

# Lepidoptera of South Ossetia (Northern Transcaucasia). Part V. Superfamily Papilionoidea Latreille, 1809

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## Abstract

Seventy seven Papilionoidea species have been indicated for South Ossetia (72 – for the first time for thus territory). For three species listed in the Red Book of South Ossetia (*P. apollo*, *I. podalirius* and *P. machaon*) new localities are given.

## Keywords

Biodiversity, Caucasus, species richness, fauna, Hesperiiidae, Papilionidae, Pieridae, Lycaenidae, Nymphalidae

## Introduction

This article continues the series of publications devoted to the lepidopterofauna of South Ossetia and covers families of Papilionoidea (Hesperiiidae, Papilionidae,

Pieridae, Lycaenidae, and Nymphalidae). Families Adelidae, Incurvariidae, Psychidae, Tineidae, Roeslerstammiidae, Gracillariidae, Yponomeutidae, Argyresthiidae, Plutellidae, Ypsolophidae, Ethmiidae, Depressariidae, Elachistidae, Scythrididae, Cryptolechiidae, Oecophoridae, Lecithoceridae, Stathmopodidae, Coleophoridae, Momphidae, Blastobasidae, Autostichidae, Lypusidae, Cosmopterigidae, Gelechiidae, Epermeniidae, Choreutidae, Pyraloidea, Cossidae, Limacodidae, part of Erebiidae, Notodontidae, Lasiocampidae, Lemoniidae, Saturniidae, Sphingidae, Drepanidae, Cimeliidae, Tortricidae, Pterophoridae and Alucitidae were previously treated (Streltsov et al. 2022 a, b, c; Nedoshivina et al. 2023; Sinev et al. 2023). In the fifth part we publish data on Superfamily Papilionoidea; information about which in South Ossetia was not previously available.

A detailed description of the natural conditions and history of studying the lepidopteroфаuna of the region is contained in the first article in the series, dedicated to Lepidoptera (Streltsov et al. 2022b) and is not discussed here.

The butterflies (Papilionoidea) of South Ossetia are very poorly studied. The information on their distribution in the region is provided only for five species listed in the Red Data Book of South Ossetia (Bazaev et al. 2017). *Parnassius nordmanni* (Menetries, 1850) was reported from north of South Ossetia in the highlands of the Great Caucasus. *P. apollo* (Linnaeus, 1758) was given for the valleys of the Bolshaya and Malaya Liakhva rivers and other locations, mainly in the south of the territory at altitudes of 1200–2000 m. *Iphiclides podalirius* (Linnaeus, 1758) was indicated for Khetagurovo, Belot and Tsadykau villages. *Papilio machaon* Linnaeus, 1758 was regularly found in the Inner Kartli Valley. *Colias thisoa* Menetries, 1832 was spotted in the upper reaches of the Bolshaya and Malaya Liakhva rivers and tributaries of the Rioni river.

## Materials and methods

The specimens were collected in South Ossetia in eight localities (Fig. 1) by A. N. Streltsov, P. Y. Ustjuzhanin and R. V. Yakovlev in June–July 2021 and by V.V. Rudoi, P. Y. Ustjuzhanin and R. V. Yakovlev in July 2022.

Methods are described in detail in the first part of the article (Streltsov et al. 2022a). The determination of Material was carried out according to Tshikolovets and Nekrutenko (2012).

The examined material is kept in the collections:

