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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?

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Abstract: Common Glider – *Neptis sappho* (Lepidoptera: Nymphalidae) always was considered as extremely rare species in Poland. It was last seen 1967 and because of lack of new records it was regarded extinct in Poland. In 2019 and 2020 the species was found at 28 new sites in 6 mesoregions of SE Poland: the Western Bieszczady Mts., the Jasło Foothills, the Dynów Foothills, the Przemyśl Foothills, the Chyrów Plateau and the Lower San Valley close to a localities where it had been recorded in the past. The typical habitats of *N. sappho* were open broadleaved and mixed woodland, especially in river and stream valleys. The habitat is largely shaped by *Robinia pseudoacacia*, which is the main food-plant of its caterpillars in Central Europe. In south-eastern Poland *N. sappho* reaches its northern range, and discovering so many new sites may be the result of fluctuations at the range boundary associated with global warming, beneficial for this species. Another explanation may be that *N. sappho* was overlooked, as it was considered extinct on the territory of Poland. Due to the rediscovering of *N. sappho* in south-eastern Poland, it was proposed to cover this species one of the forms of legal protection available in our country, mainly due to the danger of catching by collectors and insect dealers.

Key words: rediscovering, endangered species, the Przemyśl Foothills, the Western Bieszczady Mts., the Jasło Foothills, the Dynów Foothills, the Chyrów Plateau, the Lower San Valley, conservation management.

INTRODUCTION

Common Glider – *Neptis sappho* (PALLAS, 1771) (Lepidoptera: Nymphalidae) is an Euro-Siberian species, found from the northern Italy, Austria, Slovakia, the Balkans, northern Greece, southern Russia and temperate Asia to Korea and Japan (KUDRNA 2002). In Europe the species was recorded in 19 countries such as Austria, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Greece, Hungary, Italy, Kosovo, North Macedonia, Moldavia, Poland, Romania, the European part of Russia, Serbia, Slovakia, Slovenia and

Ukraine but it is usually local or very local throughout and it is absent from the north and the Mediterranean region (TOLMAN & LEWINGTON 1997, JUTZELER *et al.* 2000, LELO 2000). It became probably extinct in Belarus (LVOVSKIY & MARGUN 2007), in the Czech Republic it is considered extinct since 1977 (LAŠTŮVKA & LIŠKA 2011) as well as in Poland since 1967 (DĄBROWSKI & KRZYWICKI 1982, BUSZKO & NOWACKI 2002, BUSZKO 2008, BURY 2010). In the last years it was discovered in Montenegro (FRANETA 2018).

In some of the European countries and territories *N. sappho* was estimated as rare, vulnerable or endangered (van SWAAY & WARREN 1999, WITKOWSKI *et al.* 2003). Interestingly, the species is not listed, even as extinct, in the work “Polish Carpathians Mts. as a refugium of the endangered species of invertebrates” (PAWŁOWSKI 2011).

In Poland *N. sappho* was known from locality of Węgierka near Pruchnik on the Dynów Foothills, where was observed in the years 1958-1967 (SKALSKI & ŚLIWIŃSKI 1975, DĄBROWSKI & KRZYWICKI 1982, BUCIOR 1987, BUSZKO 2008). It was also mentioned from Olchowa near Lesko – the Western Bieszczady Mts., but its presence in this position has never been confirmed (SCHEFFNER 1925, ROMANISZYN & SCHILLE 1929, SCHRAMM 1948, BIELEWICZ 1973, PRZYBYŁOWICZ 2000).

N. sappho has specific habitat requirements - it occurs on the edges of forest roads, clearings and glades of deciduous and mixed woods with bordering edges mostly formed by invasive *Robinia pseudoacacia* L. Generally, edges on the external borders of woods and the open areas are almost completely uninhabited. Butterflies occurs from 200 m to c.a. 1500 m above sea level (TOLMAN & LEWINGTON 1997, JUTZELER *et al.* 2000, LAFRANCHIS 2007).

