P. (Rororthosia) gyurirani* BENEDEK & RONKAY, 2001 in south-western Iran (BENEDEK & RONKAY 2001, SHIRVANI *et al.* 2012, POORSHABANAN & SHIRVANI 2022, RAJAEI *et al.* 2023). Two further species are endemic to the large eastern Mediterranean islands: the Cypriot *P. (Rororthosia) wimmeri* HACKER, 1996 and the Cretan *P. (Rororthosia) sellingi* (FIBIGER, HACKER & MOBERG, 1996). Only *P. rorida*, the type species of the subgenus, has a markedly wider range, extending along the northern Mediterranean region from southern France and Italy through the Balkans and Asia Minor to Syria and Lebanon, and eastwards to Iraq, Armenia, and Georgia (BESHKOV *et al.* 1996, RONKAY *et al.* 2001). It has been recorded from all Balkan countries, being widespread and usually frequent in the southern and coastal areas, local in the central regions and absent from the northern part of the peninsula. In the vicinity of Romania there

are only a few records from southern Serbia, but several from southern Bulgaria; the closest localities are Varna, on the Bulgarian Black Sea coast, and Sliven, the type locality of the species, situated on the southern foothills of the Stara Planina Mountains (FRIVALDSZKY 1835, BESHKOV 2000, JAKŠIĆ 2022) (Fig. 1).

Adults are early-flying, mainly in March–April (Fig. 2), while the larvae are reported from mid-April to late May or early June (Fig. 3). The species is associated mainly with warm, dry, sun-exposed habitats, including xerothermic grasslands, scrub and rocky or calcareous slopes. A close association with the shrub *Paliurus spina-christi* Mill. (Rhamnaceae) as a larval host plant is mentioned by several sources (RONKAY *et al.* 2001, ŠTANTA & ZADRGAL 2016).

To date, not previously published or documented material supports an earlier record of *Perigrapha rorida* from the fauna of Romania; the species is not included in the national faunistic catalogues published by RÁKOSY *et al.* (2003) and RÁKOSY & GOIA (2021). The aim of the present note is to document the first record of the species for Romania, based on material collected in the Hagieni Forest Nature Reserve (Constanța County), and to provide information on its habitat, phenology and biogeographical significance.

Materials and methods

The material on which the present record is based was collected on 30 March 2022 and 20–21 March 2026 in the Hagieni Forest Nature Reserve

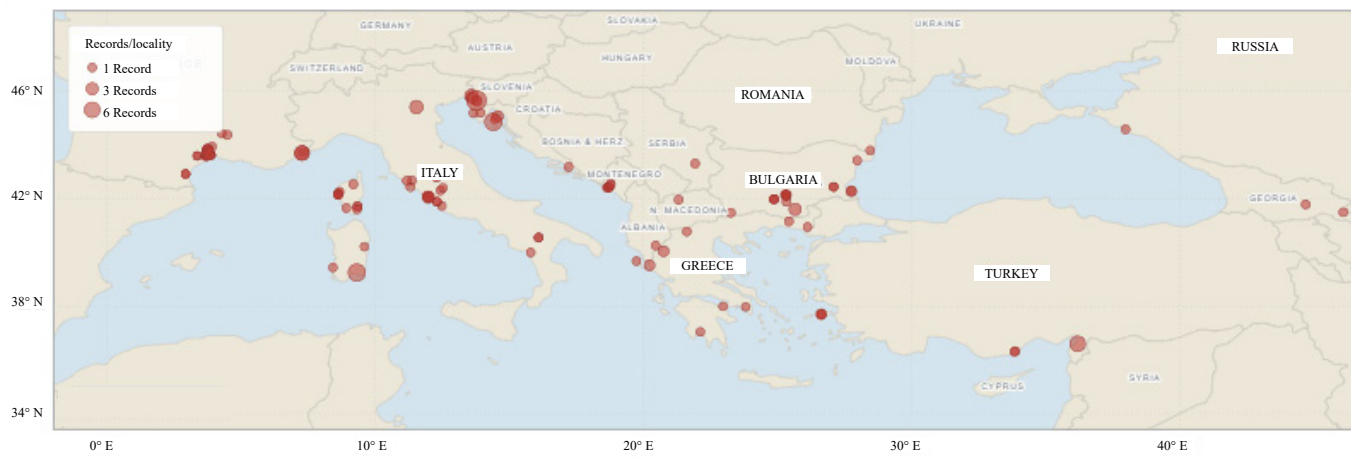


Fig. 1. Distribution of *Perigrapha rorida* (FRIVALDSZKY, 1835) (based on literature, GBIF and iNaturalist data; GBIF.org 2026).



