

## ***Pelopidas thrax* (Hübner, [1821]) (Lepidoptera: HesperIIDae): new to Albania, records and distribution update. With first recorded sightings in Montenegro and Croatia.**

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### Abstract

In recent years, there has been a growing interest in the study and distribution of butterflies, leading to the development of new distribution maps of butterflies in Albania.

The most recent studies confirm the presence of 207 butterfly species, however, field observations and documentation from 2024 have resulted in the recording of a new species, *Pelopidas thrax* (Hübner, [1821]), increasing the total to 208 confirmed species.

At the westernmost limit of its range in Europe, *P. thrax* has gradually expanded its range northward and further west, reaching continental Greece, the Ionian islands, and, most recently southern Albania with the first confirmed observation in Butrint National Park on May 25, 2024, and followed by further records during the autumn of 2024 and new sightings in the spring of 2025. These repeated observations, particularly across two consecutive years in the same area, strongly suggest successful overwintering and local reproduction. This evidence indicates that *P. thrax* is no longer a sporadic visitor, but has established, several, likely isolated, breeding populations in Albania, becoming a naturalised component of the country's butterfly fauna.

Further supporting this rapid expansion is a confirmed sighting of *P. thrax* in Montenegro in September 2024, which represents the northernmost known locality for the species in Europe. This observation highlights the species' potential for continued northward spread along the Adriatic coastline. In 2025, the northward expansion was further supported by new observations in Montenegro and the first confirmed records from Croatia.

### Key words

Balkan Peninsula, Albania, Montenegro, Croatia, Papilionoidea, HesperIIDae, *Pelopidas thrax*, range expansion.

### Introduction

In recent years, intensified research has produced increasingly detailed butterfly distribution data across the well-studied Western Palearctic, one of the best-surveyed regions worldwide.

This has revealed patterns of poleward and westward unexpected range expansions among thermophilic butterfly species, exemplified by *Pieris mannii* (Mayer, 1851) (Ziegler 2009; Vantieghem 2018; Cuvelier & Vervaeke 2023).

Among these expanding species is *Pelopidas thrax* (Hübner, [1821]), a subtropical member of the family HesperIIDae. It closely resembles *Pelopidas mathias* (Fabricius, 1798), with no clear evidence of range expansion. Morphological differences have been documented between these two species (Marafi & Cuvelier 2024).

These expansions seem linked to climate warming, habitat changes, and improved monitoring, illustrating how individual species respond dynamically to environmental shifts.

A contrasting but related case is *Cacyreus marshalli* Butler, 1898, which was accidentally introduced to Mallorca in the late 1980s (Eitschberger & Stamer 1990), and has since expanded from the southwestern to the southeastern Mediterranean (Marko & Verovnik 2009; Soyhan *et al.* 2013). This inverse expansion, compared to *P. thrax*'s northwestward spread, illustrates how both accidental introductions and climate-driven range shifts shape butterfly distributions across the Mediterranean basin.

Before 2000, *P. thrax* was confined in Europe to a few Greek islands in the Aegean Sea near Turkey and Cyprus, and started spreading rapidly to other islands in the Dodecanese and northern Aegean, before reaching northeastern continental Greece by 2020. *P. thrax* has in recent years shown clear signs of range expansion towards the northwest. Its gradual spread through continental Greece and the Ionian islands has now extended into the western Balkans (Cuvelier 2009; Cuvelier & Mølgaard 2012; Martin & Russell 2013; Cuvelier 2014; Cuvelier & Mølgaard 2014; Langourov *et al.* 2021; Kefaleli & Mamais 2024; Danahar & Sordinas 2024).

On 12.iv.2024 *P. thrax* was included as a potential species for Albania after confirmed sightings (August 30th to November 16th 2023) from different sites in the north of the Greek island of Kerkira (Corfu).

Since spring 2024, *P. thrax* has been newly recorded as a species in both Albania, with multiple confirmed sightings, and Montenegro, marking the first national record for that country in 2024. In 2025, the northward expansion was further confirmed by additional sightings in Albania and Montenegro, as well as the first confirmed sightings from Croatia.

This study aims to document and analyze the recent range expansion of *P. thrax* into the Western Balkans, with a particular focus on new records from Albania, Montenegro and Croatia, to better understand the species' distribution dynamics and potential for further spread.

