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FIRST RECORD OF *PROTEREBIA PHEGEA* (LEPIDOPTERA: SATYRINAE) FROM ALBANIA

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We provide information on the unexpected discovery of *Proterebia phegea* in Albania, the fourth distinct distribution area for the species in the Balkan Peninsula. The butterfly was found to be numerous on south-facing slopes at Qafa e Buallit pass in Dibër County. The most striking characteristic of the habitat is the sandy brown ophiolite rocky substrate, compared to limestone areas in other parts of its range. Habitat structure and vegetation are otherwise similar to the more overgrown sites in the Dalmatian part of its range. Given the widespread presence of ophiolite rocks in eastern Albania, the species could be significantly more widespread in the country; however, further surveys are required. Two additional rare species in Albania, *Erynnis marloyi* and *Anthocharis gruneri,* were also recorded in the area.

Key words: Papilionoidea, Nymphalidae, distribution, faunistics, checklist

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U radu se daju informacije o neočekivanom otkriću *Proterebia phegea* u Albaniji, koja predstavlja četvrto odvojeno područje rasprostranjenosti ove vrste na Balkanskom poluotoku. Utvrđeno je da je leptir brojan na južnim padinama kod prijevoja Qafa e Buallit u okrugu Dibër. Najupečatljivija karakteristika staništa je pjeskovito-smeđa ofiolitna stjenovita podloga, u usporedbi s vapnenačkim područjima u drugim dijelovima njegove rasprostranjenosti. Struktura staništa i vegetacija je slična zaraslijim nalazištima u dalmatinskom dijelu njegove rasprostranjenosti. S obzirom na raširenu prisutnost ofiolitnih stijena u istočnoj Albaniji, vrsta bi mogla biti znatno raširenija u zemlji, međutim, potrebna su daljnja istraživanja. Dvije dodatne rijetke vrste u Albaniji *Erynnis marloyi* i *Anthocharis gruneri* također su zabilježene na tom području.

Ključne riječi: Papilionoidea, Nymphalidae, distribucija, faunistika, čeklista

INTRODUCTION

The Dalmatian Ringlet (*Proterebia phegea* (Borkhausen, 1788)) is a typical Asian steppe butterfly species (Bartoňová *et al.*, 2017) with isolated relic occurrences in several southern areas in the Balkan Peninsula (Bartoňová *et al.*, 2018). Its range extends from south-western Mongolian Altai (Yakovlev, 2012) through steppe regions of Kazakhstan, Kyrgyzstan and Russia, as far as the Crimean Peninsula in Ukraine (Tshikolovets *et al.*, 2009; Tshikolovets, 2011; Tshikolovets *et al.*, 2016). It is widespread, but more fragmentarily distributed south of the Caucasus in Georgia, Armenia, Azerbaijan, Iran (Tshikolovets & Nekrutenko, 2012; Tshikolovets *et al.*, 2014), reaching central Anatolia in Turkey (Hesselbarth *et al.*, 1995). Additionally, its range extends

east through the Alborz Mountains in northern Iran to the Kopet Dagh range in Turkmenistan (Tshikolovets, 1998; Tshikolovets *et al.*, 2014).

Historically, in the Balkan Peninsula, the species was only known from central Dalmatia, from where the subspecies *dalmata* was described by Godart (1824). Until recently it was considered extremely rare and localised in this region (Mihoci & Šašić, 2005), but new surveys indicate a much wider distribution including the south-western part of the Velebit Mountains and Pag Island in the north (Zakšek, 2005; Koren *et al.*, 2010; Tvrtković *et al.*, 2015) through most of central Dalmatia to the eastern slopes of the Biokovo Mountains in the south (Mihoci & Šašić, 2007). The record further south, from Korčula Island (Jakšić, 1993), could not be corroborated by recent studies, nor was there any suitable habitat found on the island recently (Koren *et al.*, 2018). The species was also found in Bosnia and Herzegovina (Koren & Trkov, 2011), however, this is only a marginal extension of its range inland from Dalmatia. In Greece, the species was first discovered in Kozani Province in western Macedonia (Askion and Vourinos Mountains) resulting in the description of a new subspecies *pyramus* (De Louker & Dils 1987). Further east, the species was reportedly found in the Greek Rhodope Mountains (Pamperis, 2011), but no location detail or habitat description has been revealed. It is therefore unclear whether the locality: Thrace, Nestos canyon, listed by Bartoňová *et al.* (2018) pertains to the same record and/or area of distribution.

