New distributional data regarding the butterflies (Lepidoptera: Papilionoidea) of the Republic of Moldova

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Abstract. From late May until early June 2016 the author visited the Republic of Moldova on a joint trip with Arne Lykke Viborg from Denmark. Hardly any literature (books, articles) exists about the butterfly fauna (Lepidoptera: Papilionoidea) of Moldova mainly due to historical reasons. This trip was organized in order to improve the knowledge on the butterfly fauna of this country by visiting selected habitats. Our second aim was to try to rediscover *Tomares nogelii* (Herrich-Schäffer, 1851) in Moldova, where the species was suspected of being extinct. The third aim was to try to discover *Neolycaena rhymnus* (Eversmann, 1832) in Moldova for the first time, which has a large population in adjacent Ukraine. All observations of this trip are presented together with additional comments on the habitats visited. Four butterfly species are recorded for the first time from Moldova.

Samenvatting. De auteur bezocht samen met Arne Lykke Viborg uit Denemarken de Republiek Moldavië van einde mei tot begin juni 2016. Er bestaat haast geen literatuur (boeken, artikels) over de dagvlinderfauna (Lepidoptera: Papilionoidea) van Moldavië, vooral omwille van historische redenen. Deze reis werd ondernomen om de kennis van de dagvlinderfauna van dat land te verbeteren door geselecteerde biotopen te bezoeken. Het tweede doel was om *Tomares nogelii* (Herrich-Schäffer, 1851) te herontdekken in Moldavië, waar de soort als uitgestorven beschouwd wordt. Het derde doel was om te pogen *Neolycaena rhymnus* (Eversmann, 1832) te ontdekken in Moldavië, omdat de soort een grote populatie heeft in het naburige Oekraïne. Alle waarnemingen van deze reis worden voorgesteld met bijkomend commentaar over de bezochte biotopen. Vier dagvlindersoorten worden hier voor het eerst uit Moldavië gemeld.

Résumé. L'auteur, ensemble avec Arne Lykke Viborg du Danemark, a visité la République de Moldavie de fin mai à début juin 2016. Il n'existe presqu'aucune publication (livres, articles) traitant la faune des papillons (Lepidoptera: Papilionoidea) de Moldavie, pour des raisons historiques. Ce voyage a été organisé pour améliorer la connaissance de la faune des lépidoptères de ce pays, en visitant des biotopes sélectionnés. Le deuxième but était de redécouvrir *Tomares nogelii* (Herrich-Schäffer, 1851) en Moldavie, suspect d'être éteint dans ce pays. Le troisième but était de découvrir *Neolycaena rhymnus* (Eversmann, 1832) en Moldavie, ayant une grande population en Ukraine. Toutes les observations de ce voyage sont présentées, ainsi que des commentaires additionnels concernant les biotopes visités. Quatre espèces de papillons sont mentionnées ici pour la première fois de Moldavie.

Rezumat. Între sfârșitul lui mai și începutul lui iunie 2016, autorul a vizitat Republica Moldova împreună cu Arne Lykke Viborg din Danemarca. Cu precădere din motive istorice, există foarte puțină literatură de specialitate (cărți, articole) referitoare la fauna de fluturi diurni (Lepidoptera: Papilionoidea) a Republicii Moldova. Călătoria a fost organizată cu scopul de a obține, prin vizitarea unor habitate selectate, date noi asupra faunei de fluturi diurni ai acestei țări. Cel de-al doilea obiectiv a fost redescoperirea lui *Tomares nogelii* (Herrich-Schäffer, 1851) în Republica Moldova, unde specia este presupusă a fi dispărută. Al treilea obiectiv a fost descoperirea lui *Neolycaena rhymnus* (Eversmann, 1832) în fauna Republicii Moldova, întrucât specia are o populație cu efective aparent mari într-o zonă învecinată din Ucraina. Sunt prezentate toate observațiile acestei călătorii alături de comentarii asupra habitatelor vizitate. Patru specii de fluturi diurni sunt semnalate pentru prima dată din Republica Moldova.

Key words: Moldova – Papilionoidea – *Pyrgus armoricanus* – *Spialia orbifer* – *Thymelicus lineola* – *Ochlodes sylvanus* – distribution – faunistics.

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Introduction

While the butterfly fauna of neighbouring Romania has been studied for more than 150 years (Mann 1866) resulting in many publications describing a high biodiversity (Dincă *et al*. 2009) with at least 180 confirmed butterfly species (Rákosy *et al*. 2003, Székely 2008, Rákosy 2013), the butterfly fauna of the Republic of Moldova is still very poorly explored.

The historical background of Moldova is different from that of Romania. Until 1940 it was part of the Russian Empire and then Greater Romania. Shortly after the beginning of World War II the Moldavian Soviet Socialist Republic was established as part of the USSR and remained as such until its declaration of independence in 1991 (Wikipedia 1). Partly due to this fact, and partly because Moldova probably did not attract the attention of Soviet lepidopterists, apparently no research on butterflies was published during the Soviet era. After the independence of Moldova only one study has been published about the butterfly fauna of the country (Danilă & Nagomatulin 2003). All attempts by the author to trace any other books or articles about the butterfly fauna of Moldova have been unsuccessful except a Russian entomological blog with some sparse reports from a field trip (Molbiol.ru 1, Molbiol.ru 2). To date, at least 92 species of butterflies have been recorded (Danilă & Nagomatulin 2003, Molbiol.ru 1, Wikipedia 2). Due to the very limited research and documentation, large parts of Moldova still remain unexplored.