### Materials and methods

Data collection was carried out through an integrated approach combining a review of published literature, analysis of the Pamperis 2025 distribution map, and direct consultation with colleagues and regional experts. This multi-source methodology enabled a robust and comprehensive assessment of species presence and distribution.

In addition, biodiversity databases such as iNaturalist and Observado were consulted. Where possible, observers were contacted to verify records and provide supplementary information. When available, observations were supported with photographic evidence (Figs. 1-10), for which appropriate copyright permissions was obtained.

*Pelopidas thrax* can be readily identified in the field based on distinct external morphological characteristics, making genetic or genitalia analyses unnecessary for confirming its presence. Species distribution maps were generated using DMAP cartographic software.

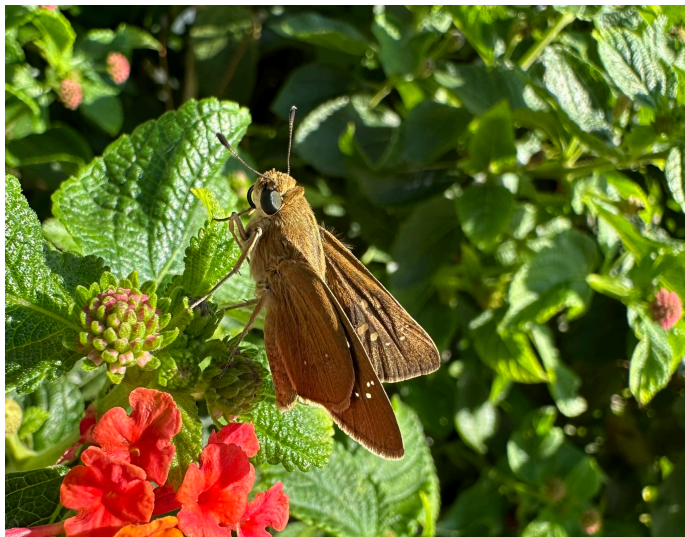


Fig. 1. *Pelopidas thrax*, upperside, Butrint NP, Albania, 25.v.2024 (© Bernard Schön).

Fig. 2. *Pelopidas thrax* upperside, Sarandë, Albania, 20.ix.2024 (© Andrea Angiari).





Fig. 3. *Pelopidas thrax* upperside, Tiranë, Albania, 11.x.2024 (© Wei Zhou).

Fig. 4. *Pelopidas thrax* upperside, Orikum, Albania, 27.ix.2024 (© Levente Horváth).

Fig. 5. *Pelopidas thrax* underside, Sarandë, Albania, 20.ix.2024 (© Andrea Angiari).



Fig. 6. *Pelopidas thrax* underside, southern Montenegro, 24.ix.2024 (© Andreas Manz).

Fig. 7. *Pelopidas thrax* upperside, Sarandë, Albania, 02.x.2024 (© Nathalie Brenner).

Fig. 8. *Pelopidas thrax* underside, Sarandë, Albania, 02.x.2024 (© Nathalie Brenner).



Fig. 9. *Pelopidas thrax* upperside, Fushë\_Draçi, Albania, 07-10.x.2024 (© David Jenner).

Fig. 10. *Pelopidas thrax* lateral, Fushë\_Draçi, 07-10.x.2024, Albania (© David Jenner).

## Results and discussion

Before 2000, *Pelopidas thrax* was confined to a few Greek islands in the Aegean Sea near Turkey and Cyprus (Fig. 11), and started spreading to other islands in the Dodecanese and northern Aegean (Fig. 12-13), before reaching northeastern continental Greece (Fig. 14) by 2020. After 2020, the expansion accelerated, extending into the continental part of Greece, showing clear signs of range expansion towards the northwest (Fig. 15). Its gradual spread through continental Greece and the Ionian islands has facilitated the species to reach the western Balkans (Fig. 16).

