

The Red Admiral (*Vanessa atalanta*) (Lepidoptera, Nymphalidae) continues to expand its range in Eurasia

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Academic editor: A. Matsyura | Received 15 January 2024 | Accepted 2 February 2024 | Published 17 March 2024

<http://zoobank.org/168D9FDE-DC91-4FCA-AE88-706EB7D5334B>

Citation: Chumakov SV, Goshko DV, Korshunov AV, Yakovlev RV (2024) The Red Admiral (*Vanessa atalanta*) (Lepidoptera, Nymphalidae) continues to expand its range in Eurasia. Acta Biologica Sibirica 10: 47–54. <https://doi.org/10.5281/zenodo.10814373>

Abstract

The article describes the distribution dynamics of the widely spread species *Vanessa atalanta* (Linnaeus, 1758) (Lepidoptera, Nymphalidae), which is for the first time reliably noted for a number of Siberian regions (Krasnoyarsk Territory, the Republic of Khakassia, Kemerovo Territory) and for Tajikistan (Western Pamir, the Bartang river valley).

Keywords

Butterflies, East Siberia, Pamir, Tajikistan, area dynamics, *Vanessa*, *Limenitis*, *Apatura*, *Maniola*

Introduction

The Red Admiral – *Vanessa atalanta* (Linnaeus, 1758) (Lepidoptera, Nymphalidae) is a widely spread species (western Eurasia, northern Africa, North America from Canada to Mexico cross Central America to Columbia (Rodríguez & iNaturalist

2024), the Bermudas, the Hawaii and New Zealand), it is also an active migrant (Tuzov et al. 2000; Mikkola 2003; Bozano & Floriani 2012). Northern, eastern and south-eastern portions of its habitat tend to expand. Thus, for the European north-east of Russia, *V. atalanta* was indicated in a series of localities up to 65° N (Tatarinov & Dolgin 1999), and 20 years later it was already found 2 degrees north and about 300 km east – in the vicinity of the Kharp village in the Asian part of the Polar Ural Mountains (Rybalkin et al. 2018).

In the south of western Siberia in XX century the most eastern points of the habitat were the sporadic findings of occasionally appearing specimens in a number of localities in Novosibirsk Territory (Ruzskiy 1946; Korshunov 1961, 1981). Later, the species findings in Novosibirsk Territory became more stable (Ivonin et al. 2013, 2018). For more eastern regions of Siberia the data were given without specifying the exact localities and were not confirmed by the collection materials (Tuzov 1993; Korshunov & Gorbunov 1995; Tuzov et al. 2000). The first reliable findings from Altai Territory were provided by Yakovlev (2001), in the Republic of Altai – by Yakovlev (2002) and Mitrofanov (2006), in the Republic of Khakassia – by Korshunov (2002), in Krasnoyarsk region – by Gorbunov & Kosterin (2007), Anikin et al. (2019). In the Altai Territory, the species started to appear annually, but only in autumn (Roman Yakovlev and Timofey Zalutskiy pers. comm.). The obtained data are summarized on maps (Tshikolovets et al. 2009).

The findings in Central Asia are quite sporadic and are probably occasional flights. The most eastern localities in Kazakhstan are the Altai Mountains and Zaisan Valley (Tshikolovets et al., 2016). It is necessary to notice that the Red Admiral has not been found yet in China and Mongolia. The most south-eastern flights of *V. atalanta* in Central Asia are recorded in Uzbekistan (south-western Kyzylkum and Zeravshan ridge) (Tshikolovets 2000).

Materials and methods

The materials for the research were obtained in the field studies of the first three authors of this publication. The distribution map was generated using SimpleMappr (Shorthouse 2010) and then edited using Adobe Photoshop CS6.

Result

Vanessa atalanta (Linnaeus, 1758)

Figs 1–8

Material examined. 1 male, Tajikistan, W Pamir, 40 km Rushan city, Yazgulem range, Bartang Vall., Siponch vill., Vodz riv., H 2800–3200 m, 19–27. 07.2023, leg. D. Goshko (private collection of Roman V. Yakovlev, Barnaul); 1 male, Russia,

Kemerovo Territory, Novokuznetsk District, 10 km NE Chistaya Griva vill., mine Uvalnaya, H 313 m, 54°05'18.1"N, 87°35'46.4"E, 19.10.2023, leg. A. Korshunov (private collection of Alexey V. Korshunov, Kemerovo).

Photo-Material examined. Seven photo in Nature from Gornoe Forestry (Shushensky Bor National Park, Krasnoyarsk Territory, Shushenskoe district 22.ix.2023); Yenisei Valley (Khakassia Republic, Cheremushki, 7.x.2023) and (Yenisei Valley, Krasnoyarsk Territory, near Cheremushki, 10.x.2023).