N. sappho in its northern range shows a close connection with forests habitats similar to sympatric butterfly *Leptidea morsei major* GRUND, 1905, and the species can be considered a characteristic of mixed thermophilous oak-woods, and particularly of the “*Querceto-Carpinetum*” type (KUHNERT 1967, LORKOVIĆ 1975). The butterflies occurs both in wet and in dry types of biotopes and the protection against the wind is very important for the presence of the species (JUTZELER *et al.* 2000).

The ecology and behaviour of *N. sappho* in Europe is relatively well known. In Central Europe *N. sappho* is bivoltine (TOLMAN & LEWINGTON 1997). In south-eastern Poland the species was observed in two well separated broods from mid May to late June and from mid July to mid August (ROMANISZYN & SCHILLE 1929, Krzywicki 1982). In Austria the butterflies of the 1st brood usually fly from early May to late June, and the 2nd one from early July to late August or mid September (JUTZELER *et al.* 2000). In eastern Austria imagines of the 1st brood can already be observed at the end of April (HABELER 1965) and butterflies of the 2nd brood still flies in October (HOFFMANN & KLOS 1914, DANIEL 1968). In Slovakia butterflies fly from early April to late August (KALIVODA 2020). In Ukraine the flight period continues from late April to late August or early September in the south (NEKRUTENKO & TSHIKOLOVETS 2005). Sometime the two broods can overlap (LINDENBAUER 1949). The butterflies during the early morning and late afternoon often stay near the ground and basking on the sun with outspread wings. At midday they are usually fly at higher levels up to the wood canopy. Butterflies rarely visit flowers, more often they collect water from the ground or wet leaves, they also collect honeydew, sometimes perch on animal excrement and even on sweaty human skin (JUTZELER *et al.* 2000).

Latyrus vernus (L.) BERNH., *Latyrus niger* (L.) BERNH., *Cytisus hirsutus* L. and invasive *Robinia pseudoacacia* L. are listed as the host-plants of the species in Central Europe (ROMANISZYN & SCHILLE 1929, KRZYWICKI 1982, JUTZELER *et al.* 2000, NEKRUTENKO & TSHIKOLOVETS 2005, BUSZKO 2008). The females lay eggs on the upper side of the leaves

of the plants, very often near the top of a leaf. In the last time *Robinia pseudoacacia* L. is preferred for ovipositing on the many areas. The females usually choose small *Robinia* trees which receive sunshine for only a short time of the day. On higher ones, the eggs can be found between approximately 50 cm and 2.50 – 3 m above the ground (JUTZELER *et al.* 2000).

Caterpillars can be observed between early June and early July and again from early August to the late October sitting on the upper side of the leaves of the host-plant. Fully grown caterpillars hibernate (KRZYWICKI 1982, JUTZELER *et al.* 2000). In spring - early April, the caterpillars wake up from hibernation, and due to lack of food – *Robinia* begins to sprout late, they do not forage, but prepare to pupate. Pupation occurs on plants stalks and branches near the ground. The pupal phase continues about 4 weeks in spring, while only 6-8 days in summer (JUTZELER *et al.* 2000).

METHODS

Fieldwork was carried out in the years 2019 - 2020 in 8 mesoregions of south-eastern Poland – in the Western Bieszczady Mts., the Jasło Foothills, the Chyrów Plateau, the Przemyśl Foothills, the Dynów Foothills, the Rzeszów Foreland, the Tarnogród Plateau and on the Lower San Valley.

Butterflies and preimaginal stages of *N. sappho* were followed in their habitats. Their occurrence as well as their habitats was documented by photographs (Figs. 1–20). The names of macro- and mesoregions are given according to “Geografia regionalna Polski” (KONDRACKI 2002). UTM (Universal Transverse of Mercator) co-ordinates (10x10 km grid) are also provided for each site. The program MapaUTM ver. 5.2 (<http://www.heteroptera.us.edu.pl/mapautm.html> - author G. Gierlasiński) was used to prepare the map (Fig. 21).