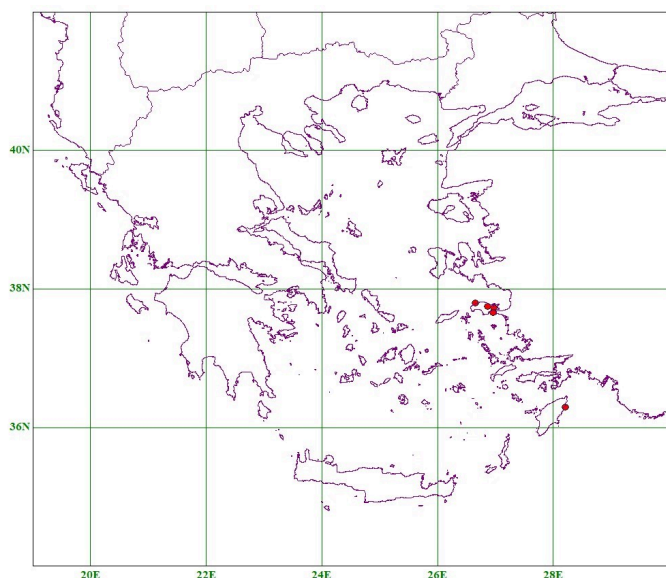


Fig. 11. Map 1980-1999. Records from Samos and Rhodes.

Fig. 12. Map 1980-2010. Expanding in Dodecanese and northern Aegean islands.

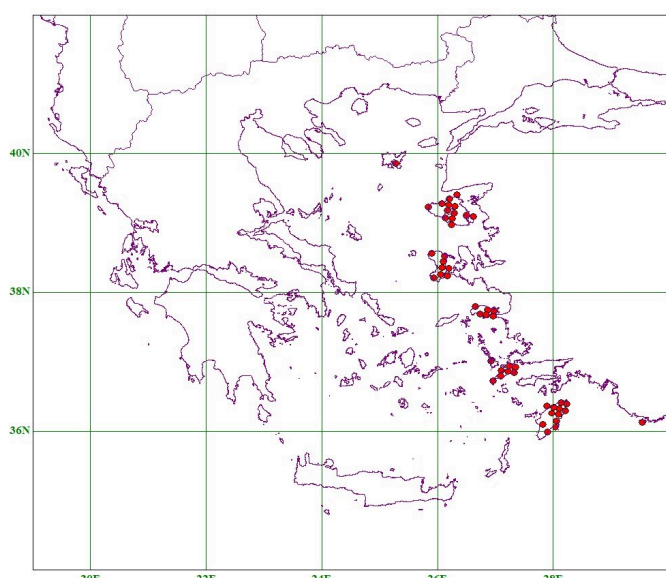
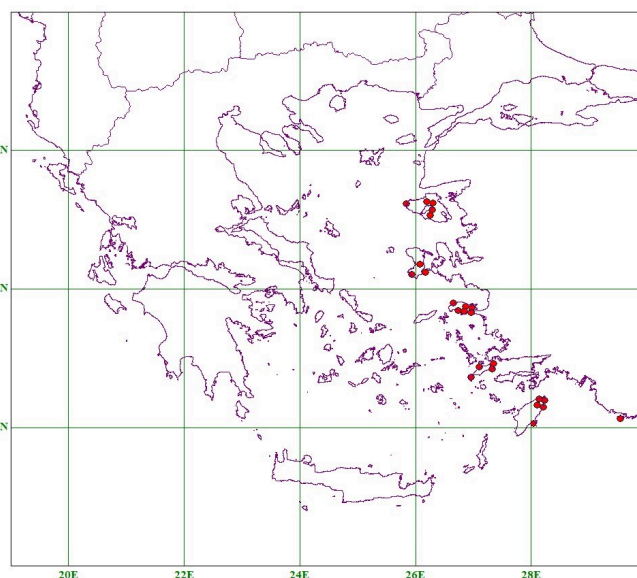


Fig. 13. Map 1980-2019. Reaching Limnos.

Fig. 14. Map 1980-2020. Reaching northern continental Greece.

