

"Fauna lepidopterologica Volgo-Uralensis" 150 years later: changes and additions. Part 1. Rhopalocera

(Insecta, Lepidoptera)

by

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Summary: 199 species of Rhopalocera are listed as the present day fauna of the Volgo-Ural region. 8 species are deleted from previous lists. *Lycaena baschkiria* KRUL. is synonymized with *Maculinea arion* L. The reasons for the changes in the Volgo-Ural fauna of the Rhopalocera are discussed.

Резюме: 199 видов булавоусых чешуекрылых отмечаются в современной фауне Волго-Уральского региона. 8 видов исключаются из списка как ошибочно приведенные ранее, а *Лыкаена башкирия* KRUL. синонимизируется с *Макулинея арион* L. Обсуждаются причины изменения фауны Rhopalocera региона.

The famous monograph on the Lepidoptera of the Volgo-Ural region by EVERSMANN was published almost 150 years ago. Since then, no other publications which have been made are comparable to it, especially with regards its profoundness and the amplity of the material included. At the same time very strong anthropogenic pressures on Volga and Ural nature have led to irreversible changes in the lepidopteran fauna of that region. As a result, some species – especially those inhabiting steppe biotopes – have disappeared or had large reductions in their numbers, and also some other species from adjacent territories have migrated to the region now under study.

This paper is the first in a series of publications dealing with the composition of the present day fauna of lepidoptera in the Lower and Middle Volga and the south-western Cisurals. This region comprises of the administrative divisions of Astrakhan-, Volgograd-, Saratov-, Samara, Ulyanovsk-, Orenburg-, Uralsk- and Atyraus- (= Gurjev) Districts, together with Tataria and Bashkiria. The territory of the Lower and Middle Volga region is outlined in map 1, with the numbers of the administrative units corresponding with those given in table 1.

As expected, the authors had to face an extreme inequality in the study of the various groups of Lepidoptera of the region. The unfavourable situation made it impossible to publish the separate parts of this work in systematic order. Therefore this and the following parts are prepared in accordance with the processing of the faunistic data and literature on the moths and butterflies of the southern part of the Volgo-Ural region, which is a large territory.

In not being a taxonomic, but a faunistic-ecological work, our aim is to present a study of the present day fauna of Lepidoptera in the Volgo-Ural region with regards the changes caused by human influence. Therefore only material reliably labeled, and spanning the last 20 years was used for this study. The main collections are those of the authors V. ANIKIN (Saratov and Volgograd Districts), S. SACHKOV (Samara District), and V. ZOLOTUHIN (Ulyanovsk district and southern Tataria). For some districts we also made use of literature data, i.e. Astrakhan district (LVOVSKY, 1971), Bashkiria (GROSSER, 1983, 1987) and Uralsk district (ABASOV, 1974; KUZNETSOV & MARTYNOVA, 1954). All the data from the 19th and early 20th century was taken into account but only as a reference (BECKER, 1854–66; BUTLEROV, 1848; CHRISTOPH, 1867, 1868; GROSS, 1925; JAKOVLEV, 1861). Whilst compiling this list we also took advantage of the information from recent papers on this region (KUMAKOV & KORSHUNOV, 1979; MIGRANOV, 1991; SACHKOV, 1986; ZOLOTUHIN, 1992) which was partly critically reviewed and revised. The material in the collections of the Zoological Institute of the Russian Academy of Sciences at St. Petersburg, Moscow and Kiev Universities was also examined for our study. Also the private collections of E. ARTEMJEVA and A. ISAEV (Ulyanovsk) and V. KUNAEV (Samara) could be studied, to whom we express our sincere thanks. We also owe special thanks to the curators of the Lepidopteran collections at the institutions listed above – namely to E. M. ANTONOVA (Moscow), I. Yu. KOSTJUK (Kiev) and A. L. LVOVSKY (St. Petersburg) for their help in our work with the museum funds. Special thanks also to V. A. LUKHTANOV (St. Petersburg) and V. K. TUZOV (Moscow) for their valuable advice concerning the taxonomy and nomenclature of the Rhopalocera. We also thank I. SIMAGINA (Ulyanovsk) for the correction of the English text and Dr. U. EITSCHBERGER (Marktleuthen) for editing this paper.

Geobotanical description of the region

Naturally the composition of the lepidopteran fauna of any region is primarily determined by the variety of the plant communities and therefore by the physico-geographical peculiarities of a locality. The parameters of different abiotic factors such as e.g. radiation, precipitation, average temperature, and temperature totals show a wide range because of the large extent of the region, both from North to South, and from East to West. A rich and diversified hydrographic system is mainly conditioned by the Volga river tributaries. It provoked the penetration of many nemoral and meadow species of Lepidoptera alongside the plant communities of the flooding areas far in the South, to the zone of deserts and semi-deserts of the Lower Volga.