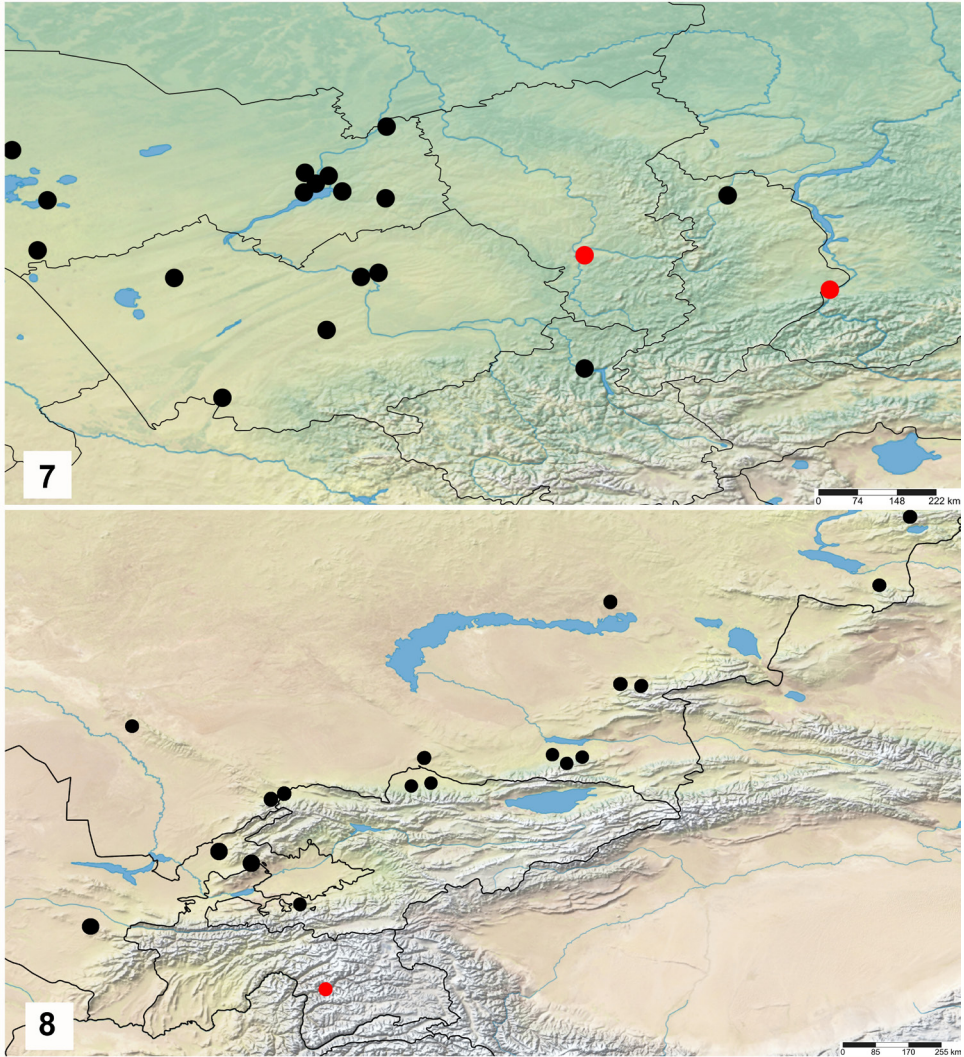
Thus, in 2023 the occasional flights of the Red Admiral significantly expanded the species range – *V. atalanta* was for the first time indicated in Tajikistan, which increases the species habitat for about 500 km to south-east; we also indicated for the first time the findings verified by materials in the Kemerovo and Krasnoyarsk Territories and the Republic of Khakassia.



Figures 1–4. *Vanessa atalanta*, adult specimens: **1.** Tajikistan, W Pamir, 40 km Rushan city, Yazgulem range, Bartang Vall., Sipunoh vill., Vodz riv., H 2800–3200 m, 19–27. vii.2023, leg. D. Goshko (private collection of Roman V. Yakovlev, Barnaul); **2.** Russia, Kemerovo Territory, Novokuznetsk District, 10 km NE Chistaya Griva vill., mine Uvalnaya, H 313 m, 54°05'18.1"N, 87°35'46.4"E, 19.x.2023, leg. A. Korshunov (private collection of Alexey V. Korshunov, Kemerovo); **3.** Russia, Krasnoyarsk Territory, Shushenskoe District, 22.ix.2023 (photo by Sergey V. Chumakov); **4.** Russia, Khakassia Republic, near Cheremushki, 7.x.2023 (photo by Sergey V. Chumakov).



Figures 5–6. Habitats of *V. atalanta*: 5. Tajikistan, Bartang Valley (photo by Dmitry V. Goshko); 6. Krasnoyarsk Territory and Khakassia Republic, Yenisei Valley (photo by Sergey V. Chumakov).



Figures 7–8. Distributional maps of *V. atalanta* (black – known localities, red – new localities): 7. Eastern part of area in Siberia; 8. Central Asian part of area.

Discussion

It is obvious that further expansion of the Nymphalidae genera *Apatura* Fabricius, 1807, *Limenitis* Fabricius, 1807, *Vanessa* Fabricius, 1807, and *Maniola* Schrank, 1801, is going on, these genera are actively expanding their habitats in the Palearctic (Dubatolov & Kosterin 2000; Knyazev & Kosterin 2003; Kosterin et al. 2007; Yakovlev et al. 2014; Yakovlev & Kostyunin 2015; Gordeev 2016; Dragan 2018; Gordeev & Gordeeva 2020; Knyazev 2020; Kostyunin & Klyueva 2020; Berlov et al.

2023; Borisova et al. 2023; Davydov et al. 2023; Gordeev et al. 2023). In some cases it is hard to say whether these findings are just occasional flights, or a sign of formation of stable populations. For new findings of *Vanessa atalanta* in Siberia it sounds more like occasional flights, as all the most eastern findings are dated by autumn (September–October). Finding of the species representatives in western Pamir is of a peculiar interest (in addition to the collected male, D. Goshko saw a few more specimens) – in this case it is difficult to establish where *V. atalanta* penetrated from to Pamir – from more northern regions of Central Asia (Tien-Chan or Zeravshan) or on the contrary, from the south (northern India and northern Pakistan).

Acknowledgements

The study of Roman Yakovlev was funded by the state assignment of the Ministry of Science and Higher Education of the Russian Federation (project FZMW-2023-0006 “Endemic, local and invasive arthropods (Arthropoda) of the mountains of South Siberia and Central Asia: a unique gene pool of a biodiversity hotspot”).

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