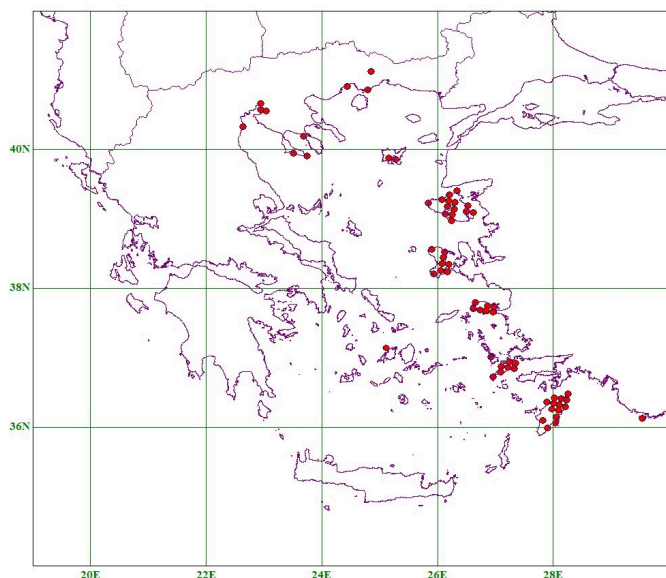
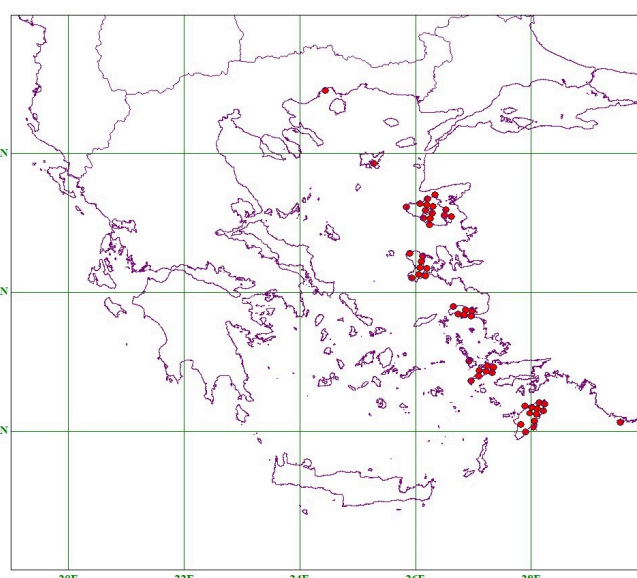
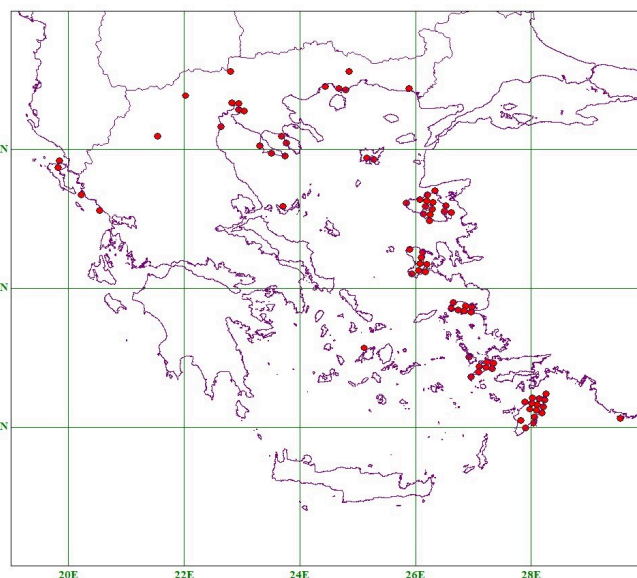


Fig. 15. Map 1980-2022. Spreading westward in northern Greece.

Fig. 16. Map 1980-2023. Reaching NW Greece and Kerkyra (Corfu).



Based on the 2023 records provided by Christian Dollé and Dan Danahar regarding observations near southern Albania, the species was listed in the *P. thrax* monograph of the website [Flutur e Shqipërisë](#) as a potential occurrence, with close attention given to whether its range would continue expanding northward.

During 2024 and 2025, several important observations of *P. thrax* were documented in Albania (Fig. 17), representing the first confirmed records of this species in the country and indicating a clear expansion of its range towards the northwestern Balkans.

The species was first confirmed through a spring observation in Butrint National Park on 25.v.2024 (Fig. 1).

Subsequently, *P. thrax* was photographed at two nearby locations near Sarandë on 20.ix.2024, near Vlorë on 27.ix. 2024, near Sarandë on 02.x.2024, in the southern part of Fushë-Draçi on 7.x.2024, and near Tiranë on 11.x.2024 (Fig. 2-5; 7-10).

These data suggested that the species' rapid spread may continue northward, from the Albanian coastline along the Ionian Sea toward the Adriatic coast.

A first proof of further northwards spreading was given by an observation in southern Montenegro on 24.ix.2024 (fig. 6).