During a joint field trip from May 26th to June 4th 2016 the author and Arne Lykke Viborg visited different places in Moldova (Fig. 1) to study the Papilionoidea of the country. Coordinates and altitudes of all localities were measured with a GPS (Garmin eTrex 20).

This trip also focused on rediscovering *Tomares nogelii* (Herrich-Schäffer, 1851) in Moldova. *T. nogelii* has

been found in southern and central Moldova (Tshikolovets 2011) including a small population in Chişinău airport district and at Vadul lui Vodă which are both believed to be extinct (Vadim Tshikolovets oral comm., Artur Choch oral comm.) and the species apparently disappeared from Moldova before 1999 (van Swaay *et al*. 2010). While studying the areas near Chişinău airport district and Vadul lui Vodă on Google Earth prior to the trip it was not possible to locate any habitats potentially suitable for *T. nogelii* and it was decided not to include these areas in our searches.

A third goal of the trip was to record *Neolycaena rhymnus* (Eversmann, 1832) in Moldova for the first time, as this species has a large population in adjacent Ukraine, just across the border river Dniester (Artur Choch, oral comm.).

The different places we visited are described and additional comments are given on the distributional and ecological aspects of the species encountered. All observations are summarized in a table and the visited localities are shown on a map to provide an overview of the geographical coverage of the study.

Notes

For each of the visited localities the butterfly diversity and the habitat characteristic are described.

Numbers following the locality names refer to Table 1 and 2.

Orhei (**1**)

This site is situated in the northwestern margin of the town Orhei and consists of small abandoned agricultural patches bordered by trees, which have turned into humid grassland with tall herb communities.

The 3 species of butterflies were observed in poor weather conditions and this habitat might offer more. If the place remains undisturbed the number of species can be expected to increase as more plant communities move in.

Holoşniţa (**2**)

The visited area is situated 2-3 km west of Holoşniţa village in extreme northern Moldova. Our visit was made in order to try to discover *N. rhymnus* in Moldova.

This species inhabits steppe grasslands with shrubs always in close proximity to its host plant, *Caragana frutex*.

Although *N. rhymnus* is known to occur in the Ukrainian side, we were unable to locate a suitable habitat nor the host plant on the Moldavian side of the river. There is a chance that one or more small colonies exist further west along the river; these areas were not investigated by us. Systematic researches are needed in order to discover such populations.

The hills gently sloping down to the river were covered by mixed deciduous forests and open grassy patches, partly disturbed by grazing and former agricultural use and partly planted with small *Robinia* trees.

Due to the disturbances present in the area the number of species was limited to 9, the most notable being *Plebejus argyrognomon* (Bergsträsser, 1779), *Melitaea phoebe* (Denis & Schiffermüller, 1775) and *Coenonympha glycerion* (Borkhausen, 1788).

Cureşniţa (**3**)

Cureşniţa village is located just south of Holoşniţa and the habitat is a sun-exposed steep grassy hillside with various nectar sources and which has been intensively grazed (Fig. 3a). It is situated in the outskirts of the village and the land use in the area is dominated by small cultivation fields and livestock of cattle. The 8 species observed there are widely distributed in Europe and are habitat generalists, typical for such anthropogenically disturbed habitats.

Teleneşti (**4**)

This site investigated south of the town Teleneşti is situated in open deciduous woodland with a mix of small trees and bushes (mainly *Quercus* and *Prunus* species) where the patchy clearings are covered with well developed vegetation in relatively humid conditions (Fig. 3b). Despite this, the number of observed butterfly species was limited to 8, among which *Ochlodes sylvanus* (Esper, 1777), representing the first record of this species from Moldova, *Colias croceus* (Fourcroy, 1785), *Satyrium pruni* (Linnaeus, 1758) and *Lasiommata maera* (Linnaeus, 1758).

It is to be expected that later in the season, several other forest species occur there as the habitat looks suitable for species like *Favonius quercus* (Linnaeus, 1758), *Neptis sappho* (Pallas, 1771), *Limenitis camilla* (Linnaeus, 1764), *Argynnis paphia* (Linnaeus, 1758), *Euphydryas maturna* (Linnaeus, 1758), *Melanargia galathea* (Linnaeus, 1758) and *Minois dryas* (Scopoli, 1763). All these species are known from Moldova (Danilă & Nagomatulin 2003).

Budăi (**5**)

Further south near Budăi are vast mesoxerophilous grasslands (Fig. 4a), reminding of what in ancient times was supposed to have original steppe vegetation. These are heavily grazed by sheep and goats but still preserve an abundance of *Thymus* plants, being almost the only nectar sources left for the few butterflies surviving there.

Seven butterfly species were observed there, among them *Coenonympha glycerion* (Borkhausen, 1788). The strong human influence in this area keeps the biodiversity very low.