The following abbreviations of the names of the observers were used – Jarosław Bury – **JB**, Adam Górnicki – **AG**, Jacek Mazepa – **JM**, Mariusz Obszarny – **MO**, Stanisław Włodyka – **SW**, anonymous observer – **NN**.

RESULTS

N. sappho was recorded in 28 sites within 8 squares of a UTM grid (100 km² each) localised in 6 mesoregions: the Bieszczady Mts., the Jasło Foothills, the Dynów Foothills, the Przemyśl Foothills, the Chyrów Plateau and the Lower San Valley, i.e. FA11, FA12, FA20, FA21, FA31, FV04, FV24 and EV48 (Fig. 21). Within the Tarnogród Plateau the species has not been detected so far.

Description of new sites

The Chyrów Plateau:

No1. Siedliska-Jaksmanice – FA31, about 240-290 m a.s.l., 07.2020 – 1 butterfly (NN), 17.08.2020 – 1 caterpillar (L1), shady forest road on *Robinia pseudoacacia* L. (JB). The site covers about 73 ha of forest area. Part of the site meets the Polish-Ukrainian borderline. Within the site there is a Natura 2000 area “Salis Soglio” (PLH 180008) and the Nature Reserve “Skarpa Jaksmanicka”. *Robinia* vegetation is very abundant in some parts of the area, especially near the borderline. The forest complex extends on both sides of the border and is much larger on the Ukrainian side. The closest known locality of the species is approximately 11 km to the west – locality No3.

No2. Łuczyce – FA31, about 225-270 m a.s.l., 22.08.2020 – 1 caterpillar (L1), very small clearings and c.a. 800 m shady forest road, on *Robinia pseudoacacia* L. (JB & JM). The site covers about 23,5 ha of forest area.

No3. Pikulice SE – FA21, about 240-280 m a.s.l., 08.2019 – 3 butterflies, clearings and shady forest roads (AG), 03.08.2020 – about 20 butterflies (JB & JM), 10.08.2020 – about 15 butterflies, clearings and shady forest roads, 16.08.2020 – 6 butterflies, on the edges of the clearings and on shady forest roads - 8 caterpillars (L1, L2) and 2 eggs on *Robinia pseudoacacia* L. (JB & MO). The site covers about 33,5 ha of forest area. Inside the area there are 4 large clearings and several smaller ones, now forested.

No4. Pikulice M – FA21, about 270-310 m a.s.l., 03.08.2020 – 3 butterflies, very small clearings and shady forest roads (JB & JM), 16.08.2020 – 2 caterpillars (L1), on the small clearing and deep in the forest, on *Robinia pseudoacacia* L. (JB & MO). The site covers about 23 ha of forest area. Inside the area there are no large clearings.

No5. Pikulice NW – FA21, about 280-320 m a.s.l., 03.08.2020 – 3 butterflies, clearings and shady forest roads (JB), 16.08.2020 – 1 butterfly, small clearings and shady forest roads (JB & JM). The site covers about 30,5 ha of forest area. Inside the area there are small clearings, a medium one was created after a few large trees were knocked down by the wind.

No6. Pikulice R – FA21, about 305-385 m a.s.l., 03.08.2020 – 2 butterflies, c.a. 800 m long forest road, (JB & JM), 16.08.2020 – 16 caterpillars (L1, L2, L3) on *Robinia pseudoacacia* L. (JB & MO). 29.08.2020 – 20 caterpillars (L2, L3) on *Robinia pseudoacacia* L. (JB).

No7. Grochowce – FA21, about 300 m a.s.l., 17.08.2020, 2 caterpillar (L1) on *Robinia pseudoacacia* L., deep in the forest close to near the southern edge of the forest complex (MO). The site covers about 50 ha of forest area. Inside the area there are no large clearings. Site approximately 800 m to the west from locality No2 and 500 m to the east from locality No7.