**ASSP** collection of Alexandr Streltsov (Saint-Petersburg, Russia);

**CUK** collection of Petr Ustjuzhanin and Vasilij Kovtunovich (Novosibirsk, Moscow, Russia);

**KKM** collection of Kirill Kolesnichenko (Moscow, Russia);

**RYB** collection of Roman Yakovlev (Barnaul, Russia).

## List of collecting localities

1. South Ossetia, Tskhinval Distr., 2 km NW Grom, 42°10'6" N / 44°11'53" E, 930 m, 22-25.06.2021, A. Streltsov, P. Ustjuzhanin & R. Yakovlev leg.
2. South Ossetia, Leningor Distr., 4 km E Leningor, 42°08'45" N, 44°30'55" E / 1200 m, 26-27.06.2021, A. Streltsov, P. Ustjuzhanin & R. Yakovlev leg.; 13-14.07.2022, P. Ustjuzhanin & R. Yakovlev leg.
3. South Ossetia, Dzaus Distr., 4 km NNE Kvaisa, Koz lake, 42°33'32" N / 43°37'59" E, 1580 m, 28-30.06.2021, A. Streltsov, P. Ustjuzhanin & R. Yakovlev leg.
4. South Ossetia, Dzaus Distr., Rachinsky Range, near Dodtota, 42°27'25" N / 43°43'18" E, 1750 m, 1-2.07.2021, A. Streltsov, P. Ustjuzhanin & R. Yakovlev leg.; 19-22.07.2022, V. Rudoi, P. Ustjuzhanin & R. Yakovlev leg.
5. South Ossetia, Dzaus Distr., Dvalet Range, near Kherusel't, 42°32'37" N / 43°47'32" E, 1760 m, 3-5.07.2021, A. Streltsov, P. Ustjuzhanin & R. Yakovlev leg.
6. South Ossetia, Dzaus Distr., Mtiulet Range, near Erman, 42°31'2" N / 44°14'10" E, 2140 m, 7-9.07.2021, P. Ustjuzhanin & R. Yakovlev leg.; 26-27.07.2022, V. Rudoi, P. Ustjuzhanin & R. Yakovlev leg.
7. South Ossetia, Znaur Distr., 2 km W Dzagina, 42°14'34" N / 43°43'11" E, 1100 m, 11-12.07.2021, P. Ustjuzhanin & R. Yakovlev leg.; 15-16.07.2022, P. Ustjuzhanin & R. Yakovlev leg.
8. South Ossetia, Dzaus Distr., Tli, 42°29'31" N / 43°51'22" E, 1860 m, 23-25.07.2022, V. Rudoi, P. Ustjuzhanin & R. Yakovlev leg.

## Result

| No                 | Taxa   | Localities |   |   |   |   |   |   |   |
|--------------------|--|------------|---|---|---|---|---|---|---|
|                    |  | 1          | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| <b>Hesperiidae</b> |  |            |   |   |   |   |   |   |   |
| 1                  | <i>Erynnis tages</i> (Linnaeus, 1758)          | -          | - | - | + | - | - | - | + |
| 2                  | <i>Spialia orbifer</i> (Hübner, 1823)          | -          | - | - | + | - | - | - | - |
| 3                  | <i>Pyrgus sidae</i> (Esper, 1784)              | +          | - | - | - | + | - | - | - |
| 4                  | <i>Pyrgus serratulae</i> (Rambur, 1839)        | -          | - | + | - | + | - | - | - |
| 5                  | <i>Carterocephalus palaemon</i> (Pallas, 1771) | -          | - | - | - | + | - | - | + |
| 6                  | <i>Carcharodus alceae</i> (Esper, 1780)        | +          | - | - | - | - | - | - | - |
| 7                  | <i>Carcharodus flocciferus</i> (Zeller, 1847)  | -          | - | - | + | + | - | - | - |
| 8                  | <i>Thymelicus lineola</i> (Ochsenheimer, 1808) | +          | - | + | + | + | - | - | + |
| 9                  | <i>Thymelicus sylvestris</i> (Poda, 1761)      | +          | - | - | - | - | - | - | - |
| 10                 | <i>Ochlodes sylvanus</i> (Esper, 1777)         | +          | - | + | + | - | + | - | - |