3 km south of Budăi (**6**)

In these damp meadows (Fig. 3c) there had apparently been almost no grazing and the vegetation was well developed, including scrubs (*Prunus* species) in the margins of the meadows. Associated to the *Prunus*, *S. pruni* was present. Just like at Teleneşti, the specimens were very fresh, indicating that the flight period had just started. In the central part of the meadows we observed the presence of *Rumex* and *Polygonum* species, and a few fresh males of *Lycaena dispar* (Haworth, 1803) were seen as well. Other interesting species were *C. glycerion*, *P. argyrognomon* and *Glaucopsyche alexis* (Poda, 1761) bringing the total number of species here to 11. Without grazing and agricultural use in this area the populations of these species might have a good chance to survive in the future.

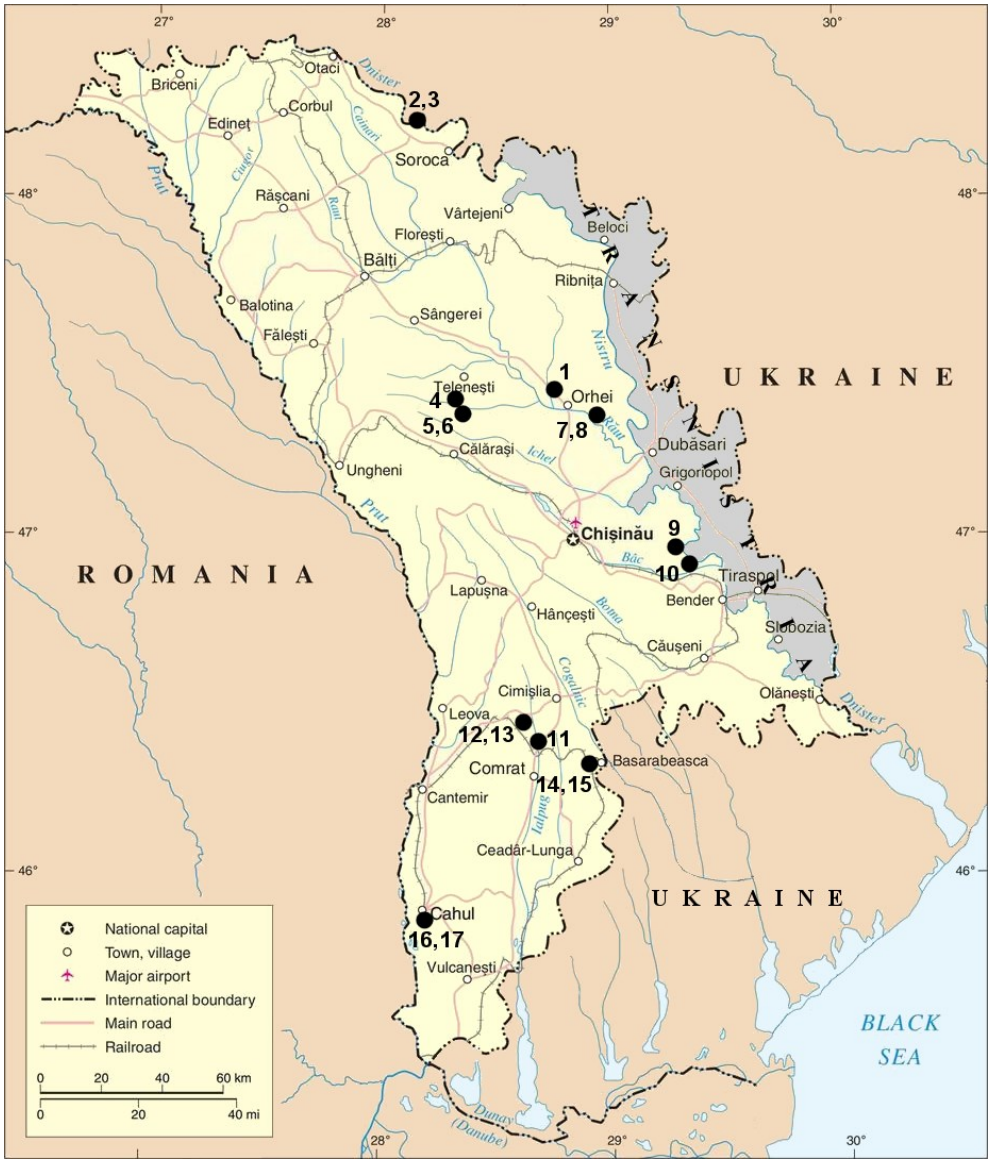

Figure 1. Map of Moldova with the visited localities marked with black dots and numbers.

Trebujeni (**7, 8**)

This area is treated under the same description as it is more or less a single habitat. It is stretching from the village Trebujeni approx. 2 km northwards along the Răut river into a narrow valley, which reminds of a canyon. It is shaped by long calcareous hills on both sides of the stream during erosion through millions of years (Fig. 4b).

The xerothermic grasslands at the foot of the hills and on the hillsides in the canyon were of a steppic character and provided several interesting observations. Here we were able to document the presence of the following two butterfly species recorded for the first time in Moldova: *Pyrgus armoricanus* (Oberthür, 1910) and *Spialia orbifer* (Hübner, 1823). These species are typical for this kind of habitat and to be expected in Moldova as it lies inside their global range (Tolman & Lewington 1997, Tshikolovets 2011, Kudrna 2015, Leraut 2016).