The region's vegetation that really determines the Lepidopteran composition as its trophic base is complicated and original. There are strips of the southern Taiga-like pine and pine-fir forests in the North. The changing of the coniferous forests to the pine-deciduous and deciduous woods takes place as one advances southwards. For example, about 80% of the woodland in the Ulyanovsk and Samara districts is already occupied by deciduous forests with the dominance of *Quercus*, *Tilia*, *Betula* and *Populus tremula*. There are also meadow communities here, which are especially rich in the flooding zones. Southwards of the forests and meadows is a forest-steppe typical for the right-bank area of Ulyanovsk and northern part of Saratov district. Flood forests here are represented, on well drained soils, by *Quercus*, *Tilia* and sometimes *Betula*, on the lower ones situated nearer to the banks,

they are represented by *Ulmus*, and on the banks by *Populus nigra*. For the lowest places near to the water, *Salix* and *Alnus* are typical.

The meadows alternate with meadow steppes which are characterized by the presence of *Arenastrum* and various *Stipa* species: *S. pennata*, *S. stenophylla*, *S. pulcherrima*, *S. dasyphylla*. The major part of the steppe zone occupies the Saratov, Volgograd, Uralsk and to the North of the Astrakhan District, but the real steppes are mostly located in the Saratov region, north of the left-bank area of the Volgograd and partly in the Uralsk Districts. *Stipa lessingiana*, *S. capillata* and *Festuca aulcata* are often dominant. The arboreal vegetation present in the steppe zones is not of native forests but of extrazonal, intrazonal and artificial origin. The plots of rocky and chalky steppes situated on the high banks along the Volga and Ural rivers are accompanied by bare rocks.

In the most southerly area the mesophilic representatives of the vegetation give way to xerophilous ones with the dominance of grasses. The main structure there is the deserted steppe on saline soils. Typical for this area is the presence of herbs such as *Artemisia maritima*, *Kochia prostrata*, *Camphorosma soongoricum* and grasses like *Festuca sulcata*, *F. orientalis*, *Elamus junceus* and *Atropis distans*. The southernmost part of the Astrakhan District on the right-bank area is also occupied by steppe-desert communities on saline land with the dominance of *Eremopyrum triticeum*, *Artemisia maritima*, *A. arenaria*, *Ferula nuda*, *Glycyrrhiza glabra*, *Triticum repens* and *Acroptilon picris*. The left-bank area consists of hilly and barkhan sands which are partially overgrown with *Elymus giganteus*, *Agriophyllum arenarium*, *Bromus tectorum*, *Kochia arenaria*, various *Artemisia* spp. and sole bushes of *Calligonum* and *Tamarix*.

Results

Such an interpenetration of coniferous, mixed and deciduous forests, forest-steppes and the appearance of semi-deserts, deserts and saline lands stimulated a unique combination of species of plants and animals atypical for other regions of the country.

The species composition within the Rhopalocera, is rich and almost completely known. There are now 199 species, and another 8 species which are deleted from previous lists as faulty for the Volga-Ural region, namely *Euchloe simplonia* FRR., *Hipparchia pellucida* STAUD., *Satyrus actaea* ESP., *Pseudophilotes baton* BRGSTR., *Lycaena baschkiria* KRUL., *Polyommatus escheri* HBN., *P. eros* OCHS. and *P. admetus* ESP. A detailed analysis of this, is of peculiar interest with regards fluctuations of the species distribution in that region, population dynamics, biology etc.

For the ease of use information is given in the form of a table, with the principal data of all species mentioned for the Volgo-Ural region. Many localities have been renamed during the last 150 years, the most important ones being listed below:

Samara – later Kujbyshev – now Samara

Simbirsk – now Ulyanovsk

Sarepta – now Krasnoarmejsk of the Volgograd District

Zarizyn or Tsarizyn – later Stalingrad – now Volgograd.

column 1: Species number

- species is deleted from the list
- * species needs guarding

column 2: Species name

column 3: Species listed by EVERSMANN (1844) within the regional limits of that paper

column 4 – 10: Administrative units

- 4 Astrakhan District (centre is Astrakhan)
- 5 Volgograd District (Volgograd)
- 6 Saratov District (Saratov)
- 7 Samara District (Samara)
- 8 Uljanovsk District (Uljanovsk)
- 9 Bashkiria (Ufa)
- 10 Uralsk District (Uralsk)
- + species is present
- species not found during this study
- ? species is known from old or doubtful data
- o type locality
- Ø species now unknown in its type locality

column 11: Flight periods

IV – XI – months

b, m, e – beginning, middle, end of month

1 (2) G – species develops 1 (2) generation(s)