No8. Grochowce R – FA21, about 295-395 m a.s.l., 25.07.2020, 1 butterfly, c.a. 1500 m long forest road (JB), 16.08.2020, 10 caterpillars (L1, L2) on *Robinia pseudoacacia* L. (JB & MO).

The Przemyśl Foothills:

No9. Grochowce RC – FA21, about 270-385 m a.s.l., 16.08.2020, 4 caterpillars (L1, L2) on *Robinia pseudoacacia* L., c.a. 300 m long forest road leading to the clearing deep in the forest (JB & MO).

No10. Grochowce C – FA21, about 365 m a.s.l., 16.08.2020 1 caterpillar (L1) on *Robinia pseudoacacia* L., overgrown clearing deep in the forest (JB).

No11. Przemyśl-Kruheli Wielki – FA21, about 320 m a.s.l., 03.08.2020, 1 butterfly, deep in the forest, close to near the northern edge of the forest complex, 29.08. 2020, 2 caterpillars (L2) on *Robinia pseudoacacia* L. (JB). The site covers about 4 ha of forest area. Site approximately 150 m to the north from locality No5.

No12. Przemyśl-Kruheli Wielki RE – FA21, about 365-385 m a.s.l., 17.08.2020, 2 caterpillars (L1) on *Robinia pseudoacacia* L. – c.a. 500 m long forest road in the eastern part of the forest complex (MO). 29.08.2020, 2 caterpillars (L2) on *Robinia pseudoacacia* L. (JB).

No13. Przemyśl-Kruheli Wielki RW – FA21, about 240-330 m a.s.l., 17.08.2020, 1 caterpillar (L1) c.a. 1600 m long forest road in the western part of the forest complex (MO), 29.08.2020, 6 caterpillars (L2, L3) on *Robinia pseudoacacia* L. (JB).

No14. Pralkowce – FA21, about 275-330 m a.s.l., 29.08.2020, 1 butterfly and 3 caterpillar (L3) on *Robinia pseudoacacia* L. (JB), c.a. 1500 m long forest road in the southern part of the forest complex. The historical locality in Węgierka is located approximately 14 km to the north-west.



Fig. 1. *Neptis sappho* (PALLAS, 1771) – Pikulice, the Chyrów Plateau. 08.08.2020. Photo by J. Bury.



Fig. 2. *Neptis sappho* (PALLAS, 1771) – Pikulice, the Chyrów Plateau. 08.08.2020. Photo by J. Bury.



Fig. 3. An egg of *Neptis sappho* (PALLAS, 1771) – Pikulice, the Chyrów Plateau. 14.08.2020. Photo by J. Bury.



Fig. 4. A first instar caterpillar of *Neptis sappho* (PALLAS, 1771) – Pikulice, the Chyrów Plateau. 14.08.2020. Photo by J. Bury.



Fig. 5. A first instar caterpillar of *Neptis sappho* (PALLAS, 1771) – Grochowce, the Chyrów Plateau. 14.08.2020. Photo by J. Bury.



Fig. 6. A first instar caterpillar of *Neptis sappho* (PALLAS, 1771) – Grochowce, the Chyrów Plateau. 14.08.2020. Photo by J. Bury.



Fig. 7. A first instar caterpillar of *Neptis sappho* (PALLAS, 1771) before the first molting – Grochowce, the Chyrów Plateau. 14.08.2020. Photo by J. Bury.



Fig. 8. A second instar caterpillar of *Neptis sappho* (PALLAS, 1771) – Witoszyńce, the Przemyśl Foothills. 16.08.2020. Photo by J. Bury.



Fig. 9. A second instar caterpillar of *Neptis sappho* (PALLAS, 1771) – Wapowce, the Hołubla Valley, the Dynów Foothills. 31.08.2020. Photo by J. Bury.