In the spring of 2025, two new observations confirmed the continued presence of *P. thrax* in Albania, indicating a potentially established and expanding population. On 01.v.2025, a single individual was observed in Vlorë, followed shortly after by another record on 3.v.2025, in Butrint National Park. The presence of *P. thrax* in southern Albania and Montenegro was confirmed in July 2025 through multiple observations made by several observers. The species was also recorded near Lake Prespa, Albania, on 19.vii.2025. On 08.vii.2025, *P. thrax* was recorded for the first time in Croatia, near Trsteno in the southern part of the country. Since then, additional sightings have been documented in the vicinity of Dubrovnik. An overview of all known records from Albania, Montenegro and Croatia to date, is presented in Table 1 and Fig. 17-18. Fig. 19 shows the expansion from the early origins in Greece to the territory of Albania.

Table 1.

Locality	Country	Coordinate	Date	Source
Butrint NP	Albania	39.75168N 20.04672E	25.v.2024	Bernard Schön ( <a href="#">url</a> )
Sarandë	Albania	39.85559N 20.02080E	20.ix.2024	Andrea Angiari ( <a href="#">url</a> )
Sarandë	Albania	39.85506N 20.02003E	20.ix.2024	Andrea Angiari ( <a href="#">url</a> )
Budva	Montenegro	42.28158N 18.83722E	24.ix.2024	Andreas Manz ( <a href="#">url</a> )
Orikum	Albania	40.32697N 19.45581E	27.ix.2024	Levente Horváth ( <a href="#">url</a> )
Sarandë	Albania	39.87479N 20.00757E	02.x.2024	Nathalie Brenner ( <a href="#">url</a> )
Fushë_Draçi	Albania	41.52649N 19.51591E	07-10.x.2024	David Jenner (email 01.v.2025)
Tiranë	Albania	41.27984N 19.86141E	10.x.2024	Wei Zhou ( <a href="#">url</a> )
Zvërnec	Albania	40.5059N 19.4177E	01.v.2025	Ronald S ( <a href="#">url</a> )
Butrint NP	Albania	39.7478N 20.0033E	03.v.2025	Ronald S ( <a href="#">url</a> )
Orikum	Albania	40.3200N 19.4521E	02.vii.2025	Cyr Mestdagh ( <a href="#">url</a> )
Orikum	Albania	40.3146N 19.4474E	02.vii.2025	Florian Bonte ( <a href="#">url</a> )
Orikum	Albania	40.3160N 19.4486E	02.vii.2025	Cyr Mestdagh ( <a href="#">url</a> ), Bert Van Hecke ( <a href="#">url</a> ) and Axel Heyerick ( <a href="#">url</a> )
Orikum	Albania	40.3247N 19.4517E	02.vii.2025	Cyr Mestdagh ( <a href="#">url</a> ), Bert Van Hecke ( <a href="#">url</a> ) and Axel Heyerick ( <a href="#">url</a> )
Sveti Stefan	Montenegro	42.2536N 18.8972E	08.vii.2025	Steven De Saeger ( <a href="#">url</a> )
Trsteno	Croatia	42.71140N 17.97646E	08.vii.2025	Jaroslav Bury ( <a href="#">url</a> )
Cavtat	Croatia	42.5835N 18.2149E	12.vii.2025	Camille ( <a href="#">url</a> )
Goričë e Vogël	Albania	40.8853N 20.9214E	19.vii.2025	Lucca De Bruyker ( <a href="#">url</a> )
Mlini	Croatia	42.62478N 18.20726E	24.vii.2025	Lindy ( <a href="#">url</a> )
Dubrovnik	Croatia	42.64096N 18.11044E	26.vii.2025	nguyenlinhquang ( <a href="#">url</a> )

