



First records of *Neptis sappho* (Pallas, 1771) in Albania.

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Abstract

Neptis sappho (Pallas, 1771), has a wide but fragmented range from Japan to Eastern Europe. Although previously undocumented in the literature, *N. sappho* was recently confirmed in Albania, occurring in habitats dominated by the invasive *Robinia pseudoacacia*. These records lie at the southern edge of its European range. Suitable habitats extend beyond the recorded sites, suggesting that *N. sappho* is likely more widespread in Albania than currently documented.

Key words

Neptis sappho — Lepidoptera — Papilionoidea — Nymphalidae — new species — Albania.

Introduction

Neptis sappho (Pallas, 1771) is an Asiatic-Eastern European species originally described from the Volga region of the Russian Federation (Higgins & Riley 1970; [Taymans & Cuvelier 2025](#)). According to Tuzov *et al.* (2000), the type locality is specified as Mount Kabatskay in the Samara region, Russian Federation. Despite considerable variation in the white markings on the upperside and in overall size across its range, *N. sappho* is treated as comprising three subspecies in Bozano (2008). From China, Korea, and Japan, he lists *N. sappho intermedia* Pryer, 1877, whose characteristics often overlap with those of the nominal subspecies (*N. sappho sappho*) as well as with the next-described subspecies. In regions mostly outside the Palearctic, such as the Himalayas, India, northern Myanmar, northern Thailand, Vietnam and southern China, Bozano includes *N. sappho astola* Moore, 1872, and *N. sappho formosana* Fruhstorfer, 1908 from Taiwan, within this subspecific framework. Its range extends from Japan, Korea and Taiwan through Southeast Asia and Siberia, and westward through Kazakhstan, central and southern Russia (Tuzov *et al.* 2000; Tshikolovets 2003), the Caucasus (Tshikolovets & Nekrutenko 2012), as well as southern Belarus, Moldova, Ukraine (Tshikolovets 2003) and Romania (Székely 2008; Rákósy 2013). In Europe, the species is predominantly found in the Danube Plain, extending westward to its limit along the Alpine foothills of Austria, Slovenia, and northeastern Italy (Verovnik *et al.* 2012; Kudrna 2019; Palmi, *Farfalle Italiane* [\[online\]](#)). Its distribution reaches the Balkan Peninsula, where it is highly localised, extending to northeastern Greece as its southernmost point, and is absent from most of the Greek territory (Jakšić 1988; Schaidler & Jakšić 1989; Franeta 2018; [Pamperis 2025](#); Marić, *Butterflies of Croatia* [\[online\]](#); Miljević *et al.* 2014-2025, *Alciphron - database on insects of Serbia* [\[online\]](#)). At the edges of its range, *N. sappho* has faced significant declines, or even extinction, due to inappropriate management of damp forest habitats. Practices such as intensive drainage and timber extraction have disrupted the moisture and vegetation critical to these ecosystems. These disturbances often lead to habitat fragmentation and a loss of the specific conditions necessary for species like *N. sappho* to thrive. For example, in the Czech Republic, it became extinct in Bohemia in the 19th century and Moravia in the 20th century (Beneš 2002), while in Austria (Jutzeler *et al.* 2000) and Poland ([Bury 2020](#)), it has been driven to extinction by similar management practices. Although *N. sappho* is a conspicuous butterfly, observations from a distance may lead to confusion with similar species such as *Neptis rivularis* (Scopoli, 1763), *Limenitis camilla* (Linnaeus, 1764) and *Limenitis reducta* Staudinger, 1901. The butterfly typically inhabits sunny forest glades, forest-steppe belts, and open areas in light deciduous forests, usually near rivers and streams. In the northern part of its range, it is monovoltine, with a flight period from mid June to July. In southern part of the range it is bivoltine, on the wing from May to August. A sporadic partial third generation has been mentioned (Verovnik *et al.* 20212; Marić, *Butterflies of Croatia* [\[online\]](#)). The caterpillars hibernate in rolled leaves, and the pupa mimics a dead leaf. Best chances to observe *N. sappho*, are during the morning and late afternoon. At midday, they are usually found at higher levels up to the crowns of the trees and during hot days their activity is strongly reduced.