Fig. 10. A third instar caterpillar of *Neptis sappho* (PALLAS, 1771) – Grochowce, the Przemyśl Foothills. 14.08.2020. Photo by J. Bury.



Fig. 11. A fourth instar caterpillar of *Neptis sappho* (PALLAS, 1771) – Przemyśl – Kruhel Wielki, the Przemyśl Foothills. 29.08.2020. Photo by J. Bury.



Fig.12. A fourth instar caterpillar of *Neptis sappho* (PALLAS, 1771) – Prądkowce, the Przemyśl Foothills. 29.08.2020. Photo by J. Bury.



Fig. 13. A prepupa of *Neptis sappho* (PALLAS, 1771). Photo by P. Borkowski.



Fig. 14. A chrysalis of *Neptis sappho* (PALLAS, 1771). Photo by P. Borkowski.



Fig. 15. A biotope of *Neptis sappho* (PALLAS, 1771) – Pikulice, the Chyrów Plateau. 14.08.2020. Photo by J. Bury.



Fig.16. A biotope of *Neptis sappho* (PALLAS, 1771) – Siedliska-Jaksmanice - the Polish-Ukrainian borderline, the Chyrów Plateau. 17.08.2020. Photo by J. Bury.



Fig. 17. A biotope of *Neptis sappho* (PALLAS, 1771) – Książyce, the Przemyśl Foothills. 22.08.2020.
Photo by J. Bury.



Fig.18. A biotope of *Neptis sappho* (PALLAS, 1771) – Prądkowce, the Przemyśl Foothills. 29.08.2020.
Photo by J. Bury.



Fig. 19. A biotope of *Neptis sappho* (PALLAS, 1771) – Wapowce, the Hołudla Valley, the Dynów Foothills. 31.08.2020. Photo by J. Bury.



Fig.20. A biotope of *Neptis sappho* (PALLAS, 1771) – Pikulice, the Chyrów Plateau. 14.08.2020. Photo by J. Bury.