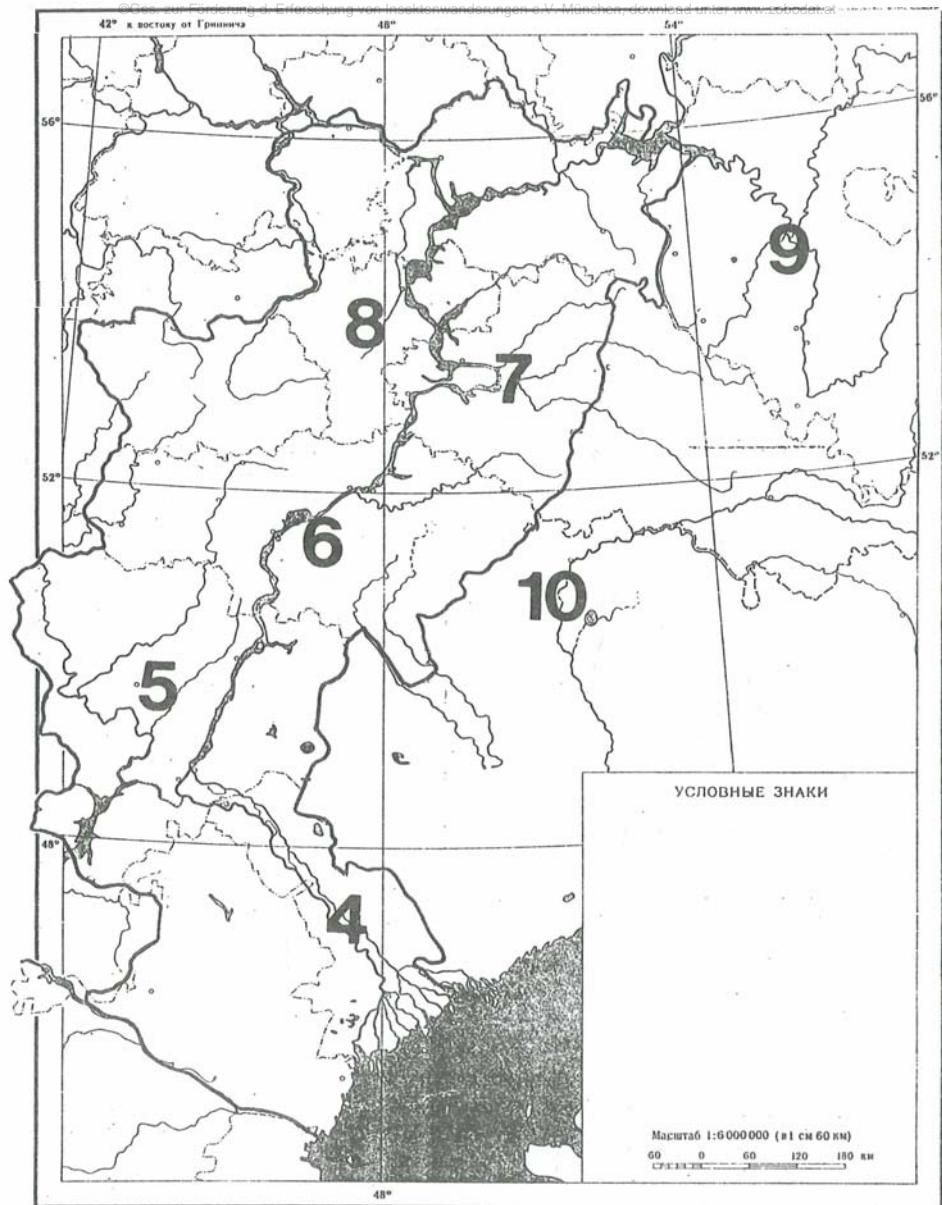
column 12: Comments and larval foodplants