The documented foodplants of *N. sappho* originally included *Lathyrus niger* (Tshikolovets 2003; Gascoigne-Pees *et al.* 2008), *Lathyrus vernus* (Tuzov *et al.* 2000; Tshikolovets 2003; Gascoigne-Pees *et al.* 2008), *Lathyrus humilis* (Tuzov *et al.* 2000;) and *Lespedeza bicolor* (Tuzov *et al.* 2000). Over time, *Robinia pseudoacacia* has also become an accepted food source across various parts of Europe, including well-documented examples in Austria (Jutzeler *et al.* 2000). In fact, it may well be the major foodplant in certain areas, contributing to the species' adaptability and expansion in different regions.

R. pseudoacacia was introduced to Europe from its native range in North America in the early 17th century. The first recorded planting is often attributed to 1601 in France, in the royal gardens at the Château de Versailles, though this date is debated. In the 18th and 19th centuries, *R. pseudoacacia* was planted more widely across Europe, especially in central and southern regions. It was valued for its timber, used in construction, as well as for its ability to fix nitrogen in the soil, thus improving soil fertility. It became increasingly invasive in many countries and started to outcompete the native vegetation, often leading to the displacement of native species. It spreads via both seeds and root suckers, which allows it to form dense thickets and compete aggressively with native flora. Its high tolerance to a wide range of soil conditions and climates, combined with its nitrogen-fixing ability, contributes to its success in a variety of habitats, from disturbed sites to natural forests. In recent decades, *N. sappho* has shown signs of re-expansion within its former Central European range, particularly in woods dominated by non-native *R. pseudoacacia*. It is colonising forests in Austria, Hungary, Italy, Slovenia, and other regions (Jutzeler *et al.* 2000; Beneš *et al.* 2002, [Bury](#) 2020), indicating its ability to adapt to these altered habitats and expand its distribution across Europe.

Observations

Maarten Jacobs made the first documented record of *Neptis sappho* in Albania. He observed a "glider" while wading through a stream near Bushtricë (Kukës County) on 23.vi.2025 at an altitude of 750 m a.s.l. The butterfly was flying in a sunny clearing above the small stream, which was bordered on both sides by a wooded hedgerow. The butterfly continually flew higher through the treetops, but he was able to photograph it using a telephoto lens (Fig. 1-3).

The surrounding landscape consisted of small-scale hay meadows and thermophilous, nutrient-poor grasslands.

Under normal conditions, the date of this observation would fall within the expected range of the first generation, suggesting that the specimen likely belonged to that generation. However, due to the extreme heat and drought experienced in the Balkans during 2025, it is unclear whether this observation can be confidently assigned to the first generation. It is clearly not a fresh specimen, as evident damage can be seen on the hindwing. However, caution is needed when interpreting this, as the species has delicate wings that can become damaged easily in its open woodland habitat.

On 27.vi.2025, Michel Taymans made an undocumented observation of *N. sappho*, along the road between Bujan and Markaj (Shkodër county) at 1020 m a.s.l.

Subsequently, on 30.vi.2025 he was able to provide verifiable evidence of *N. sappho* in Albania, having observed the species east of Çidhën (Dibër County), along the Black Drin (Albanian: Drini i Zi), where he collected a single specimen (Fig. 5) at an altitude of 375 m a.s.l. The habitat was marked by a visible, though not dominant, occurrence of *Robinia pseudoacacia* (Fig. 1-3; 8).

As with the previous observation, it is unclear whether these individuals can be confidently assigned to the first generation. However, the freshness of the collected specimen might suggest that these observed butterflies belong to the second generation.

At the end of July, Sylvain Cuvelier also observed *N. sappho*, at several sites in Dibër county.