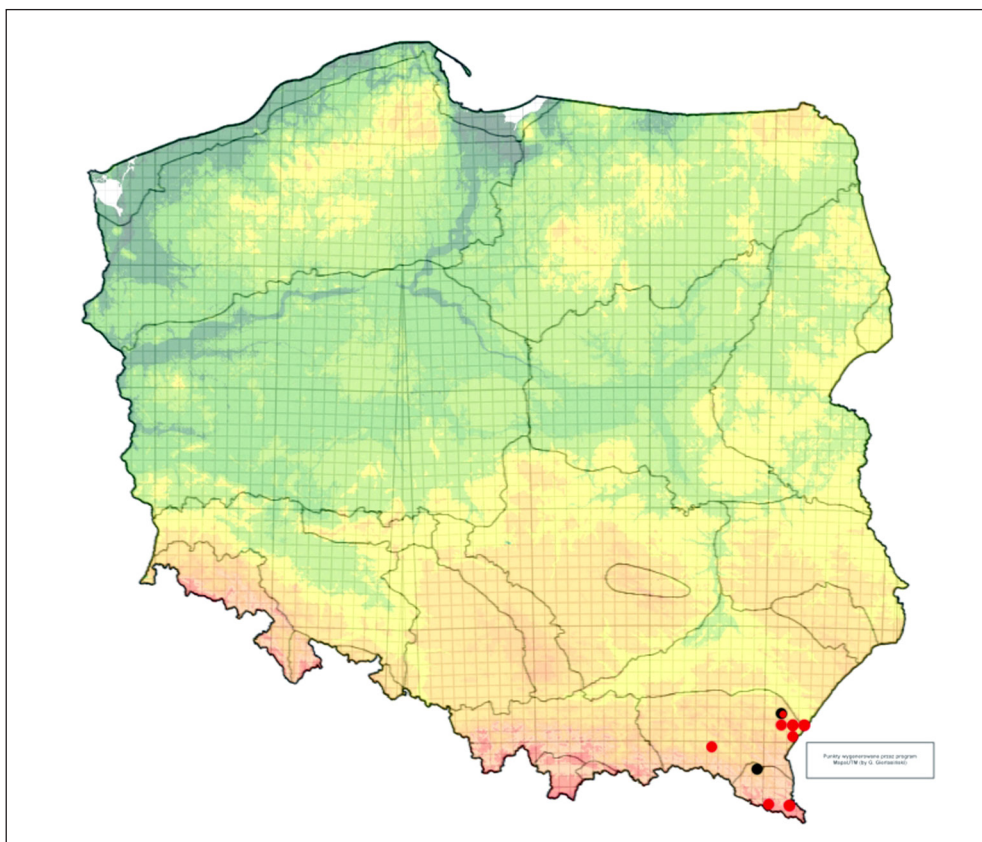


Fig. 21. Map of the distribution of *Neptis sappho* (PALLAS, 1771) localities in Poland: black dots – positions known until 1967 (SCHEFFNER 1925, ROMANISZYN & SCHILLE 1929, SCHRAMM 1948, BIELEWICZ 1973, SKALSKI & ŚLIWIŃSKI 1975, DĄBROWSKI & KRZYWICKI 1982, KRZYWICKI 1982, BUCIOR 1987, PRZYBYŁOWICZ 2000, BUSZKO & MASŁOWSKI 2008, BURY 2010); red dots – new discovered positions from the period 2019-2020 (BURY 2020a, b).

No15. Witoszyńce – FA21, about 420-425 m a.s.l., 16.08.2020 – 4 caterpillars (L1, L2) on *Robinia pseudoacacia* L., c.a. 100 m long section of forest road (JB & MO). The closest known site of the species is located approximately 1.5 km to the east – locality No7.

No16. Ostrów – FA21, about 280-320 m a.s.l., 31.08.2020, 8 caterpillars: 7 (L2) & 1 (L3) on *Robinia pseudoacacia* L., c.a. 400 m long forest road leading to the small clearings deep in the forest (JB), 13.09.2020, 15 caterpillars (MO).

No17. Dybawka – FA21, about 320 m a.s.l., 31.08.2020, 1 caterpillar (L2) on *Robinia pseudoacacia* L., the small clearings in the forest (JB).

No18. Krasiczyn – FA21, about 335-395 m a.s.l., 31.08.2020, 3 caterpillars (L2) on *Robinia pseudoacacia* L., c.a. 1000 m long forest road (JB).

No19. Krasiczyn HVL – FA21, about 295-335 m a.s.l., 17.09.2020, 2 caterpillars (L3) on *Robinia pseudoacacia* L., c.a. 3500 m long clearing under the high voltage line running through the forest (MO).

No20. Kniażyce – FA20, about 305-325 m a.s.l., 22.08.2020, 1 butterfly and 5 caterpillars: 1 (L1) & 4 (L2) on *Robinia pseudoacacia* L., c.a. 600 m long forest road leading to the clearing deep in the forest (JB).

No21. Kniażyce RF – FA20, about 305-345 m a.s.l., 14.09.2020, 8 caterpillars: (L3, L4) on *Robinia pseudoacacia* L., c.a. 400 m long forest road and adjacent forest with an area c.a. 11,5 ha (JB).

No22. Brylińce – FA20, about 255-310 m a.s.l., 10.09.2020, 5 caterpillars: (L2, L3) on *Robinia pseudoacacia* L., c.a. 1100 m long forest road leading to the clearing deep in the forest (MO), 12.09.2020, 1 caterpillar (L3) on *Robinia pseudoacacia* L. (JB).

The Lower San Valley:

No23. Przemyśl - Zielonka – FA21, about 235 - 355 m a.s.l., 17.08.2020, 1 butterfly, dominated by *Robinia pseudoacacia* L. small forest 5,5 ha (JB). The closest known site of the species is located approximately 1 km to the south – locality No5.