Fig. 2. *Perigrapha rorida* (FRIVALDSZKY, 1835): habitus, lateral view, Hagieni Forest Nature Reserve, 2026. Photo Cosmin Mancu.



Fig. 3. *Perigrapha rorida* (FRIVALDSZKY, 1835): larva, dorsal and lateral view, near Asenovgrad (Bulgaria), N41.9778° E24.8654°, 18.05.2026. Photo Cosmin Mancu.

(Constanța County, southern Dobruja, Romania), at N43.799977°, E28.466658°, 51 m and N43.7885°, E28.4521°, 55 m a.s.l. (Fig. 7).

In 2022, after an unusually cool early spring, the first warmer spell occurred at the very end of March: bushes of *Cornus mas* L. and *Prunus mahaleb* L. were in full blossom, while *Adonis vernalis* L., *Iris pumila*

L. and *Muscari neglectum* Guss. ex-Ten. & Sangiov. were just beginning to bloom.

Unlike in 2022, the night of 20–21 March 2026 was meteorologically unfavourable — cold and rainy — which likely reduced moth activity.

Specimens were collected using bucket-type light traps fitted with 8 W UV lamps (365 and 395 nm).

Identification was based on external morphological characters, using as main references the works of FIBIGER *et al.* (1996), RONKAY *et al.* (2001) and TOP *et al.* (2023). Identification was confirmed by examination of the genitalia, following standard methodology (10% KOH; preparation in glycerol); the preparations are deposited in the collections of Sándor Kovács & Zoltán Kovács and Cristian & Geanina Sitar.

Photographs of the mounted specimens were taken in a studio using a Canon EOS R camera equipped with a Canon RF 100 mm f/2.8L Macro IS USM lens; genitalia were photographed with a Canon EOS R7 camera equipped with a Canon MP-E 65 mm f/2.8 1–5× lens. Four continuous light sources were used. Each final image was produced by focus stacking a composite of approximately 30–100 photographs, depending on the view. The images were stacked in Zerene Stacker (version 1.04; <https://zerenesystems.com/>) and subsequently processed in Adobe Photoshop (<https://www.adobe.com/products/photoshop.html>) to obtain a clean background.

The examined material is deposited in the collections of Sándor Kovács & Zoltán Kovács, Cristian & Geanina Sitar, Constantin Corduneanu and Cătălin Balan.

Results

Material examined:

Romania, Constanța County, near Albești, within the Hagieni Forest Nature Reserve, 51 m, N43.799977°, E28.466658°, 30.03.2022, 19 males and 1 female, genitalia preparation 3059 (male), S. Kovács & Z. Kovács leg., det. & coll.; same locality, but N43.7885°, E28.4521°, 55 m, 20–21.03.2026, 6 males, genitalia preparation 1023 (male), Cosmin Mancu leg., Cosmin Mancu & Cristian Sitar det., Cristian & Geanina Sitar coll. (Figs 2, 5, 6).

Bulgaria, near Batova (Dobrich Province), N43.4201°, E27.9668°, 150 m, 19.03.2026, 15 males, Cosmin Mancu leg., stored in the collections of Cristian & Geanina Sitar, Constantin Corduneanu and Cătălin Balan; genitalia preparation 1024 (male) stored in the collection of Cristian & Geanina Sitar (Figs 5, 6).

Other species recorded on 30 March 2022, Hagieni Forest:

- Geometridae: *Dasycorsa modesta* (STAUDIN-

GER, 1879), *Apocheima hispidaria* ([DENIS & SCHIFFERMÜLLER], 1775), *Lycia hirtaria* (CLERCK, 1759), *Agriopis bajaria* ([DENIS & SCHIFFERMÜLLER], 1775) and *Costaconvexa polygrammata* (BORKHAUSEN, 1794).

- Erebididae: *Scoliopteryx libatrix* (LINNAEUS, 1758).