On 26.vii.2025, he recorded the species south of Sllatinë, in a habitat with regular stands of *R. pseudoacacia*.

On 30.vii.2025, he made two additional observations: one east of Çidhën, at 418 m a.s.l., near the second locality of Michel Taymans (Fig. 6; 8), and another northwest of Çidhën (Fig. 9), at 690 m a.s.l., where *R. pseudoacacia* was likewise well represented along a small running brook.

These later observations, made at the end of July, most likely correspond to the species' second generation, based on its typical phenology.



Fig. 1-3. *Neptis sappho* perching on *Robinia pseudoacacia*, Bushtricë (Kukës County, Albania), 23.vi.2025 (© Maarten Jacobs)



Fig. 4. Distribution map of *Neptis sappho* in Albania.

Dot size indicates record reliability: large = confirmed record (collected, netted and photographed); small = unsubstantiated record (© Sylvain Cuvelier)

Fig. 5. *Neptis sappho*, east of Çidhën, along the Black Drin (Dibër County, Albania), 30.vi.2025 (© Michel Taymans)

Fig. 6. Habitat of *Neptis sappho*, east of Çidhën, along the Black Drin (Dibër County, Albania), 30.vii.2025 (© Sylvain Cuvelier)

Results and discussion

Neptis sappho has never been historically recorded from Albania. The first comprehensive summary of species in Albania by [Rebel and Zerny](#) (1931) did not include *N. sappho*, and over the following century, there have been no reports confirming the species' presence in the country.

While *Neptis rivularis* (Scopoli, 1763) was cited in older literature as present in the country, [Cuvelier et al.](#) 2018 clarified that these mentions were the result of confusing historical nomenclature and actually referred to *Limenitis reducta* Staudinger, 1901. The late Prof. K. Misja confirmed in a personal communication that he had never encountered any *Neptis* species in Albania.

A single unverified *N. sappho* record, from between Dragobi and Valbonë on 18.viii.2018, appeared on Observado ([url](#)) but lacked photographic documentation and was later marked as uncertain. The site is ecologically suitable, and the date supports the likelihood of a second-generation *N. sappho*, reducing the chance of confusion with *N. rivularis*. And, potential misidentification cannot be ruled out, as *Limenitis camilla* has been documented at nearby locations.

Prior to 2025, a few other records claimed the presence of *N. sappho* at various localities in Albania. However, none were supported by verifiable evidence such as in situ photographs or collected specimens. Moreover, the described habitats did not correspond to the species' known ecological preferences, casting further doubt on the reliability of these records. Upon further inquiry, it became evident that there was uncertainty as to whether the observations might have involved confusion with one of the similar species. As a result, these records were not included in the [Flutur e Shqipërisë Atlas 09.i.2025](#). However *N. sappho* was considered potentially present in Albania, given its confirmed occurrences near the Albanian borders in North Macedonia, Kosovo and Metohija, and Montenegro (Fig. 7), where it reaches its southern distribution limit and appears to be locally rare and uncommon.

N. sappho is widespread in the northern Balkans, being rather common in the northern half of Croatia ([Marić, Butterflies of Croatia \[online\]](#)). In Bosnia & Herzegovina ([Jakšić 1988](#)), it occurs in scattered localities, with records decreasing toward the south. It is widely recorded throughout Serbia ([Miljević et al. 2014-2025, Alciphron - database on insects of Serbia \[online\]](#)) and extensively found in Romania ([Székely 2008; Rákossy 2013](#)), except in areas south of the Carpathian Mountains. Overall, the number of recorded localities shows a consistent decline moving southward across the region.

In the neighbouring countries of Albania (Fig. 7), namely Montenegro, Kosovo, North Macedonia and Greece, *N. sappho* is known from few localities and appears to be generally scarce.