The Western Bieszczady Mts.:

No24. Ustrzyki Górne – FV24, 08.2019, 1 butterfly, forest road (NN).

No25. Przylup – FV04, about 660-790 m a.s.l., 12.08.2020, 1 butterfly, c.a. 500 m long forest road in the southern part of the forest complex (JB).

The Jasło Foothills:

No26. Bania near Wietrzno – EV59, about 375 m a.s.l., 27.08.2020, 1 butterfly, c.a. 1000 m long road in the southern part of the forest complex (SW).

The Dynów Foothills:

No27. Wapowce – FA11, about 215-275 m a.s.l., 31.08.2020, 8 butterflies, 1 egg and 54 caterpillars (L2, L3) on *Robinia pseudoacacia* L., c.a. 2000 m long forest road in the Hołubla Valley and the small overgrown clearing with an area of 1.5 ha, (JB), 05.09.2020 – 8 caterpillars (L2 & L3) on *Robinia pseudoacacia* L., (JB & JM). The historical site in Węgiełka is located approximately 5.7 km to the north-west, while locality in Siedliska-Jaksmanice (No1) 20.7 km to the east.

No28. Belwin – FA12, about 285 m a.s.l., 05.09.2020, 1 caterpillar (L2) on *Robinia pseudoacacia* L., small overgrown clearing with an area of 0.5 ha, used as a timber yard (JB & MO). The historical site in Węgiełka is located approximately 6.1 km to the north-west, while locality in Wapowce (No27) 2.8 km to the south-west.

DISCUSSION

Neptis sappho (PALLAS, 1771), after its disappearing from the last known localization in Węgiełka FA12 within the Dynów Foothills, from 1967 was considered extinct in Poland (SKALSKI & ŚLIWIŃSKI 1975, DĄBROWSKI & KRZYWICKI 1982, BUCIOR 1987, BUSZKO & NOWACKI 2002). For over 50 years there were no data of the presence of this species in Poland, despite the fact that the area of SE Poland was covered by a series of detailed studies on the composition and distribution of butterflies occurring here (BIELEWICZ 1973, BUSZKO 1997, BURY 2012, BURY *et al.* 2015, 2016a, b, BURY 2017, BURY & GUZIK 2018, BURY 2019a, b, 2020c).

In 2019 the first mentions of the possibility of finding the species in this part of Poland appeared (A. Górnicki pers. comm.). This prompted detailed research on its distribution, which resulted in the discovery of 28 new sites of the species in 2019 and 2020.

It is very important to explain the origins of the emergence of so many new *N. sappho* sites after over 50 years break. The most likely explanation seems to be that in recent years a rapid expansion of the species range to the west took place from the sites located more to the east, especially around Lwów and possibly from the Ukrainian Carpathians or Transcarpathia. The presence of *N. sappho* in the vicinity of Lwów and Stanisławów has been confirmed from mid-nineteenth century to the present day (WERCHRAŃSKI 1893, SCHILLE 1911, ROMANISZYN & SCHILLE 1929, KRZYWICKI 1982, UKRBIN 2020). The thesis about the influx of the species from the east is clearly confirmed by the finding of the site in Siedliska-Jaksmanice (No1), located in the Polish-Ukrainian border zone. A similar expansion of the species towards the west has been observed in recent years also in south-western Slovakia in vicinity of Bratislava (H. Kalivoda – pers. comm.).

Currently, the mainstay of the species in Poland is a forest area of approx. 29 square km located south-west of Przemyśl, where 21 out of 28 new sites of the species are located (No3-No23). All these sites are located within the Przemyśl Foothills Landscape Park. Additionally two more stands are located in the nearby smaller forest complexes (No1 & No2) about 11 and 5.5 km to the east each. Another important breeding site is the locality in Wapowce in the Dynów Foothills (No27), where a third of all found caterpillars have been observed in one place. Importantly, this location of all newly discovered ones, is the closest to the historical site in Węgierka - about 5.7 km.