- Noctuidae: *Valeria oleagina* ([DENIS & SCHIFFERMÜLLER], 1775), *Eupsilia transversa* (HUFNAGEL, 1766), *Orthosia munda* ([DENIS & SCHIFFERMÜLLER], 1775), *Orthosia incerta* (HUFNAGEL, 1766), *Orthosia cerasi* (FABRICIUS, 1775), *Orthosia cruda* ([DENIS & SCHIFFERMÜLLER], 1775), *Orthosia gothica* (LINNAEUS, 1758) and *Cerastis rubricosa* ([DENIS & SCHIFFERMÜLLER], 1775).

Other species recorded on 20–21 March 2026, Hagieni Forest:

- Geometridae: *Dasycorsa modesta* (STAUDIN-GER, 1879), *Phigalia pilosaria* ([DENIS & SCHIFFERMÜLLER], 1775), *Lycia hirtaria* (CLERCK, 1759), *Agriopis bajaria* ([DENIS & SCHIFFERMÜLLER], 1775) and *Agriopis marginaria* (FABRICIUS, 1776).

- Noctuidae: *Valeria oleagina* ([DENIS & SCHIFFERMÜLLER], 1775), *Orthosia munda* ([DENIS & SCHIFFERMÜLLER], 1775), *Orthosia incerta* (HUFNAGEL, 1766), *Orthosia cerasi* (FABRICIUS, 1775), *Orthosia cruda* ([DENIS & SCHIFFERMÜLLER], 1775) and *Orthosia gothica* (LINNAEUS, 1758).

The presence of *Agriopis bajaria* ([DENIS & SCHIFFERMÜLLER], 1775) in both collecting events is somewhat surprising, as this species is usually known to fly in late autumn.

Further original observations of *P. rorida* from Bulgaria and Greece, documented photographically and uploaded to iNaturalist (iNaturalist 2026), are listed in Table 1 and shown in Fig. 4.

Identification and variability

The specimens attributed to *P. rorida* agree with the descriptions and figures published for this taxon (FIBIGER *et al.* 1996, RONKAY *et al.* 2001).

The observed variability is predominantly chromatic and in contrast, without relevant changes in the general external morphology (Fig. 5).

The wingspan of the specimens varies between 37 and 42 mm. The antennae of the male are bipectinate, those of the female shortly bipectinate. The examined series shows moderate inter-individual

Table 1. Further observations of *Perigrapha rorida* (FRIVALDSZKY, 1835).

No.	Country	Latitude (N)	Longitude (E)	Date	No. ex.	iNaturalist observation (ID)
1	Bulgaria	41.47143	23.25758	12.03.2026	1	342613728
2	Bulgaria	41.97742	24.86602	14.03.2026	3	345716241; 345718888; 345719014
3	Bulgaria	41.88245	25.32748	15.03.2026	1	345727126
4	Greece	41.15386	25.42197	13.04.2023	1	197479249
5	Greece	40.94133	26.11821	01.04.2024	1	205342566



Fig. 4. Localities where *Perigrapha rorida* (FRIVALDSZKY, 1835) was recorded: in green, the new records from Romania and Bulgaria; in red and blue, the observations from Bulgaria and Greece.

variability of the habitus, mainly in the ground colour and in the intensity of the wing-pattern elements of the forewings. Specimens range from paler forms (greyish-beige or greyish-ochre) to distinctly darker individuals with a brownish-grey tint and a more heavily dusted appearance.

The forewing pattern remains broadly constant. The reniform stigma is consistently present but differs in intensity and degree of delimitation, as does the shading of the median and postmedian areas. The subterminal line is generally weakly expressed but may be more or less recognisable depending on the contrast of the ground colour.

Variation is also seen in the extent and density of the greyish irroration or dusting of the forewings, which influences the overall appearance of the specimen.

The hindwings are relatively more uniform in colour but also show individual differences in shade, from whitish-yellow to creamy-grey, as well as slight variation in the intensity of the darker outer margin. Overall, the series suggests that the variability of the species is expressed mainly at the level of colour and pattern contrast, without major changes in the general

wing conformation or in the basic pattern.