L larval foodplants, * indicating original data

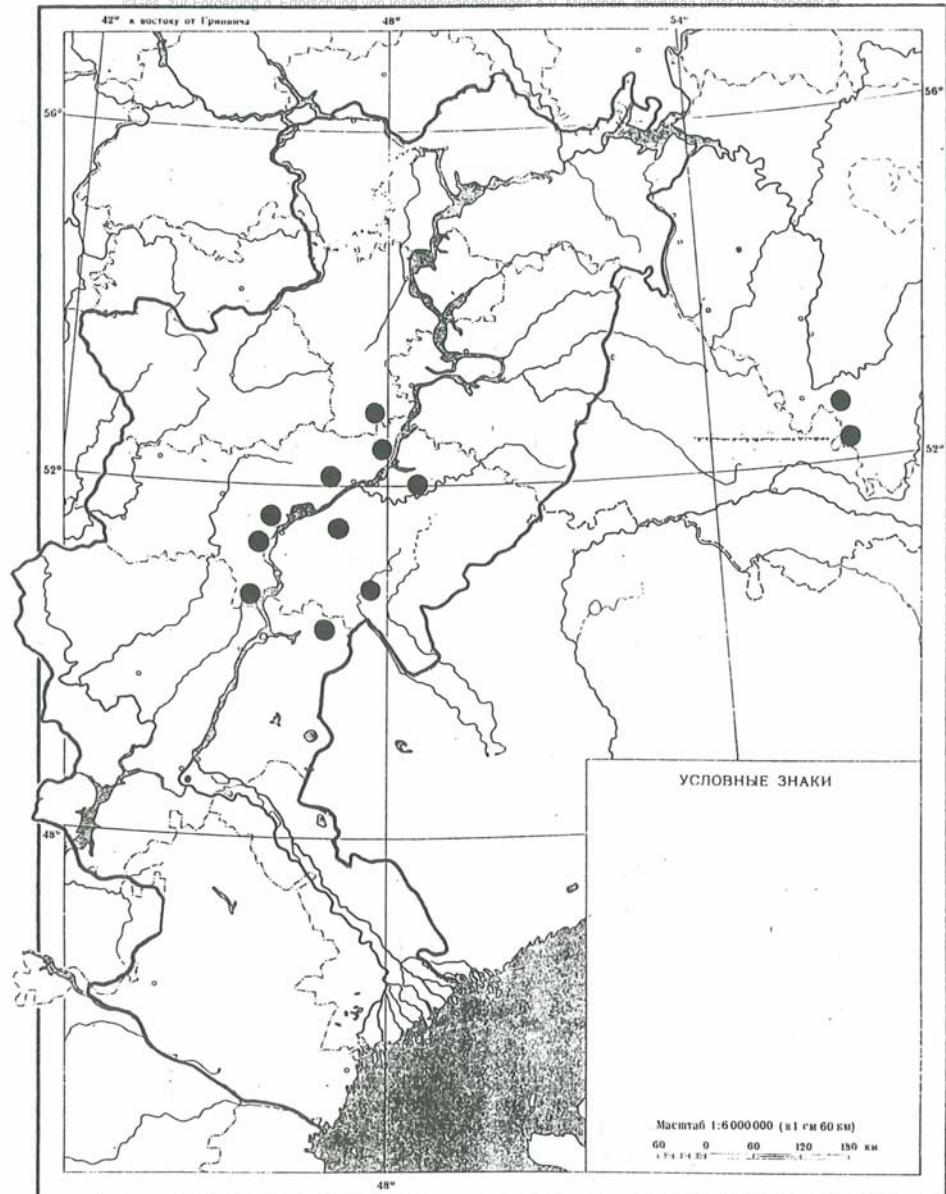
TL type locality

E EVERSMANN.

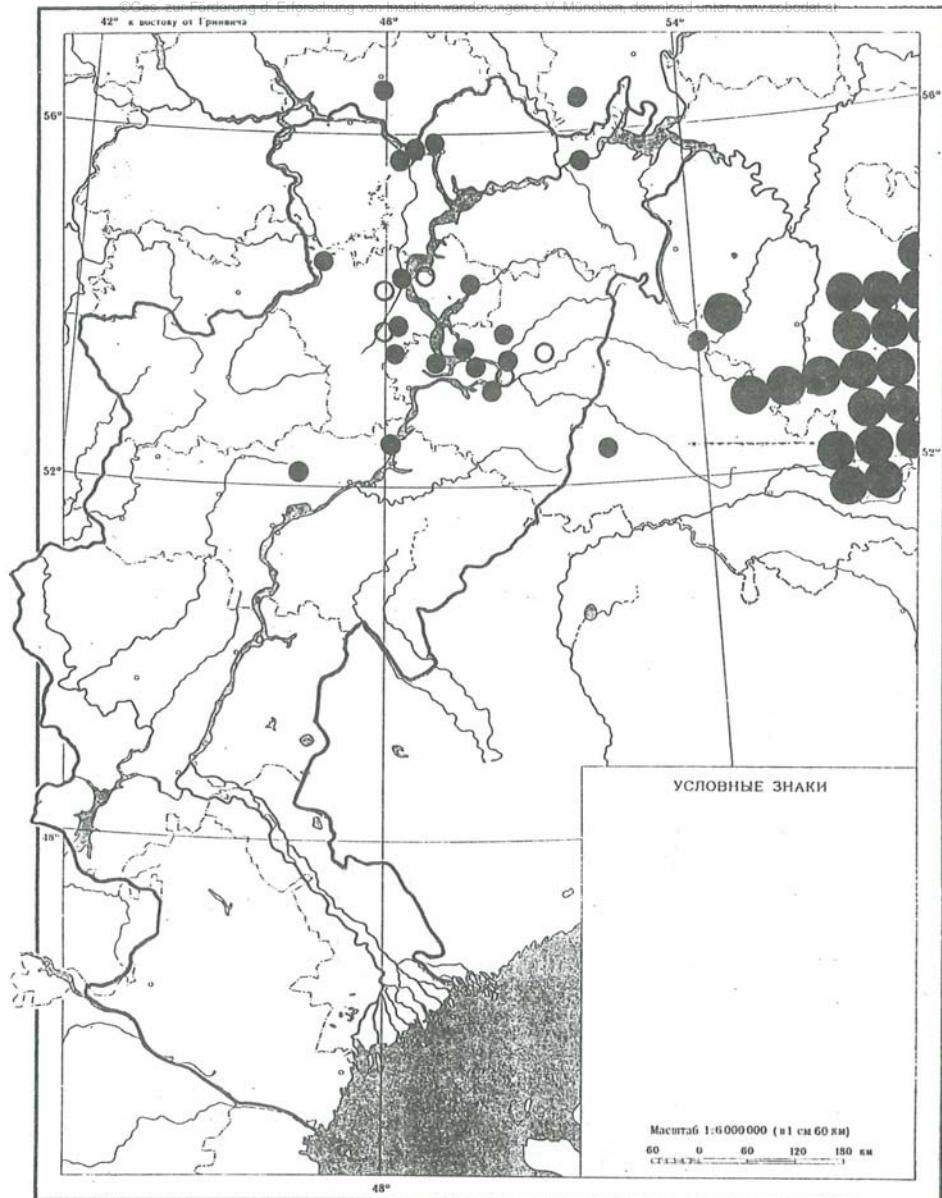
On the maps, the filled circles, indicate the places in which the species concerned is to be found. Hollow circles indicates those places, in which the species concerned have not been found during the last 15–50 years, possibly having disappeared due to the changes in the environment. The circles on the territory of Bashkiria are larger, because MIGRANOV (1991) used a larger plot size (50x50 km) than we did (30x30 km), except in the case of *Parnassius apollo* and *Euchloe ausonia*.