| No                  | Taxa  | Localities |   |   |   |   |   |   |   |
|---------------------|---|------------|---|---|---|---|---|---|---|
|                     |   | 1          | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| <b>Papilionidae</b> |   |            |   |   |   |   |   |   |   |
| 11                  | <i>Papilio machaon</i> Linnaeus, 1758                     | +          | - | - | - | + | - | - | + |
| 12                  | <i>Iphiclides podalirius</i> Linnaeus, 1758               | +          | - | - | - | - | - | - | - |
| 13                  | <i>Parnassius apollo suaneticus</i> Arnold, 1909 (Fig. 2) | -          | - | + | + | + | + | - | + |
| <b>Pieridae</b>     |   |            |   |   |   |   |   |   |   |
| 14                  | <i>Leptidea sinapis</i> (Linnaeus, 1758)                  | +          | - | - | - | + | - | - | - |
| 15                  | <i>Colias hyale</i> (Linnaeus, 1758)                      | +          | - | - | - | - | - | - | - |
| 16                  | <i>Colias croceus</i> (Geoffroy, 1785)                    | -          | - | + | + | + | - | - | - |
| 17                  | <i>Colias thisoa</i> Ménétériés, 1832                     | -          | - | - | - | - | + | - | - |
| 18                  | <i>Gonepteryx rhamni</i> (Linnaeus, 1758)                 | -          | - | + | - | - | - | - | - |
| 19                  | <i>Pieris brassicae</i> (Linnaeus, 1758)                  | +          | - | - | - | + | - | - | - |
| 20                  | <i>Pieris napi</i> (Linnaeus, 1758)                       | -          | - | - | + | - | - | - | + |
| 21                  | <i>Pieris rapae</i> (Linnaeus, 1758)                      | +          | - | - | - | - | - | - | - |
| 22                  | <i>Pieris bryoniae caucasica</i> (Lorković, 1968)         | -          | - | - | - | - | + | - | - |
| 23                  | <i>Aporia crataegi</i> (Linnaeus, 1758)                   | +          | - | + | - | - | - | - | + |
| 24                  | <i>Pontia edusa</i> (Fabricius, 1777)                     | +          | - | - | + | + | - | - | + |
| <b>Lycaenidae</b>   |   |            |   |   |   |   |   |   |   |
| 25                  | <i>Nordmannia ilicis</i> (Esper, 1779)                    | +          | - | - | - | - | - | - | - |
| 26                  | <i>Callophrys chalybeitincta</i> Sovinsky, 1905           | +          | - | - | - | - | - | - | - |
| 27                  | <i>Lycaena phlaeas</i> (Linnaeus, 1761)                   | -          | - | - | - | + | - | - | + |
| 28                  | <i>Lycaena virgaureae</i> Linnaeus, 1758                  | -          | - | - | + | + | + | - | + |
| 29                  | <i>Lycaena alciphron</i> (Rottemburg, 1775)               | -          | - | - | - | - | + | - | + |
| 30                  | <i>Celastrina argiolus</i> (Linnaeus, 1758)               | +          | - | + | - | - | - | - | - |
| 31                  | <i>Everes argiades</i> (Pallas, 1771)                     | -          | - | + | - | - | - | - | - |
| 32                  | <i>Pseudophylotes vicrama</i> (Moore, 1865)               | +          | - | - | - | - | - | - | - |
| 33                  | <i>Cyaniris semiargus</i> (Rottemburg, 1775)              | +          | - | - | + | - | + | - | - |
| 34                  | <i>Plebejus argus</i> (Linnaeus, 1758)                    | +          | - | - | - | - | - | - | - |
| 35                  | <i>Plebejus argyrognomon</i> (Bergsträsser, 1779)         | -          | - | + | - | + | - | - | + |
| 36                  | <i>Plebejus idas</i> (Linnaeus, 1758)                     | +          | - | - | - | - | + | - | - |
| 37                  | <i>Aricia agestis</i> ([Denis & Schiffermüller], 1775)    | +          | - | + | + | - | - | - | - |
| 38                  | <i>Aricia artaxerxes</i> (Fabricius, 1793)                | +          | - | - | - | - | - | - | + |
| 39                  | <i>Glaucopsyche alexis</i> (Poda, 1761)                   | +          | - | - | - | - | - | - | - |
| 40                  | <i>Phengaris teleius</i> (Bergsträsser, 1779)             | +          | - | - | - | - | - | - | - |
| 41                  | <i>Polyommatus amandus</i> (Schneider, 1792)              | +          | - | + | + | + | + | - | + |
| 42                  | <i>Polyommatus corydonius</i> (Herrich-Schäffer, [1852])  | +          | - | - | - | - | - | - | - |
| 43                  | <i>Polyommatus icarus</i> (Rottemburg, 1775)              | -          | - | - | + | + | + | - | + |