No other orthosiine species in this part of Europe has such a reduced wing pattern (Fig. 5). *P. rorida* may only be confused with greyish, heavily worn specimens of the similarly sized *Orthosia incerta* (HUFNAGEL, 1766); in such cases the structure of the antennae is diagnostic, being biserrate in the latter species.

The male genitalia are characterised by a long vinculum, a narrow and apically tapering uncus, an evenly curved ventral margin of the valva, a small cucullus, a reduced clavus and harpe, a very long and arched ampulla, and a long, slightly curved phallus (Fig. 6).

The single congener present in the Romanian fauna, *P. (Perigrapha) i-cinctum* ([DENIS & SCHIFFERMÜLLER], 1775), belongs to a different subgenus and differs markedly, possessing distinct and characteristic markings; its male genitalia have a short vinculum, a wide and flattened uncus, an unevenly curved ventral margin of the valva, a larger cucullus and a shorter ampulla, and a slightly shorter, straight phallus. Its adults also fly in early spring,

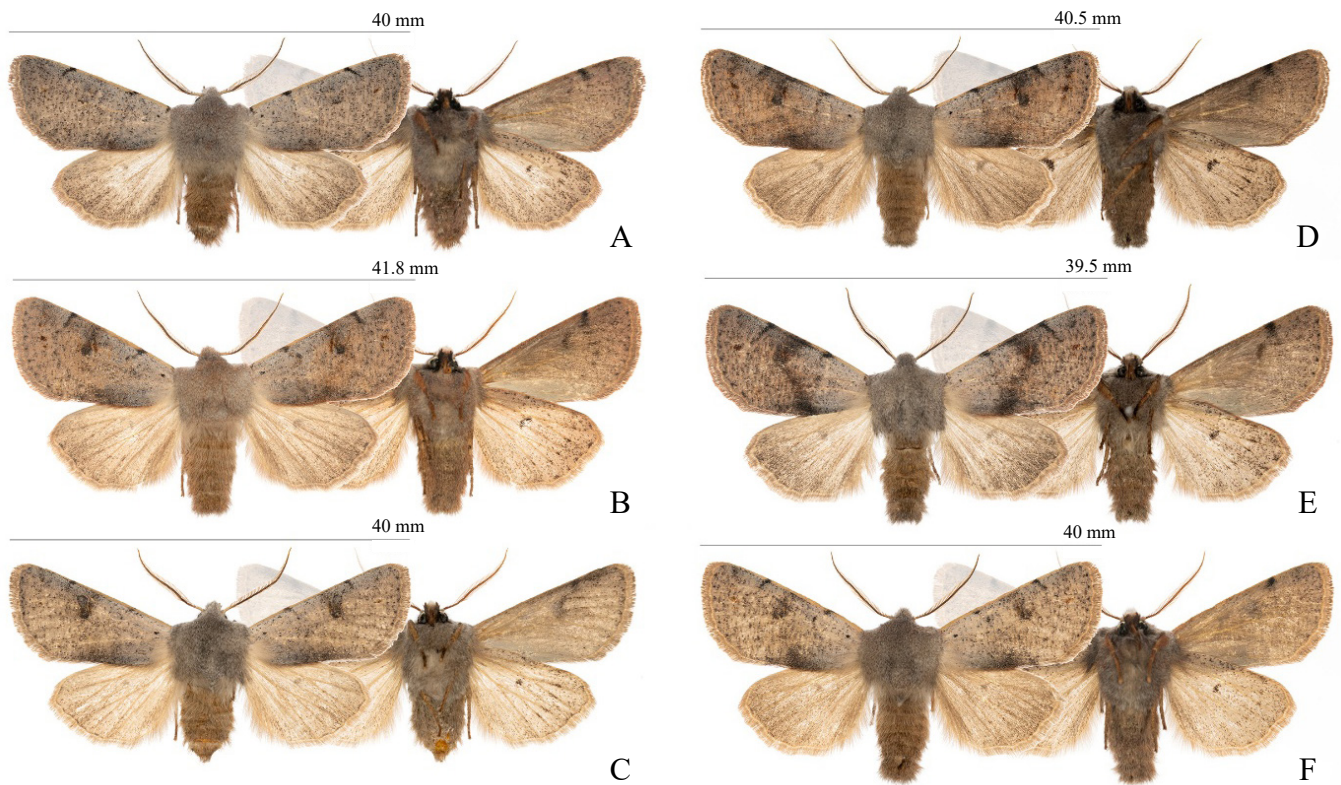


Fig. 5. Individual variability in *Perigrapha rorida* (FRIVALDSZKY, 1835) expressed in the ground colour of the forewings (from greyish-brown to brownish-ochre). A-B Romania, Hagieni Forest, C-F Bulgaria, Batova. Photo Cosmin Manciu.