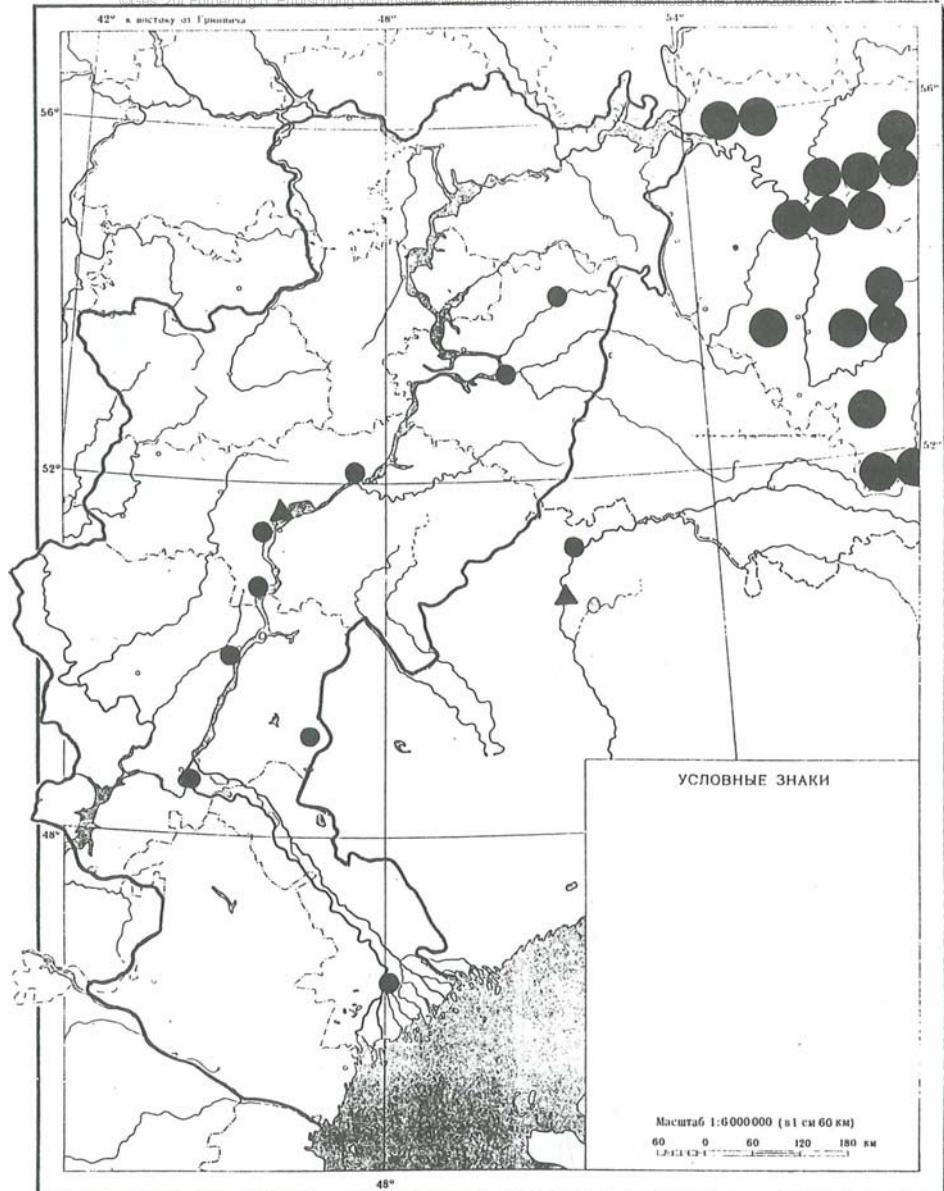
Map 1: Scheme of the Volga-Ural region. Explanation in the text.