We also observed *Colias erate* (Esper, 1805), both worn and very fresh specimens, patrolling at high speed along the foot of the hills. To be mentioned are also *S. pruni, G. alexis, Lysandra bellargus* (Rottemburg, 1775), *Argynnis pandora* (Denis & Schiffermüller, 1775) and *M. phoebe*.

The total number of species observed here was 25, which ranks first among the habitats visited during the trip. If grazing level does not increase there is a fair chance that the biodiversity will persist at this level.

The determination of all *M. phoebe* found in Moldova was done by the external characters separating it from the similar species, *Melitaea ornata* (Christoph, 1893) (Tóth & Varga 2011, Koren & Štih 2013):

- the lunules on the underside of the forewing (thin in *M. phoebe*, triangular shaped in *M. ornata*)
- the lunules in the marginal region of the hindwing (connected in *M. phoebe*; disconnected and triangular shaped in *M. ornata*)
- the antennal club (slim in *M. phoebe*, broader and elliptic in *M. ornata*)

Figure 2.

a–b. *Pyrgus armoricanus* ♀ ups/uns, Moldova, Raionul Orhei, Răut river, 2 km N Trebujeni, 29.v.2016;

c. *Spialia orbifer* ♀ ups, Moldova, Raionul Anenii Noi, Teliţa, 30.v.2016;

d. *Spialia orbifer* ♂ uns, Moldova, Raionul Orhei, Răut river, 2 km N Trebujeni, 29.v.2016;

e. *Ochlodes sylvanus faunus* ♀ ups, Moldova, Raionul Cahul, Crihana Veche, 1.vi.2016;

f. *Ochlodes sylvanus faunus* ♂ uns, Moldova, Raionul Teleneşti, Teleneşti , 28.v.2016.

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Speia (**9**)

Further east in the district of Anenii Noi, on gently sloping river banks along the Dniester river which in this region forms the border with the break-away territory Transnistria, there are humid grasslands with high shrubs, primarily *Quercus* species. The apparently sparse grazing by cows comes from the households of the nearby village Speia.

Searches were also made in this place for *T. nogelii* as the habitat looked potentially suitable, but the attempts to locate the butterfly and its larval host plant, *Astragalus ponticus*, were unsuccessful. Not many species were recorded here, 11 in total, but among them we encountered again *P. armoricanus* as well as *L. bellargus*, and, for the first time during the trip, *Satyrium acaciae* (Fabricius, 1787) and *Coenonympha arcania* (Linnaeus, 1761).

Teliţa (**10**)

Approximately 8 km to the south-east, near Teliţa village, another habitat on the slopes directly on the banks of Dniester river was visited (Fig. 4c). Due to the steeper slopes grazing is not present here, allowing a relatively high number of different flowers, and the density of the shrub is lower than at Speia.

This habitat was selected as the next potential one for a search of a potential population of *T. nogelii*, but no host plants were located.

Spialia orbifer was observed for the second time during the trip. In the shrubs of Prunus species bordering the steep river slopes *S. acaciae* was flying in abundance. Along the *Medicago* fields bordering the river slopes, single *C. erate* were patrolling and nectaring.

Because of the low anthropogenic influence, the number of recorded butterfly species reached 17.

Bugeac (**11**)

This site is situated in the autonomous region of Găgăuzia and the landscape is generally dominated by mesoxerophilous grasslands and steppes with a few shrubs in gently sloping hilly terrain with basins and uplands (Fig. 5a).

Despite the habitat looking undisturbed from a distance, we suspected that the area is grazed because of

the very limited diversity of plants, which was confirmed by the observation of herds of goats and sheep not far from the habitat. The number of butterfly species was only 7, with *G. alexis* and *M. phoebe* as the most interesting ones.