Fig. 6. *Perigrapha rorida* (FRIVALDSZKY, 1835): male genitalia (up Romania, Hagieni Forest, genitalia preparation nr. 1023, down Bulgaria, Batova, genitalia preparation nr. 1024). Photo Cosmin Manciu.

from late February to early April, mainly in steppe habitats, but so far it has been recorded only from Transylvanian sites.

Habitat

The Hagieni Forest Nature Reserve, situated in southern Dobruja (Constanța County), is an island of thermophilous woody vegetation within the regional



Fig. 7. Habitat of *Perigrappa rorida* (FRIVALDSZKY, 1835) in the Hagieni Forest Nature Reserve (Constanța county) 20.03.2026. Photo Cosmin Mancu.

steppe landscape and is regarded as a relict of the Dobrujan sub-Mediterranean forest-steppe. The site is characterised by a mosaic of habitats that includes sub-Mediterranean xerothermophilous oak woodland, steppe and sub-Mediterranean scrub, steppe grassland and strongly sun-exposed rocky or calcareous surfaces. The woody vegetation is dominated by sub-Mediterranean and Ponto-Balkan elements, among which *Quercus pubescens* Willd., *Q. pedunculiflora* K. Koch, *Carpinus orientalis* Mill., *Fraxinus ornus* L., *Jasminum fruticans* L., *Cotinus coggygria* Scop. and *Paliurus spina-christi* Mill. are frequently recorded.

The collecting site lies in an open area surrounded by forest, at 51–55 m a.s.l., on a south-west-facing slope with a calcareous/loessic substrate. The dominant vegetation is scrub with *Paliurus spina-christi* and *Jasminum fruticans*, grassland with *Festuca/Stipa*, and a sparse forest edge of *Quercus pubescens* (Fig. 7). The local conditions — south-west exposure, high insolation and xerothermophilous shrubby vegetation on a calcareous–loessic substrate — match the habitats described in the literature for *P. rorida* (RONKAY *et al.* 2001, ŠTANTA & ZADRGAL 2016).

Discussion

The first documented record of *P. rorida* from Romania and in north-eastern Bulgaria is not unexpected from a biogeographical perspective. The species has a southern-European and Mediterranean–Asiatic chorological character, with a documented distribution in southern and south-eastern Europe, and is present in several Balkan countries neighbouring Romania (HACKER 1989, BESHKOV *et al.* 1996, RONKAY *et al.* 2001). The existence of xerothermic habitats comparable to those occupied by the species elsewhere in the Balkans — particularly in Dobruja, an area with Mediterranean and Ponto-steppe climatic influences — reasonably suggested the possibility of its presence in the country.

The Christ's thorn brush, the habitat in which *P. rorida* was collected, is one of the characteristic plant associations of the wooded steppe that develops here at the confluence of the Ponto-Sarmatic steppes and the eastern Balkan sub-Mediterranean forests (CRISTUREAN & IONESCU-ȚECULESCU 1970; DONITĂ *et al.* 2005).

In Romania, *Paliurus spina-christi* is documented mainly from Dobruja, where it has been reported from the Hagieni–Albești area (Constanța County), as well as from several localities in Constanța County, including Cernavodă, Medgidia, Rasova, Murfatlar, Peștera, Agigea, Techirghiol, Mangalia, Fântâna Mare, Constanța, Tuzla and Șipotele; in Tulcea County it has been recorded from Cerna, Turcoaia (on Iacob-Deal and at Gura Armanului) and the Enisala–Sălcioara area in the Babadag Plateau. Phytocoenoses with the species have also been reported south of Hârșova and in the Babadag Plateau. Besides its Dobrujan range, the species is also present in Romania in Arad County, where the Radna–Lipova *Paliurus* Nature Reserve was established (SĂVULESCU 1958).