| No                 | Taxa   | Localities |   |   |   |   |   |   |   |
|--------------------|--|------------|---|---|---|---|---|---|---|
|                    |  | 1          | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| <b>Nymphalidae</b> |  |            |   |   |   |   |   |   |   |
| 44                 | <i>Limenitis reducta</i> Staudinger, 1901                          | +          | - | - | - | - | - | - | - |
| 45                 | <i>Limenitis camilla</i> (Linnaeus, 1764)                          | -          | - | + | - | - | - | - | - |
| 46                 | <i>Aglais urticae</i> (Linnaeus, 1758)                             | -          | - | + | + | + | + | - | + |
| 47                 | <i>Polygonia c-album</i> (Linnaeus, 1758)                          | +          | - | + | - | - | - | - | + |
| 48                 | <i>Vanessa atalanta</i> (Linnaeus, 1758)                           | +          | - | + | - | - | - | - | - |
| 49                 | <i>Vanessa cardui</i> (Linnaeus, 1758)                             | +          | - | - | + | - | - | - | + |
| 50                 | <i>Euphydryas aurinia</i> (Rottemburg, 1775)                       | -          | - | - | + | - | - | - | - |
| 51                 | <i>Melitaea cinxia</i> (Linnaeus, 1758)                            | +          | - | + | - | - | - | - | + |
| 52                 | <i>Melitaea phoebe</i> ([Denis & Schiffermüller], 1775)            | +          | - | - | - | - | - | - | - |
| 53                 | <i>Melitaea interrupta</i> Kolenati, 1846                          | +          | - | + | + | + | + | - | - |
| 54                 | <i>Melitaea caucasogenita</i> Verity, 1930                         | -          | - | - | + | + | - | - | - |
| 55                 | <i>Melitaea athalia</i> (Rottemburg, 1775)                         | -          | - | + | - | - | - | - | - |
| 56                 | <i>Clossiana dia</i> (Linnaeus, 1767)                              | +          | - | - | + | - | - | - | - |
| 57                 | <i>Clossiana euphrosyne</i> (Linnaeus, 1758)                       | -          | - | + | - | - | - | - | + |
| 58                 | <i>Brenthis ino</i> (Rottemburg, 1775)                             | -          | - | - | - | + | + | - | + |
| 59                 | <i>Brenthis daphne</i> ([Denis & Schiffermüller], 1775)            | +          | - | - | - | - | - | - | - |
| 60                 | <i>Issoria lathonia</i> (Linnaeus, 1758)                           | +          | - | + | - | + | - | - | - |
| 61                 | <i>Argynnis pandora</i> ([Denis & Schiffermüller], 1775)           | +          | - | - | - | - | - | + | - |
| 62                 | <i>Argynnis paphia</i> (Linnaeus, 1758)                            | +          | - | + | - | - | - | - | - |
| 63                 | <i>Argynnis adippe</i> ([Denis & Schiffermüller], 1775)            | +          | - | + | + | - | - | - | - |
| 64                 | <i>Argynnis aglaja</i> (Linnaeus, 1758)                            | -          | - | - | + | + | + | - | + |
| 65                 | <i>Argynnis niobe taura</i> Röber, 1896                            | +          | - | - | + | - | - | - | - |
| 66                 | <i>Pararge aegeria</i> (Linnaeus, 1758)                            | +          | - | - | - | - | - | - | - |
| 67                 | <i>Lasiommata maera</i> (Linnaeus, 1758)                           | -          | - | - | - | - | + | - | - |
| 68                 | <i>Lasiommata petropolitana</i> (Fabricius, 1787)                  | -          | - | - | - | + | - | - | - |
| 69                 | <i>Hipparchia pellucida</i> Stauder, 1924                          | +          | - | - | - | - | - | - | - |
| 70                 | <i>Melanargia galathea</i> (Linnaeus, 1758)                        | +          | - | + | - | - | - | + | - |
| 71                 | <i>Maniola jurtina</i> (Linnaeus, 1758)                            | +          | - | + | - | - | - | - | - |
| 72                 | <i>Coenonympha arcania</i> (Linnaeus, 1761)                        | +          | - | + | - | - | - | - | - |
| 73                 | <i>Coenonympha glycerion</i> (Borkhausen, 1788)                    | -          | - | - | - | + | + | - | + |
| 74                 | <i>Coenonympha pamphilus</i> (Linnaeus, 1758)                      | +          | - | + | - | - | - | + | - |
| 75                 | <i>Erebia medusa</i> ([Denis & Schiffermüller], 1775)              | -          | - | - | + | + | + | - | - |
| 76                 | <i>Erebia aethiops melusina</i> Herrich-Schäffer, 1847<br>(Fig. 3) | -          | - | + | + | + | + | - | + |