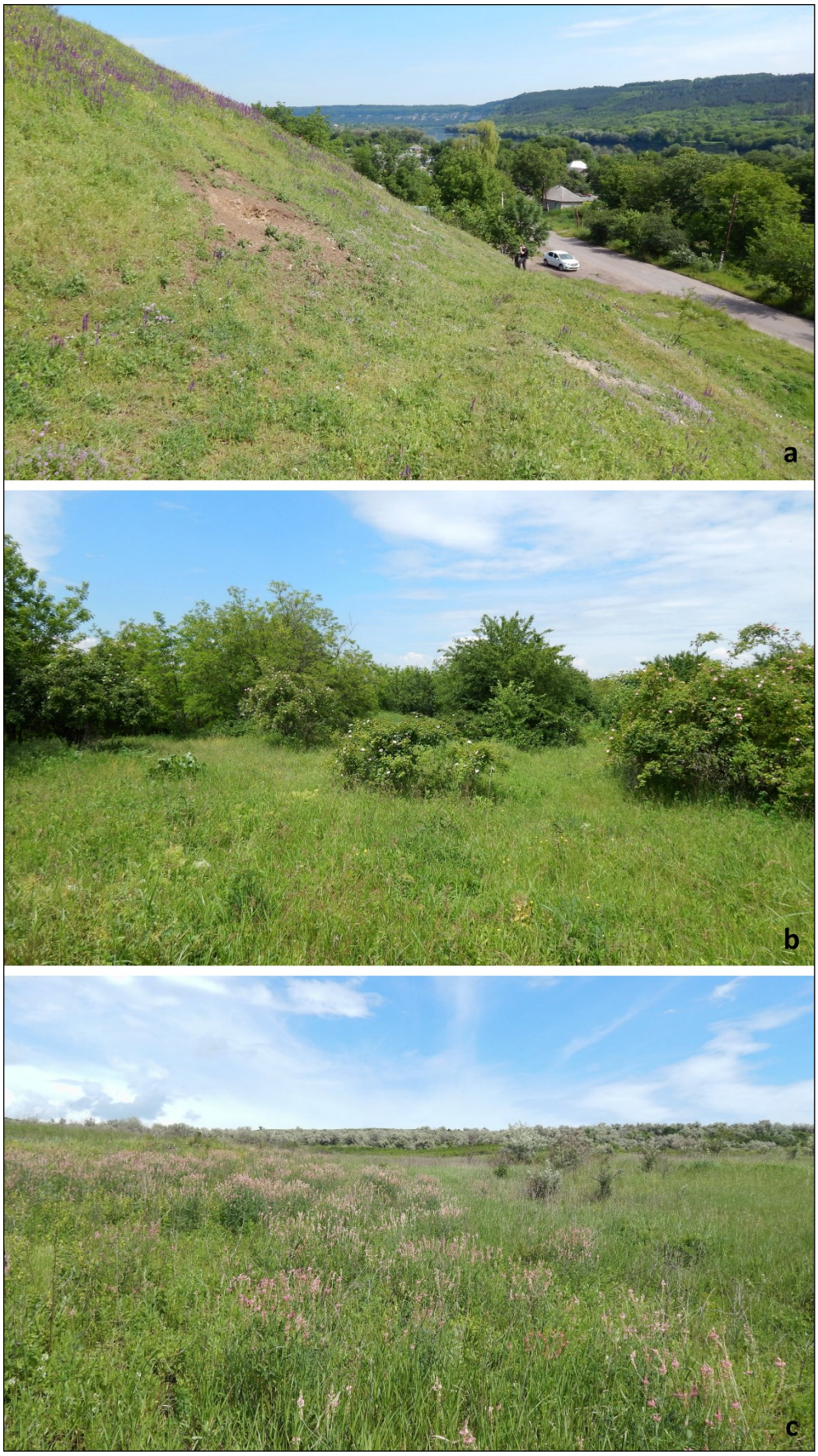

Figure 3.

a. Flowery hillside near Curesniţa, Raionul Soroca, 28.v.2016 (locality 3);

b. Clearings in deciduous woodland south of Teleneşti, Raionul Teleneşti, 28.v.2016 (locality 4);

c. Damp meadows near Budăi, Raionul Teleneşti, 28.v.2016 (locality 6).

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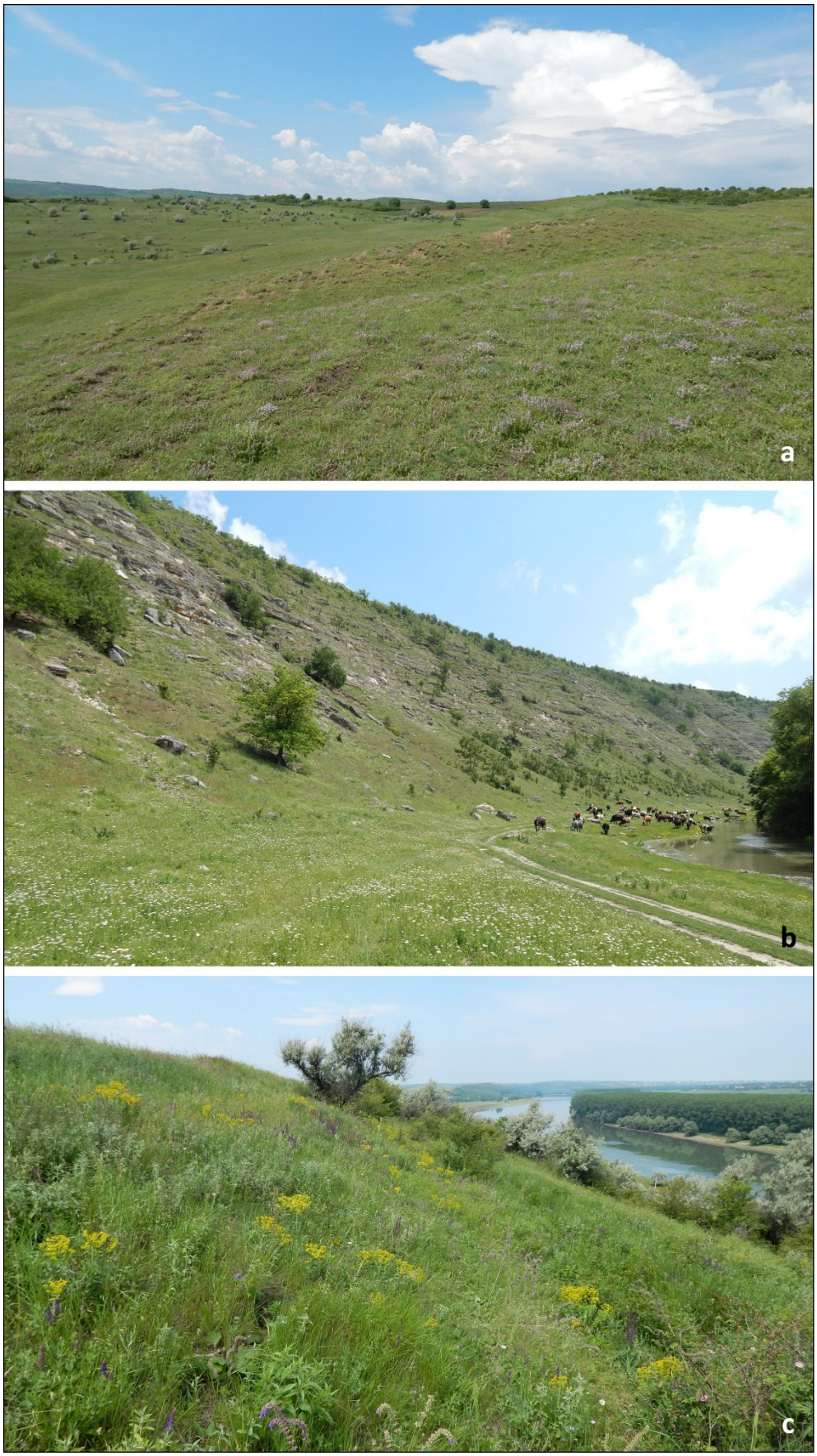