It is noteworthy that *P. rorida* is an early-flying species, with adults active mainly in March–April (RONKAY *et al.* 2001, ŠTANTA & ZADRGAL 2016), sometimes from the second half of February in more southern regions. This early phenology, in which adult activity overlaps with a period of low entomological collecting intensity, may partly explain the lack of earlier records from Romania. It cannot be excluded that the species also occurs in other xerothermic areas of Dobruja but has gone undetected owing to the limited collecting activity during this period of the year, as well as to the small number of entomologists active nationally.

Perigrappa (Rororthosia) rorida further increases the number of noctuid species that reach the northern limit of their distribution in the eastern part of the Balkan Peninsula in southern Romanian Dobruja. Some of these, such as *Teinoptera olivina* (HERRICH-

SCHÄFFER, 1852), *Cosmia confinis* HERRICH-SCHÄFFER, [1849], *Episema korsakovi szekelyleveventei* RONKAY & RONKAY, 2025 and *Luperina dumerilii* (DUPONCHEL, 1826), have well-known and stable populations in this area. Others, including *Cryphia ochsi* (BOURSIN, 1940), *Caradrina (Eremodrina) pertinax* (STAUDINGER, 1879), *Chlorotalpa subsericata* (HERRICH-SCHÄFFER, 1861) and *Aporophyla australis* (BOISDUVAL, 1829), are recorded only very rarely and probably have fluctuating range limits, reaching the area only occasionally when climatic conditions are favourable.

The discovery of *P. rorida* is part of a broader, ongoing enrichment of the Romanian Lepidoptera list, which has received numerous additions over the past decade. Some of these reflect the genuine arrival or spread of thermophilous, southern or migratory elements, a process that has repeatedly been linked to climate warming: the crimson speckled *Utetheisa pulchella* (LINNAEUS, 1758) (Erebidae) was found again in southern Dobruja after more than a century (OLTEANU 2023), the clearwing *Paranthrene diaphana* DALLA TORRE & STRAND, 1925 (Sesiidae) was reported for the first time from southern Romania (MANCI *et al.* 2024), and the thermophilous, synanthropic *Scythris sinensis* (FELDER & ROGENHOFER, 1875) (Scythrididae), which has been expanding across Europe in recent decades, was likewise recorded for the first time in the country (POP *et al.* 2022). Others represent long-overlooked resident or relict species brought to light by renewed field work, revision of old collections and citizen-science observations: the oak-forest tortricid *Pammene querceti* (GOZMÁNY, 1957), newly found in the north-west of the country together with the protected noctuid *Dioszeghyana schmidtii* (DIÓSZEGHY, 1935) (ENGHIŞ *et al.* 2025), the horse chestnut moth *Pachycnemia hippocastanaria* (HÜBNER, [1799]) (Geometridae), recognised from an old museum specimen (STĂNESCU 2024), the leaf-mining *Parornix atripalpella* Wahlström, 1979 (Gracillariidae) (POP & RÁKOSY 2023), and the boreo-montane glacial relict *Boloria eunomia* (ESPER, 1800) (Nymphalidae), discovered in the Eastern Carpathians (CORDUNEANU *et al.* 2025). Several of these authors explicitly attribute such gaps in knowledge to the small number of active lepidopterists relative to the size and habitat diversity of the country. The Romanian Lepidoptera fauna therefore remains incompletely known, and further species — whether newly arriving thermophilous elements or previously undetected resident populations — undoubtedly remain to be discovered, as the present record of *P. rorida* also illustrates.

The record from the Hagieni Forest Nature Reserve adds to the knowledge of the Noctuidae fauna of Romania and confirms the high biogeographical value of the Dobrujan xerothermic habitats for southern and Balkan faunistic elements. The presence of the host plant for *P. rorida* in the Hagieni Forest, together

with the recent records from north-eastern Bulgaria, supports the hypothesis of a stable local population.

Further surveys in similar habitats in Dobruja, with emphasis on the March–April period, are needed to establish the precise distribution, population density and ecology of the species in Romania.

Perigrapha (Rororthosia) rorida (FRIVALDSZKY, 1835) should be placed in the checklist of the Romanian Lepidoptera (RÁKOSY & GOIA 2021) before the species *Perigrapha (Perigrapha) i-cinctum* ([DENIS & SCHIFFERMÜLLER], 1775).

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