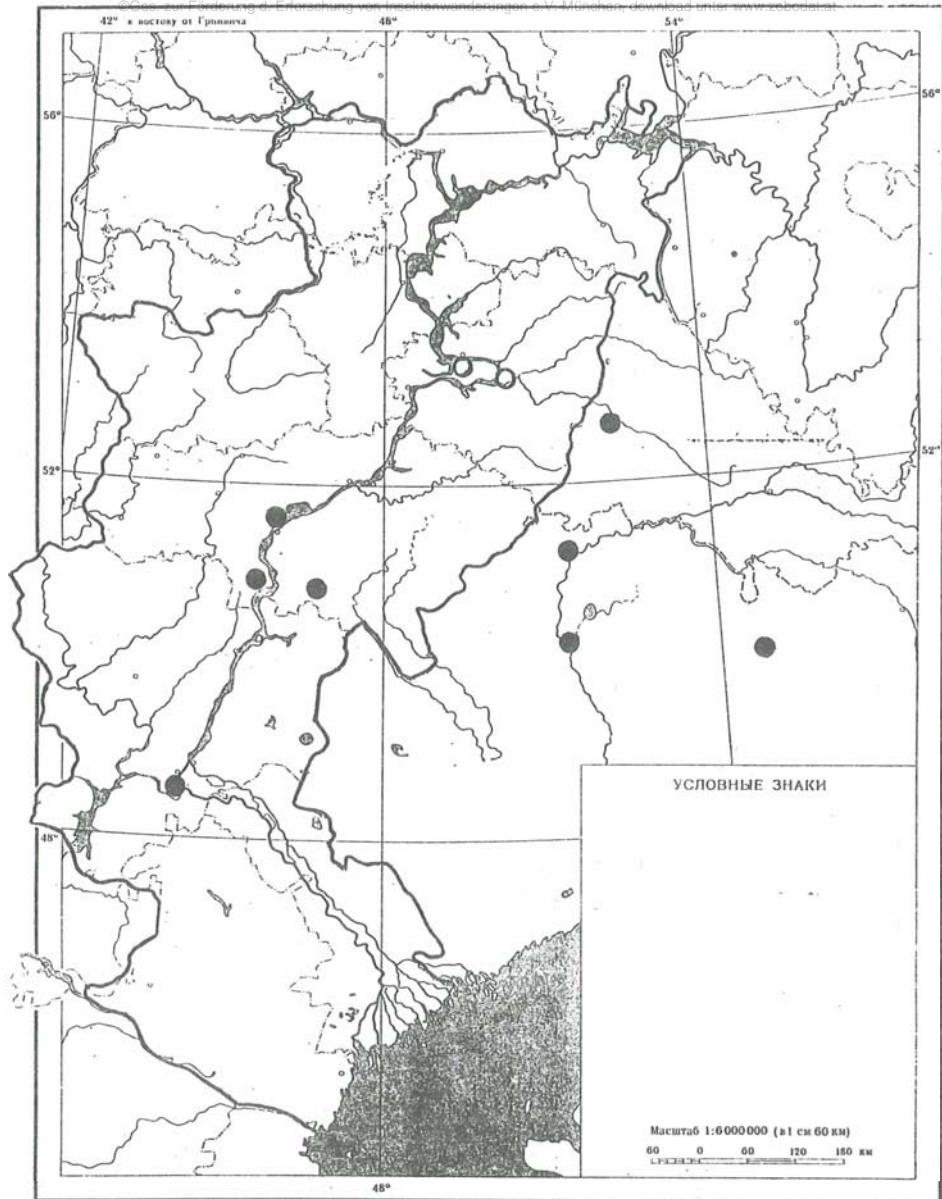
Map 2: Distribution of *Pyrgus sidae*



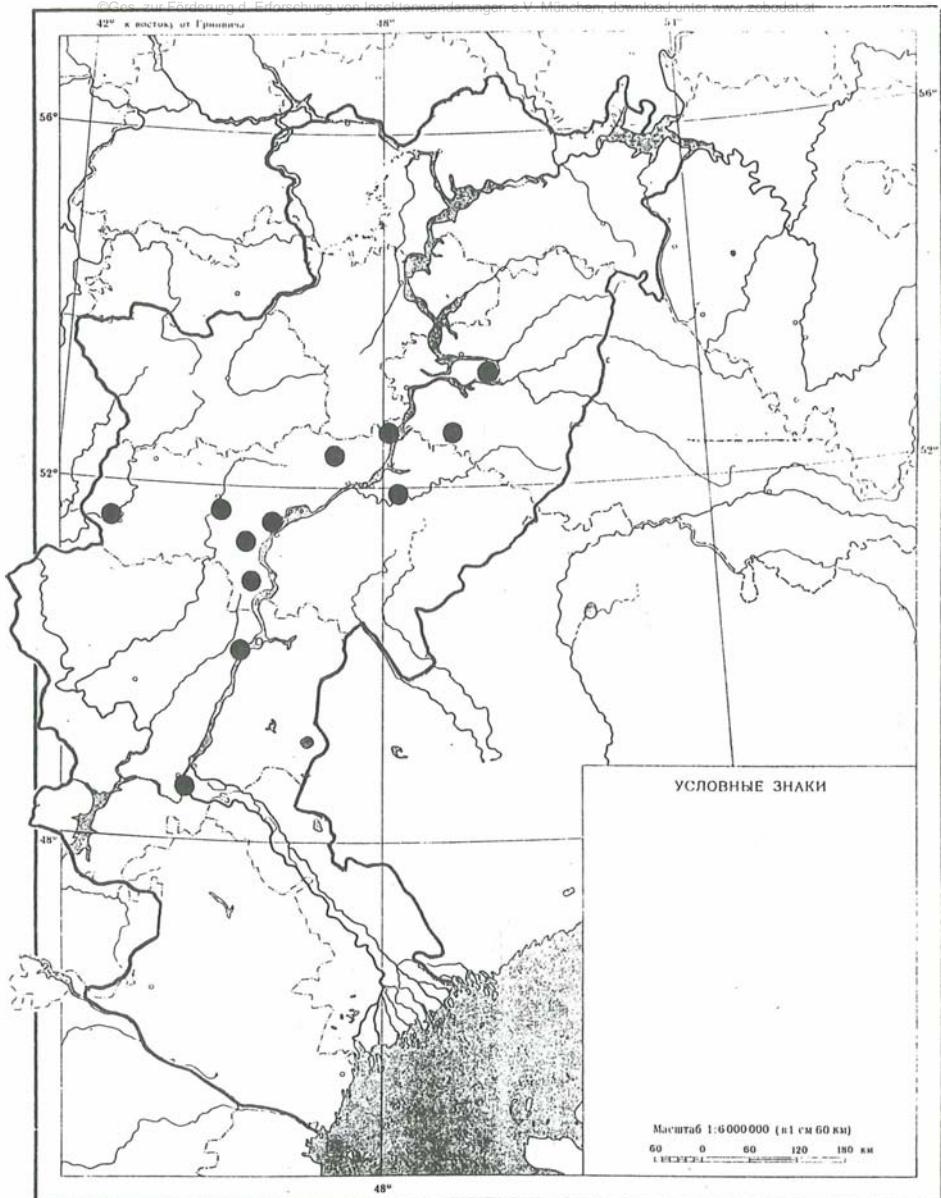