Figure 4.

a. Former steppe now destroyed by grazing near Budăi, Raionul Teleneşti, 28.v.2016 (locality 5);

b. Calcareous rocky hills surround the Răut river canyon, Raionul Orhei, 29.v.2016 (locality 8);

c. Flowery river banks near Teliţa at Dniester (Nistru) river marking the border between Moldova and Transnistria, Raionul Anenii Noi, 30.v.2016 (locality 10).

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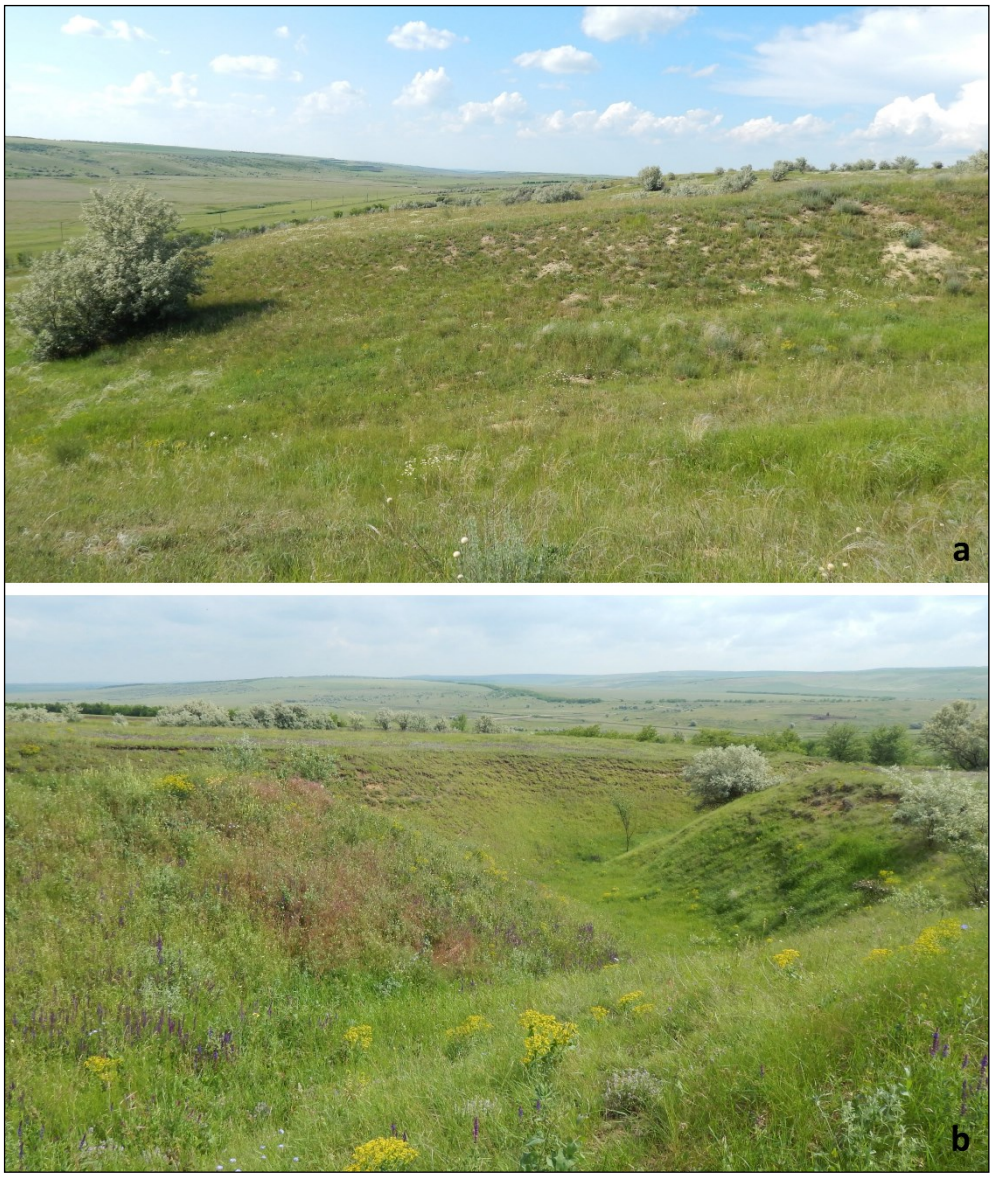

Figure 5.

a. Mesoxerophilous steppes at Bugeac, Autonoma Găgăuzia, 30.v.2016 (locality 11);

b. Flowery gully surrounded by mesoxerophilous grasslands 3 km south-east of Dezghingea, Autonoma Găgăuzia, 31.v.2016 (locality 12).