For Montenegro, no published records of *N. sappho* existed prior to Franeta (2018). The few documented observations reported by Franeta include worn males near Bijelo Polje and specimens collected in the Đalovića Gorge. Recent citizen science data from Observado and iNaturalist confirm its presence at scattered localities in northern Montenegro, particularly along the Tara River and within Durmitor National Park. These findings suggest that the species' distribution in Montenegro may be more extensive than currently documented

Kosovo's first documented occurrence was reported by [Jakšić & Zivić \(1995-1998\)](#) from the Rugova Gorge (Serbian: Rugovska Klisura; Albanian: Gryka e Rugovës), a limestone canyon located near the

city of Peć (Albanian: Peja) in western Kosovo. [Koren et al.](#) (2021) report 4 localities across central, eastern, and southeastern Kosovo. [Jakšić](#) (2025) summarises the current state of knowledge on Kosovo.

[Bytyçi et al.](#) 2023 document two localities in the northern part of Mt. Koritnik, a mountain situated on the border with Albania, with a small portion extending into Albanian territory.

Data from Observado and iNaturalist confirm its presence in southwestern Kosovo near Prizren, central Kosovo near Prishtinë, and eastern Kosovo.

In Northern Macedonia, [Schaidler & Jakšić](#) (1989) document a single locality near Skopje. [Krpáč & Darcemont](#) (2012) include *N. sappho* in the national Red List, though without further details. [Abdija et al.](#) (2013) record one locality near Stenche, south of Tetovo. Observations from both Observado and iNaturalist platforms confirm the presence of *N. sappho* across North Macedonia, with records extending from the western border region toward the northeast and southeast. The westernmost locality lies near Kičevo, within the Mavrovo National Park. Additional nearby records, although outside the park boundaries, include localities northwest of Kolari and near Ivanchishta.

An earlier record from the vicinity of Skopje was published by [Schaidler & Jakšić](#) (1989), and iNaturalist confirms its presence there. In northeastern North Macedonia, additional iNaturalist records are available, while a southern observation in North Macedonia is also included.

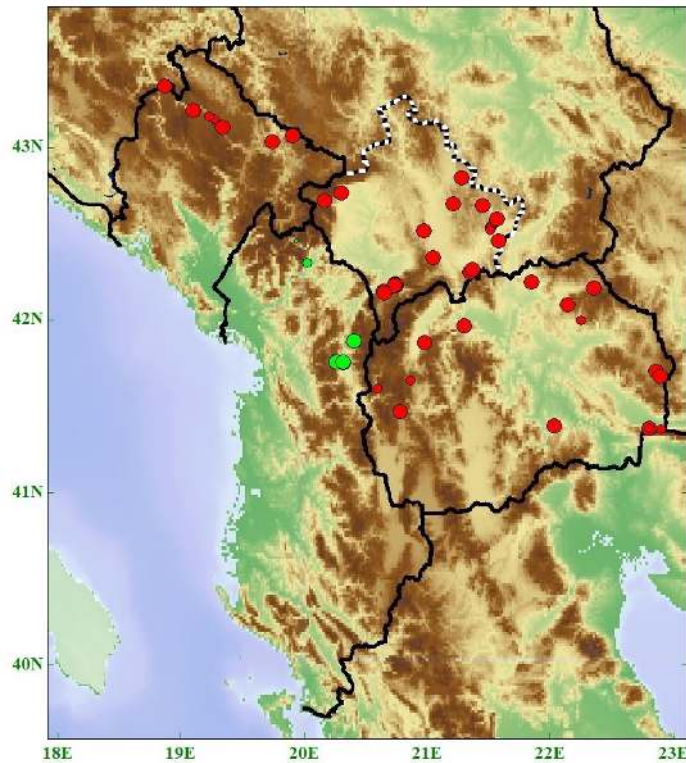


Fig. 7. Geographic distribution of *N. sappho* in Albania (●) and in adjacent territories of Montenegro, North Macedonia, and the region of Kosovo and Metohija (territorial status disputed) (●)

Solid black line: recognized international borders; dashed black line: border of disputed territorial status.