Albania has only recently become a target of extensive butterfly surveys, resulting in the discovery of several new species (for the country) and several checklist updates (Verovnik & Popović, 2013; Micevski *et al.*, 2015; Cuvelier *et al.*, 2018). Here, we provide details of an unexpected finding of *P. phegea* in Albania along with notes regarding its habitat, accompanying species, and a discussion of its potential distribution in the country.

METHODS AND RESULTS

On 27.4.2022, the authors visited Dibër County in north-eastern Albania in order to survey potential new sites for *Euchloe penia* (Freyer, 1851), which had been reported from Peshkopi and Kukës by Cuvelier *et al.* (2018) as the only known sites for the country. We found a suitable habitat, steep rocky and scree slopes on calcareous substrate, at Valikardhë village (41°30'35"N, 20°18'51"E). However, despite the finding of a suitable habitat and the host plant *Matthiola fruticulosa* (L.) Maire (see Zuber, 1995), *E. penia* was not observed. The presence of freshly emerged males of *Anthocharis gruneri* Herrich-Schäffer, 1851 and observations of both sexes of *Zerynthia polyxena* (Denis & Schiffermüller, 1775) indicate that we were probably too early in the season for the target species.

Travelling further westwards along SH6 road, we crossed the Qafa e Buallit pass near Bulqizë village and, soon after, the first *P. phegea* was observed crossing the road on the south facing slopes of the mountain, (41°29'01"N, 20°11'21"E). Further along the main road the species was more numerous, particularly on south-facing slopes (41°28'43"N, 20°10'44"E) halfway down a side road leading to a construction site. Adults were observed on slopes adjacent to the SH6 in open rocky habitats all the way along the road until it enters more wooded areas to the west (41°28'08"N, 20°08'50"E). High densities of adults were seen flying along the slopes in several places, occasionally visiting the flowers of a diminutive species of *Thymus*, which was just starting to bloom. The majority of the specimens were fresh males (Fig. 1), although newly emerged females, and some worn males, were present as well. Only a few other butterfly species

Fig. 1. A male *Proterebia phegea* perching on a rock near the road at Qafa e Buallit pass in Albania. Photo: J. Verovnik.

were observed at the site, possibly due to the scarcity of a nectar source: *Papilio machaon* Linnaeus, 1758, *Erynnis tages* (Linnaeus, 1758), *Erynnis marloyi* (Boisduval, 1834), *Pyrgus malvae* (Linnaeus, 1758), *Pieris ergane* (Geyer, [1828]), *Colias alfacariensis* Ribbe, 1905, *Leptidea* cf. *sinapis*, *Lycaena phlaeas* (Linnaeus, [1760]), *Lycaena tityrus* (Poda, 1761), *Pseudophilotes vicrama* (Moore, 1865), *Glaucopsyche alexis* (Poda, 1761), *Polyommatus icarus* (Rottemburg, 1775), and *Lasiommata megera* (Linnaeus, 1767).

Visually, the habitat is similar to the more overgrown sites in Dalmatia (Koren *et al.*, 2010; Verovnik, R. pers. observ.) and not as open or exposed as in the majority of localities in north-western Greece (Bartoňová *et al.*, 2017; Verovnik, R. pers. observ.). The most striking difference is, however, the sandy brown ophiolite rocky substrate (Fig. 2), unlike the predominantly grey/whitish limestone substrate in the Greek and Dalmatian habitats. Large tufts of a *Festuca* grass species, a potential host plant, were scattered on the slopes interspersed with juniper bushes and pines. Notably, junipers are highly indicative of the presence of *P. phegea* in Dalmatian sites and of the abandonment of pasturing (Koren *et al.*, 2010).