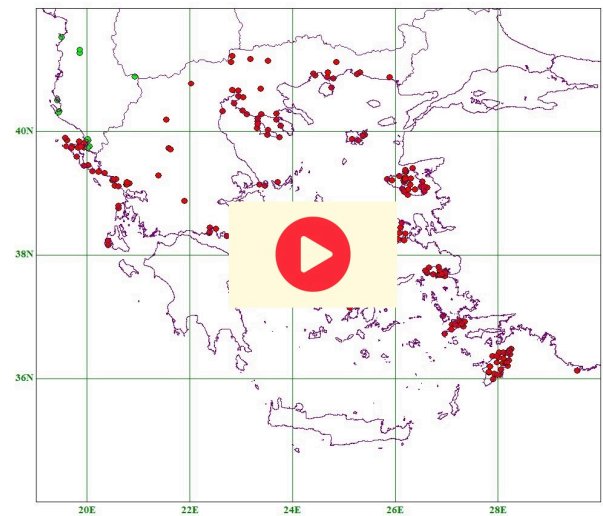
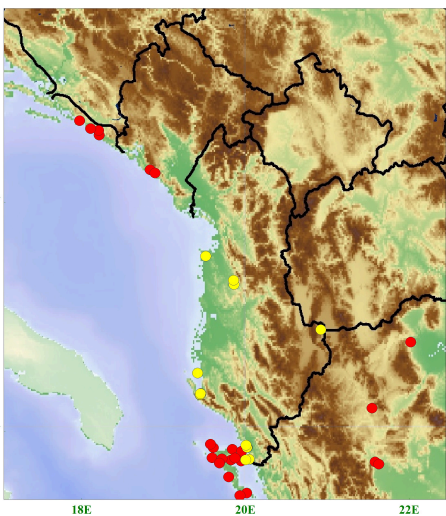
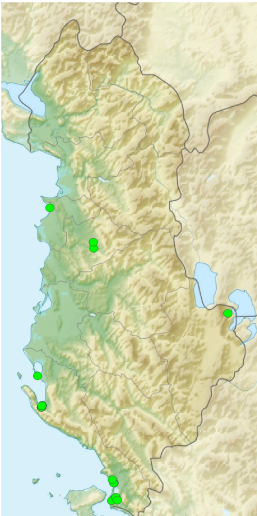


Fig. 17. Distribution map of *Pelopidas thrax* in Albania, based on records up to 09.viii.2025. (© Sylvain Cuvelier).  
Fig. 18. Expansion of *Pelopidas thrax* in Albania, Montenegro, and Croatia, with nearby records from northwestern Greece, based on records up to 09.viii.2025. (© Sylvain Cuvelier).  
Fig. 19. Video: the expansion from early origins in Greece to Albania.

These repeated observations, particularly across two consecutive years in the same area, strongly suggest successful overwintering and local reproduction. This evidence indicates that *P. thrax* is no longer a sporadic visitor, but has established, several, likely isolated, breeding populations in Albania, becoming a naturalised component of the country's butterfly fauna. Beyond the borders of Albania, the additional observations in Montenegro and Croatia represent the northernmost known localities for *P. thrax* in Europe. These observations highlight the species' potential for continued northward spread along the Adriatic coastline. As far as known to us, *P. thrax* has never been documented in the regions around the Sea of Marmara or along the Turkish Black Sea coast. This absence may indicate ecological or climatic barriers that currently limit the species' spread in that direction. Nevertheless, expansion toward the Black Sea region cannot be excluded, particularly as climate warming and habitat changes may facilitate dispersal across the interior Balkans.

Conclusion

The recent records of *Pelopidas thrax* in Albania, Montenegro and Croatia mark a significant northwestward range expansion of the species in southeastern Europe. In Albania, repeated observations across two consecutive years, including fresh individuals observed in early spring 2025, suggest the possibility of successful overwintering. While direct evidence of reproduction is lacking, these findings point toward the potential establishment of small, localised populations. The confirmed sightings in Montenegro and Croatia represent the northernmost occurrence of *P. thrax* in Europe to date. Given the species' ongoing spread from the Aegean through continental Greece and the Ionian Islands, further expansion along the Adriatic coast appears plausible. It is important to continue monitoring the species' distribution in the coming years in both Albania, Montenegro and Croatia, and to remain vigilant for signs of further northwestward expansion, including the possibility that *P. thrax* may eventually reach parts of the southwestern Mediterranean. Establishing monitoring programs in Bulgaria and the regions around the Sea of Marmara and the Turkish Black Sea coast would be important to detect and track potential future range expansions toward the northeast.

Author contributions

Xhuliana Qirinxhi: conceptualisation, data collection, analysis and interpretation, writing the original draft, review and editing.  
Sylvain Cuvelier: conceptualisation, data collection, analysis and interpretation, review and editing.  
Anila Paparisto: conceptualisation. verification, review and editing.

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Supplementary material

S1. Supplementary maps: annual *Pelopidas thrax* expansion in the Balkan Peninsula (up to 08.viii.2025).

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