Dot size indicates record reliability: large = confirmed record (collected, netted, photographed, or published); medium = reliable sighting; small = unconfirmed or unsubstantiated record (© Sylvain Cuvelier)

For Greece, [Pamperis](#) (2025) documents the occurrence of *N. sappho* exclusively in northeastern regions, a distribution further confirmed by observations from Observado in the same area.

The first records of *N. sappho* from various localities in the northeast of Albania provide clear evidence that the species is part of the country's butterfly fauna.

The original known food plants of *N. sappho* are *Lathyrus* species, with *L. vernus* and *L. niger* being most frequently cited. Both plants are native and widespread across the major biogeographical regions of Albania (personal communication, Lulëzim Shuka). According to [Shehu et al.](#) (2014) *Robinia pseudoacacia* is naturalized throughout Albania, except in certain alpine regions. In all localities where *N. sappho* was recorded, *R. pseudoacacia* was firmly established. Photographic evidence is provided in the publication (Fig. 1-3, 8).

Determining whether *N. sappho* has historically been overlooked in Albania or is a recent arrival may forever remain an open question. Much like the populations in the south-eastern Alpine habitats, where the species experienced declines followed by recovery likely linked to adaptation on *R. pseudoacacia*, the Albanian records could reflect either a long-hidden presence or a more recent establishment facilitated by adaptation to the widespread presence of the invasive *R. pseudoacacia*.

A study ([Teqja et al.](#) 2017) comparing historical and projected climate data for Albania shows that rising cold-season temperatures are expected to shift plant hardiness zones, with colder zones

disappearing and warmer ones emerging. While these changes may also create opportunities for specific species, significant uncertainties remain, particularly due to local climate variability and the limits of current predictive models. *L. vernus* and *L. niger* are shade-tolerant, cold-adapted woodland species, often found in cool, deciduous forests with stable moisture and lower temperatures, especially in montane or submontane zones. In contrast to *Lathyrus* species, *R. pseudoacacia* is a thermophilic and drought-tolerant species. These shifts could favour the further spread of thermophilous species such as *R. pseudoacacia*, while potentially reducing the suitable habitat for cold-adapted natives like *L. vernus* and *L. niger*. Whether this adaptation represents a long-term opportunity or an ecological trap for *N. sappho* in Albania remains uncertain, particularly in the face of climate-driven changes to habitat composition and plant distributions.



Fig. 8. Habitat of *Neptis sappho*, east of Çidhën, along the Black Drin (Dibër County, Albania), 29.vii.2025 (© Sylvain Cuvelier)

Fig. 9. Habitat of *Neptis sappho*, northwest of Çidhën (Dibër County, Albania), 30.vii.2025 (© Sylvain Cuvelier)

Conclusions

The recent discovery of *Neptis sappho* in Albania marks the first verified records for the country, filling a gap at the southern edge of its known European range. While previously undocumented, its occurrence is not unexpected, given its presence in neighbouring regions and the availability of suitable habitats. The species was found in areas dominated by the invasive *Robinia pseudoacacia*. The presence of similar suitable habitats across a broader area suggests that *N. sappho* is likely more widespread in Albania than currently documented, though its populations may remain localised. As such habitats extend well beyond the current records, *N. sappho* is likely more widespread in Albania than currently documented, underscoring the need for further field research to clarify its status both within the country and in underexplored areas of the Balkans. Given ongoing climate-driven changes and the expanding distribution of *R. pseudoacacia*, the future range of *N. sappho* in Albania and adjacent regions may continue to shift.

Author contribution

Sylvain Cuvelier: conceptualisation, field work, analysis, visualisation, writing - original draft, writing – review and editing.

Michel Taymans: field work, literature review, visualisation, writing – review and editing.