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3 km south-east of Dezghingea (**12**)

The habitat is a gully, around 10 meters deep and surrounded by mesoxerophilous grasslands and corn fields (Fig. 5b). The gully has a well developed flora because it seems to be grazed only rarely, enabling many plant communities to survive here.

This was reflected in the biodiversity of butterflies; *Pyrgus carthami* (Hübner, 1813) was among the 13 butterfly species identified (the only locality where it was observed during the trip) together with *S. orbifer, C. hyale*, *C. croceus* and *G. alexis*. This place was pointed out during our preparations of the trip as a potential habitat for *T. nogelii*, but our search for host plant and butterfly was negative.

Dezghingea (**13**)

The small hills in the outskirts of Dezghingea village had a significant grazing level by sheep and goats coming from the village. Tall grasses were dominating, only with a few nectar plants. Only five species of butterflies were observed, all common and widespread species.

Basarabeasca (**14, 15**)

Just south-west of Basarabeasca town near the border towards Ukraine there are vast areas with a mixture of mesoxerophilous grassland and shrubs, partly along a railway track. The areas along the railway track were dominated by many different plants and tall herbs, attracting numerous butterflies. Grazing is probably avoided here due to the train traffic, as Basarabeasca is a regional railway hub due to its geographical position near the border.

We recorded 18 butterfly species including 6 species of skippers, among them were *Thymelicus lineola* (Ochsenheimer, 1808), reported for the first time from Moldova, *O. sylvanus* and *S. orbifer*.

Carcharodus flocciferus (Zeller, 1847) was also recorded here for the first time during the trip but it is previously known from Moldova. It was separated from the very similar *Carcharodus orientalis* (Zeller, 1847) by a darker underside of the hindwing and a less complete discal band.

A fresh female of *C. erate* was observed as well; this specimen belongs to the normal yellow female form as

opposed to the white female f. *alba* (Beneš *et al*. 2002). The specimen was very fresh indicating that it had just emerged and that this was probably its breeding habitat.

Other interesting species *were P. argyrognomon, L. bellargus, A. pandora* and, for the first time during the trip, *Aricia agestis* (Denis & Schiffermüller, 1775).

Cahul (**16**)

Just south of Cahul town in southwestern Moldova we visited a mixed deciduous forest, situated near the lake Frumoasa which extends into the outskirts of the town. In the clearings of the forest there is a variety of tall herbs and grasses, including several nectar sources.

The total number of species reached 25. Although grazing was also taking place in the forest clearings, as we saw one flock of goats, it seems that the grazing level is low, allowing relatively high levels of biodiversity. In humid places a few fresh *L. dispar, G. alexis, P. argyrognomon, C. flocciferus* and *O. sylvanus* were found. *Satyrium acaciae* were present in proximity to *Prunus* shrubs, and on a forest path a single *Polygonia c-album* was basking in the sun (the first and only specimen on the trip). *S. orbifer* was again observed, together with other species such as *A. agestis, L. bellargus, M. phoebe* and *C. glycerion*.

Crihana Veche (**17**)

This is a steppe habitat consisting of big mesoxerophilous grasslands with a few shrubs outside Crihana Veche village south of Cahul. The relatively monotonous landscape is broken by a few gullies and a small stream, along which we looked for *T. nogelii*, but neither suitable habitats nor larval host plants were located in this area. The area looked disturbed by grazing, not at an alarming level but enough to reduce the potential number of species.

Again *S. orbifer* was observed, and taking into account the previous observations we conclude that it must be widespread in Moldova. Along the small stream in swampy places a few *L. dispar* were observed together with *G. alexis* and *P. argyrognomon*. We observed a total of 19 butterfly species.

Table 1. Visited localities in Moldova. The numbers refer to the map and the localities in Table 2.