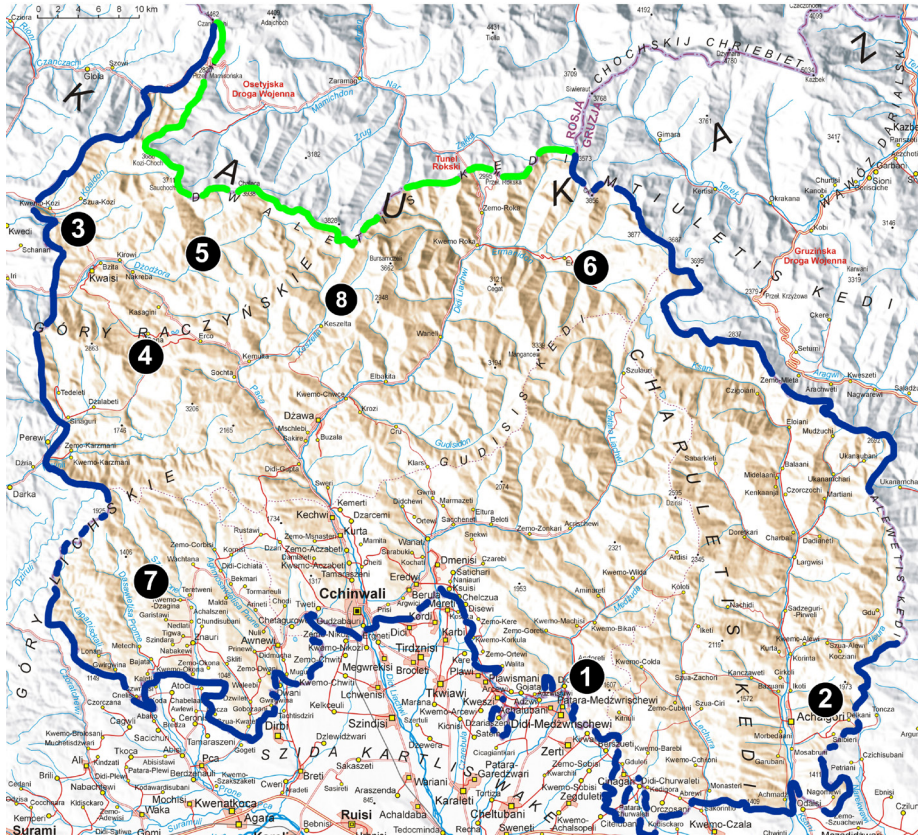


Figure 1. Map of South Ossetia with collecting localities.



Figures 2–3. Butterflies of South Ossetia in Nature: 2. *Parnassius apollo suaneticus* Arnold, 1909, male, Dzaus Distr., Rachinsky Range, near Dодtota, 42°27'25" N / 43°43'18" E, 1750 m (photo by Aleksandr Streltsov); 3. *Erebia aethiops melusina* Herrich-Schäffer, 1847, male, Dzaus Distr., Tli, 42°29'31" N / 43°51'22" E, 1860 m (photo by Roman Yakovlev).

## Conclusions

Thus, on the territory of South Ossetia 77 species of butterflies were reliably indicated. One of them (*Parnassius nordmanni* (Menetries, 1850)) is known only from published data. For three species listed in the Red data Book (*P. apollo*, *I. podalirius* and *P. machaon*) we give the new localities. It is necessary to notice that *P. apollo* in the mid-mountain belt of the Rachinsky ridge is the dominant species. The relevance of including species with huge ranges, *Iphiclides podalirius* and *Papilio machaon*, in the Red Book of the region is also not obvious.

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