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References

- Abdija X., Beadini N., Beadini S. & Iseni A. 2013a. Preliminary data for the familia Nymphalidae of Sharr Mountain and its surroundings (Mavrovo and Pollog). — *Anglisticum Journal* (IJLLIS) **2**(2): 227–236 ([url](#))
- Beneš J., Konvička M., Dvořák J., Fric Z., Havelda Z., Pavlíčko A., Vrabec V. & Weidenhoffer Z. 2002). Motýli České republiky: rozšíření a ochrana - *Butterflies of the Czech Republic: distribution and conservation I, II*. — Praha, SOM. 857 p.
- Bozano G. 2008. *Guide to the Butterflies of the Palearctic Region, Nymphalidae, part 3: Subfamily Limenitidinae, Tribe Neptini*. — Milano: Omnes Artes. 77p.
- Bury J. 2020. Common Glider – *Neptis sappho* (Pallas, 1771) (Lepidoptera: Nymphalidae) in south-eastern Poland: another case of oversight or rapid range expansion of a species considered extinct?. — *Annals of the Upper Silesian Museum in Bytom Entomology* 29 (online 006): 1–20. <http://doi.org/10.5281/zenodo.4066591>
- Bytyçi P., Zhushi-Etemi F., Kabashi-Kastrati E. & Çadraku H. 2023. Biodiversity of butterflies (Lepidoptera, Papilionoidea) in Mountain Koritnik in the Republic of Kosovo. — *Journal of Insect Biodiversity and Systematics*, 9 (4), 623–642. doi.org/10.52547/jibs.9.4.623
- Cuvelier S., Parmentier L., Paparisto A. & Couckuyt J. 2018. Butterflies of Albania - Fluturat e Shqipërisë. New surveys, new species and a new checklist (Lepidoptera: Papilionoidea) — *Phegea* 46(2): 48-69. ([url](#))
- Cuvelier S. & Paparisto A. 2025. Fluturat e Shqipërisë Atlas 09.i.2025. — *Chronicles Fluturat e Shqipërisë* 2025(1): 1–18. doi.org/10.5281/zenodo.14947890
- Franeta F. 2018. Checklist of the butterflies (Lepidoptera: Papilionoidea) of Montenegro. — *Zootaxa* 4392: 128-148. doi.org/10.11646/zootaxa.4392.1.6
- Gascoigne-Pees M., Trew D., Pateman J. & Verovnik R. 2008. The distribution, life cycle, ecology and present status of *Leptidea morsei* (Fenton 1882) in Slovenia with additional observations from Romania (Lepidoptera: Pieridae). — *Nachrichten des Entomologischen Vereins Apollo* 29(3): 113–121. ([url](#))
- Higgins L. & Riley N. 1970. *A field Guide to the Butterflies of Britain and Europe*. — London: Collins (Ed.). 380 p.
- Jakšić P. 1988. *Privremene karte rasprostranjenosti dnevnih leptira Jugoslavije (Lepidoptera, Rhopalocera) - Provisional distribution maps of the butterflies of Yugoslavia (Lepidoptera, Rhopalocera)*. — Zagreb: Jugoslavensko entomološko društvo (Ed.). 216 p.
- Jakšić P. & Zivić N. 1995-1998. The butterflies of the Kosovo and Metohija in South Serbia (Lepidoptera: Hesperioidea and Papilionoidea). — *Glasnik Prirodnjačkog Muzeja u Beogradu* 49-50: 201-218.
- Jakšić P. 2025. *The Butterflies and Skippers of the Kosovo and Metohija, Republic of Serbia A Faunal and Ecological study*. — Institute for Biological Research "Siniša Stanković" – National Institute of Republic of Serbia, University of Belgrade, 277 p. ([url](#))
- Jutzeler D., Höttinger H., Malicky M., Rebeušek F., Sala G. & Verovnik R. 2000. Biology of *Neptis sappho* (Pallas, 1771) based on the monography by Timpe & Timpe (1993) and its actual distribution and conservation status in Austria, Italy and Slovenia (Lepidoptera: Nymphalidae) — *Linneana Belgica* 17(8): 315-332.
- Koren T., Kulijer D., Vukotić K. & Zhushi-Etemi F. 2021. Contribution to the knowledge of the butterfly diversity (Lepidoptera: Papilionoidea) of Kosovo. — *Entomologist's Gazette* 72 (2), 119–129. doi.org/10.31184/G00138894.722.1789
- Kudrna 2019. *Distribution of Butterflies and Skippers in Europe (Lepidoptera: Rhopalocera, Grypocera). 24 Years Mapping European Butterflies (1995-2019) Final report*. — Prachatice: Společnost pro Ochranu Motýlů (SOM). 364 p.
- Marić M. *Neptis sappho*. In *Butterflies of Croatia. Monograph* (consulted 02.ix.2025) ([url](#))
- Miljević, M., Tot I. & Djurić M. 2014-2025. *Neptis sappho*. In *Alciphron - database on insects of Serbia (butterflies)* (consulted 02.ix.2025) ([url](#))
- Palmi P. *Neptis sappho*. In *Farfalle Italiane. Monograph Neptis sappho* (consulted 02.ix.2025) ([url](#))
- Pamperis L. 2025. *The Butterflies of Greece – New maps distribution of species 3.3" and new chart 4.5"*. ([url](#))
- Rákossy L. 2013. *Fluturii diurni din România. Cunoaștere, protecție, conservare*. — Cluj-Napoca: Editura Mega. 352 p.