In the Western Bieszczady Mts. in two different sites the single butterflies have been documented only (No24 & No25) just like in the Jasło Foothills in one locality (No26). Breeding sites could not be established, so most likely, they were separate migrants from already known sites located in the Ukrainian Carpathians or Transcarpathia (UKRBIN 2020). Migration from previously known locations in the north-eastern part of Slovak Carpathians (for example from vicinity of Medzilaborce) through the Dukla Pass is also possible, whether part of these sites have been considered extinct since the 1960s (KALIVODA 2020).

In the context of new observations from the Western Bieszczady Mts., the only known but doubtful site of the species in Olchowa near Lesko - FV97 becomes more reliable (SCHEFFNER 1925, ROMANISZYN & SCHILLE 1929, SCHRAMM 1948, BIELEWICZ 1973, PRZYBYŁOWICZ 2000).

The main reason for such intense migrations and the related expansion of the species should be seen in the climate factor. The climatic changes lead to shifts of ecological niches of individual species and, as a consequence, may contribute to the colonization of new areas by them (SETTELE *et al.* 2008). At present, these changes contribute to the colonization success of many southern and thermophilic insects rapidly expanding areas of their occurrence in SE Poland (BURY 2017, 2019a, b, 2020c).

However, another scenario cannot be completely ruled out. Possibly the relict site, or even sites, of *N. sappho* in Poland could have been overlooked. This could have happened, despite the relatively high degree of knowledge of the butterfly fauna of the area, especially because the species has specific habitat requirements and has a rather secretive lifestyle. In the last two decades, in the present area of the species distribution, detailed faunal research was carried out on many butterflies such as *Iphiclides podalirius* (LINNAEUS, 1758) (BURY *et al.* 2015, BURY 2019b), *Minois dryas* (SCOPOLI, 1763) (BURY 2012, BURY *et al.* 2016a, 2016b, BURY 2019a), *Brenthis daphne* (BERGSTRÄSSER, 1780) (BURY 2017), *Argynnis pandora* (DENIS & SCHIFFERMÜLLER, 1775) (BURY & GUZIK 2018, BURY 2020c) and others, but none of these species have habitat requirements similar to *N. sappho*. The omission of the species was even more possible as it was considered extinct in the country and it was therefore not intentionally searched for (BUSZKO & NOWACKI 2002).

Interestingly, all preimaginal developmental stages of *N. sappho* (3 eggs and 198 caterpillars) have been observed on the *Robinia pseudoacacia* L. only. Even in places where *Latyrus niger* (L.) BERNH. grew abundantly, no caterpillars were observed on this host plant. Butterflies (in total 69 individuals) were also found in places where black locust was generally abundant. Eggs and caterpillars were observed mainly along shady forest roads and overgrown clearings, similarly to butterflies, which were also occasionally seen in sunnier places. More observations are necessary to establish the detailed phenology of both butterflies and preimaginal stages of the species under Polish conditions.

After the rediscovering of *N. sappho* in Poland, its status in terms of protection in our country has become obsolete. The species is still listed on the “*Red list of threatened animals in Poland*” (BUSZKO & NOWACKI 2002) as extinct, it is not listed in the “*Polish Red Book of Animals*” (GŁOWACIŃSKI & NOWACKI 2004) and is not covered by the legal protection in Poland (ROZPORZĄDZENIE... 2016). The author suggests changing the threat category of *N. sappho* in the “*Red list of threatened animals in Poland*” from EX to DD, including the species in the “*Polish Red Book of Animals*” with the same category and covering the species by the legal protection in Poland. The correct category can be given in a few years after a more detailed observation of the existing populations and determining the trends that they follow.

Continuation of research on the distribution of *N. sappho* in the coming years is absolutely necessary to explain the current status of the species in Poland and to determine possible threats to the species in our country.

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