DISCUSSION

The new locality is situated *c*. 310 km from the Dalmatian and *c*. 170 km from the north-west Greek populations (Fig. 4), these representing the closest known distribution areas of *P. phegea*. The habitat is within a large escarpment of ophiolite rock, which is one of the dominant rock formations in the mountains of eastern Albania (see Junge *et al.*, 2021: Fig. 2). Thus, the range of *P. phegea* in Albania could potentially be much more extensive, reaching the Kosovo border (Tropojë district) in the north, through the extensive ophiolite areas east of Elbasan, all the way to the border with Greece in the south (Korçë district). The presence of other butterflies linked to ophiolite substrate,

Fig. 2. Typical habitat of *Proterebia phegea* at Qafa e Buallit pass in Albania. Photo: R. Verovnik.

such as *Pseudochazara amymone* Brown, 1976 (see Verovnik *et al.*, 2014: Fig. 2) and *Pseudochazara tisiphone* Brown, [1981], could be particularly indicative, as the northernmost site of the latter species, coincides almost exactly with the *P. phegea* location (Cuvelier *et al.*, 2018). Conversely, the lack of previous observations could indicate a much more restricted range for *P. phegea* in Albania, or simply a lack of early spring surveys in these remote regions. It must be emphasised that although other distribution areas of *P. phegea* in the Balkan Peninsula are exclusively on calcareous substrates, the species is known to occur on metamorphic substrate as well, at least in eastern Turkey (Hesselbarth *et al.*, 1995). Habitat structure, climatic niche, and host plants are therefore most likely the limiting factors for the distribution of *P. phegea.*

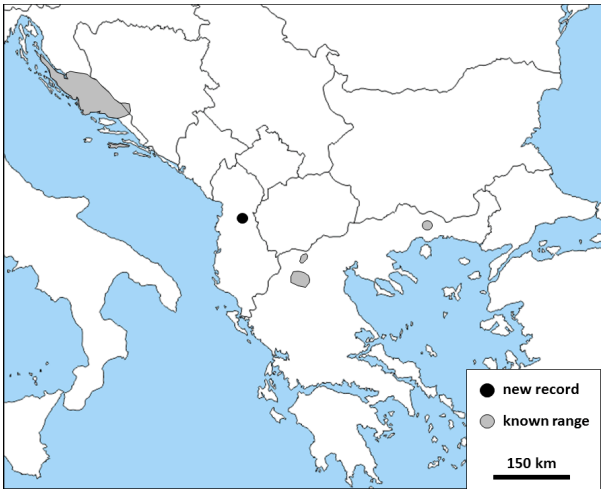

Fig. 3. Distribution of *Proterebia phegea* in the Balkan Peninsula with the position of the new location in Albania indicated.

Among other species observed, the majority are widespread in the country, with *Erynnis marloyi* and *Anthocharis gruneri* having a more restricted range. According to distribution maps published as supplementary material by Cuvelier *et al.*, (2018), the new *E. marloyi* sighting is the northernmost locality in the country, but only marginally, as its presence is indicated from the border areas of Tirana and Dibër County. *A. gruneri* is even more localised with known occurrences restricted to only two regions: the Tomorr Mountains in the south and Galičica Mountains near Ohrid Lake in the east (Rebel & Zerny, 1931; Micevski *et al.*, 2015). Our record represents the third disjunct distribution area.

The number of known butterfly species in Albania remains inconclusive, with several species marked as 'data deficient' or 'potentially present' in the latest checklist, with recent evidence for 196 species occurring within its boundaries (Cuvelier *et al.*, 2018), thus *P. phegea* represents the 197th species confirmed for the country. As our findings of the three aforementioned species were purely accidental, this further underlines the paucity of systematic butterfly surveys in Albania, in particular, regarding the spring fauna. We hope our findings will trigger further butterfly surveys of this fascinating country, with added emphasis on the study of the distribution and ecology of *P. phegea*.

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