- Rebel H. & Zerny H. 1931. Die Lepidopterenfauna Albaniens. — *Denkschriften der Akademie der Wissenschaften Wien, mathematischnaturwissenschaftliche Klasse* 103: 37–161 ([url](#))
- Schaider P. & Jakšić P. 1989. *Die Tagfalter von Jugoslawisch Mazedonien (Rhopalocera und Hesperidae)*. — München: Selbstverlag Paul Scheider. 199 p.
- Shehu J., Imeri A., Kupe L. & Mullaj A. 2014. The biological invasion in Albania. — *Albanian Journal of Agricultural Sciences* 2014 (Special Edition): 39-45.
- Székely L. 2008. *The Butterflies of Romania - Fluturii de zi din România*. — Braşov: C2 Design. 304 p.
- Taymans M. & Cuvelier S. 2025. A dynamic checklist of the Western Palearctic butterflies hyperlinked to the original descriptions at species, genus and family level (Lepidoptera, Papilionoidea). — *Archives of Western Palearctic Lepidoptera* 2025(1): 1-70. doi.org/10.5281/zenodo.14733224
- Tegja Z., Kopali A., Libohova Z. & Owens P. 2017. A Study of the Impacts of Climate Change Scenarios on the Plant Hardiness Zones of Albania. — *Journal of Applied Meteorology and Climatology* 56: 615-631. doi.org/10.1175/JAMC-D-16-0108.1
- Tshikolovets V. 2003. *Butterflies of Eastern Europe, Urals & Caucasus. An illustrated Guide*. — Kyiv-Brno: Tshikolovets (Ed.). 176 p.
- Tshikolovets V. 2011. *Butterflies of Europe & the Mediterranean area*. — Pardubice: Tshikolovets (Ed.). 544 p.
- Tshikolovets V. & Nekrutenko Y. 2012. *The Butterflies of Caucasus and Transcaucasia (Armenia, Azerbaijan, Georgia and Russian Federation)*. — Pardubice: Tshikolovets (Ed.). 423 p.
- Tuzov V., Bogdanov P., Churkin S., Dantchenko A., Devyatkin A., Murzin V., Samodurov G. & Zhdanko A. 2000. *Guide to the Butterflies of Russia and adjacent territories (Lepidoptera, Rhopalocera)*. Volume 2. Libytheidae, Danaidae, Nymphalidae, Riodinidae, Lycaenidae. — Sofia, Russia: Pensoft. 580 p.
- Verovnik R., Rebeušek F. & Jež M. 2012. *Atlas dnevnih metuljev (Lepidoptera: Rhopalocera) Slovenije. Atlas of butterflies (Lepidoptera: Rhopalocera) of Slovenia*. Center za kartografijo favne in flore. — Maribor: Miklavž na Dravskem polju. 208 p.