No.	Date	Locality	County	Altitude (m)	Coordinates (UTM)
1	26.vii.2016	Orhei	Raionul Orhei	43	635308 E 5250503 N
2	28.vii.2016	Hologniţa	Raionul Soroca	155	585110 E 5344255 N
3	28.vii.2016	Cureşniţa	Raionul Soroca	73	587592 E 5342278 N
4	28.vii.2016	Teleneşti	Raionul Teleneşti	194	601919 E 5260164 N
5	28.vii.2016	Budăi	Raionul Teleneşti	185	600950 E 5256204 N
6	28.vii.2016	3 km S Budăi	Raionul Teleneşti	138	601521 E 5254223 N
7	29.vii.2016	Trebujeni	Raionul Orhei	25	648052 E 5242858 N
8	29.vii.2016	2 km N Trebujeni	Raionul Orhei	48	648666 E 5244273 N
9	30.vii.2016	Speia	Raionul Anenii Noi	70	673927 E 5207344 N
10	30.vii.2016	Teliţa	Raionul Anenii Noi	36	677279 E 5201854 N
11	30.vii.2016	Bugeac	Autonoma Găgăuzia	90	629051 E 5137556 N
12	31.vii.2016	3 km SE Dezghingea	Autonoma Găgăuzia	89	627578 E 5140804 N
13	31.vii.2016	Dezghingea	Autonoma Găgăuzia	119	622577 E 5142204 N
14	31.vii.2016	Basarabeasca 1	Raionul Basarabeasca	101	650157 E 5131415 N
15	31.vii.2016	Basarabeasca 2	Raionul Basarabeasca	102	651663 E 5129898 N
16	1.vi.2016	Cahul (Lacul Frumoasa)	Raionul Cahul	65	594459 E 5084370 N
17	1.vi.2016	Crihana Veche	Raionul Cahul	44	593788 E 5079938 N

Conclusions

In total, during one week in Moldova, we identified 38 butterfly species. Four of these are recorded in this study for the first time from Moldova: *Pyrgus armoricanus* (Oberthür, 1910), *Spialia orbifer* (Hübner, 1823), *Thymelicus lineola* (Ochsenheimer, 1808) and *Ochlodes sylvanus* (Esper, 1778). All these species are widely distributed in Europe (Tolman & Lewington 1997, Tshikolovets 2011, Kudrna 2015, Leraut 2016), and the lack of previous records is obviously due to the fact that the butterfly fauna of Moldova is very poorly explored. These new findings increase the total number of butterfly species recorded from Moldova to 96.

Taking into account the recent European distribution maps from Tshikolovets (2011), Kudrna (2015) and Leraut (2016), it is to be assumed that several more butterfly species are yet to be discovered in this country. However, it is clear that the biodiversity of Moldova is much lower than that of neighbouring Romania, where at least 180 butterfly species have been recorded (Rákosy *et al*. 2003, Székely 2008, Rákosy 2013). It is also much lower than that of neighbouring Ukraine, where at least 198 butterfly species have been recorded (Nekrutenko & Tshikolovets 2005). This difference is in large part explained by the lower habitat diversity of Moldova (e.g. lack of mountains), but also by the relatively high antropogenic pressure in many areas.

The attempts to rediscover *T. nogelii* in Moldova were fruitless in the habitats investigated during the trip. In 2014 *T. nogelii* was rediscovered in the neighbouring Dobrogea region in Romania (Rákosy & Craioveanu 2014). It cannot be excluded that small colonies survive in a few sheltered places on Moldavian territory, potentially in steep gullies with the host plant where grazing is avoided due to the topography.

As well, *N. rhymnus* could not be found in any of the sites visited by us in Moldova as the searches along the southern bank of the Dniester river were unsuccessful. However, it is possible that undiscovered populations of this species are present on steep, sun-exposed river banks in more remote areas further west along the Moldavian side of the border with Ukraine. Systematic researches are required in these areas in order to clarify this aspect.

Table 2. Butterfly species observed in Moldova. The numbers refer to the localities in Table 1.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Hesperiidae																	
Pyrgus malvae										x							
Pyrgus armoricanus							x		x								
Pyrgus carthami												x					
Spialia orbifer							x	x		x		x		x		x	x
Carcharodus alceae							x							x			
Carcharodus flocciferus														x		x	x
Erynnis tages							x							x			
Thymelicus lineola														x			
Ochlodes sylvanus				x										x		x	x
Papilionidae																	
Zerynthia polyxena	x						x										
Pieridae																	
Pieris rapae					x	x	x	x	x	x	x	x	x	x		x	x
Pieris napi			x													x	x
Pontia edusa		x	x		x	x	x	x	x	x	x	x	x	x	x	x	x
Colias croceus				x				x		x		x					
Colias hyale			x		x		x	x		x		x					
Colias erate								x		x				x			
Lycaenidae																	
Lycaena dispar						x	x									x	x
Callophrys rubi				x		x										x	
Satyrium pruni				x		x		x									
Satyrium acaciae									x	x						x	
Glaucopsyche alexis						x	x	x			x	x				x	x
Plebejus argus	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Plebejus idas								x								x	x
Plebejus argyrognomon		x				x									x	x	x
Plebejus agestis														x		x	x
Lysandra bellargus		x	x				x	x	x	x				x		x	x
Polyommatus icarus	x	x	x	x	x	x	x	x	x	x	x	x		x	x	x	x
Nymphalidae																	
Vanessa atalanta										x						x	
Vanessa cardui							x	x	x	x		x		x		x	
Polygonia c-album																x	
Argynnis pandora								x		x				x		x	x
Issoria lathonia				x			x	x		x		x				x	x
Melitaea phoebe		x					x	x		x	x					x	x
Maniola jurtina									x					x		x	
Coenonympha pamphilus		x	x		x	x	x	x	x	x	x	x	x	x	x	x	x
Coenonympha arcania		x							x								
Coenonympha glycerion		x	x		x	x	x	x				x	x			x	x
Lasiommata maera				x													

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