Map 3: Distribution of *Parnassius apollo*



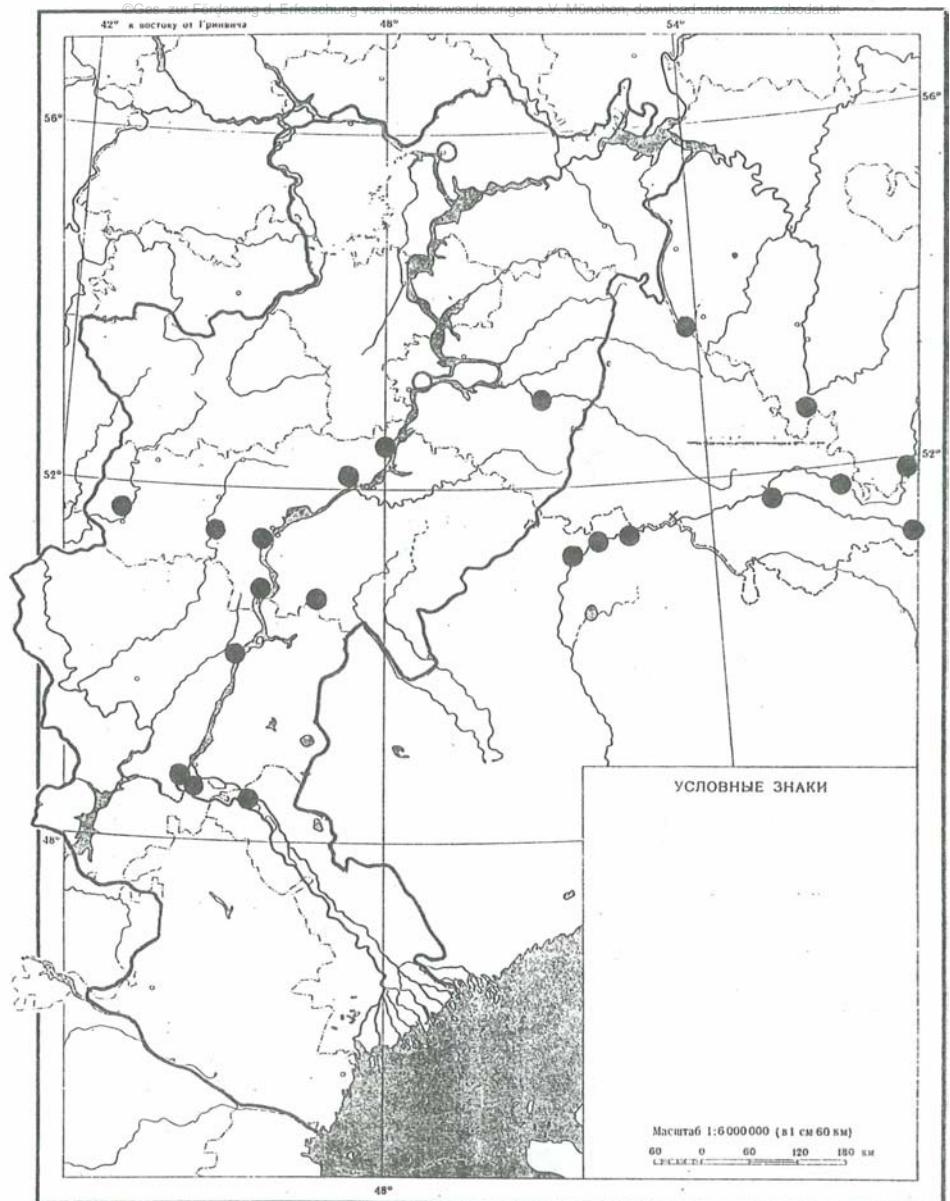
Map 4: Distribution of *Euchloe ausonia* (●) and *Migrozebris pyrothoe* (▲)



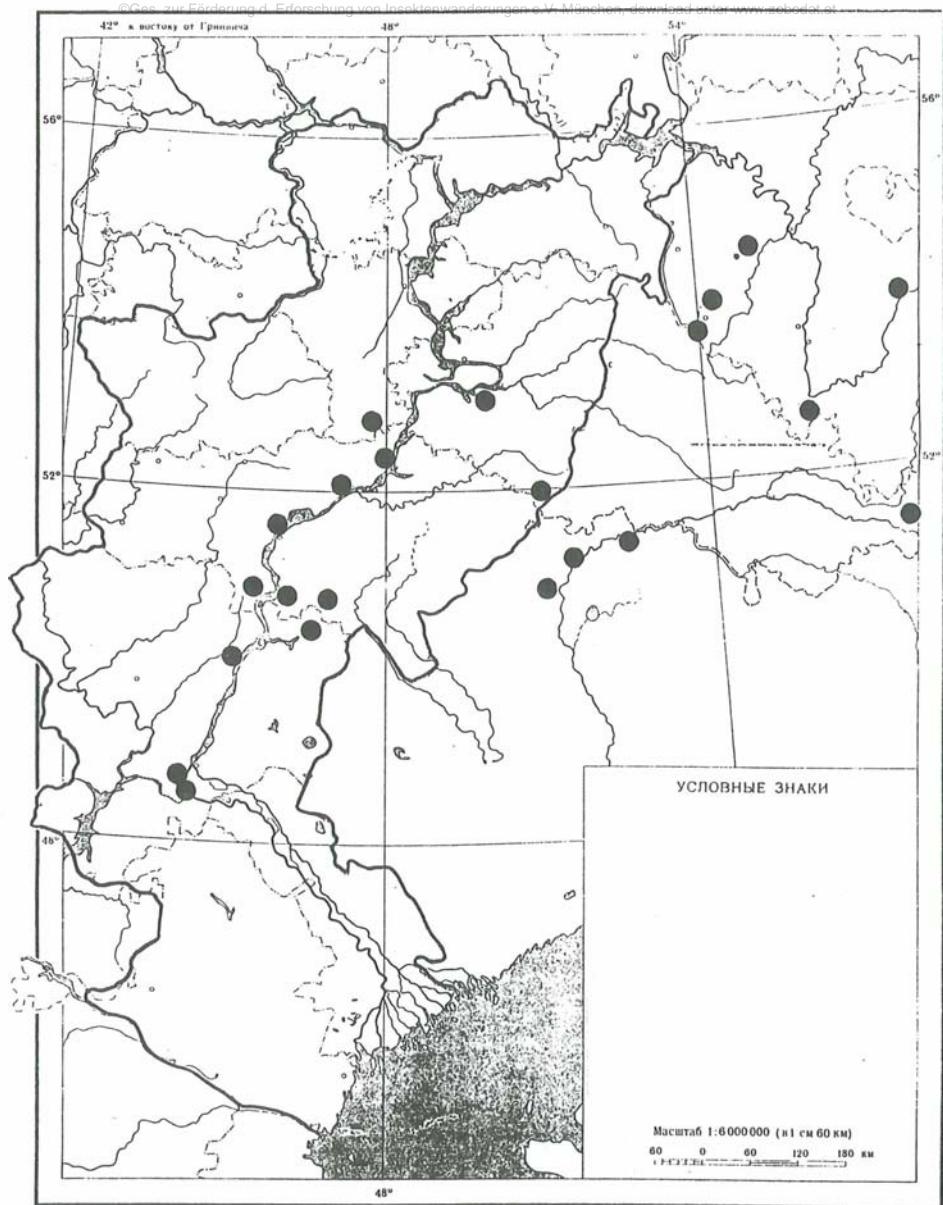
Map-5: Distribution of *Zegris eupheme*



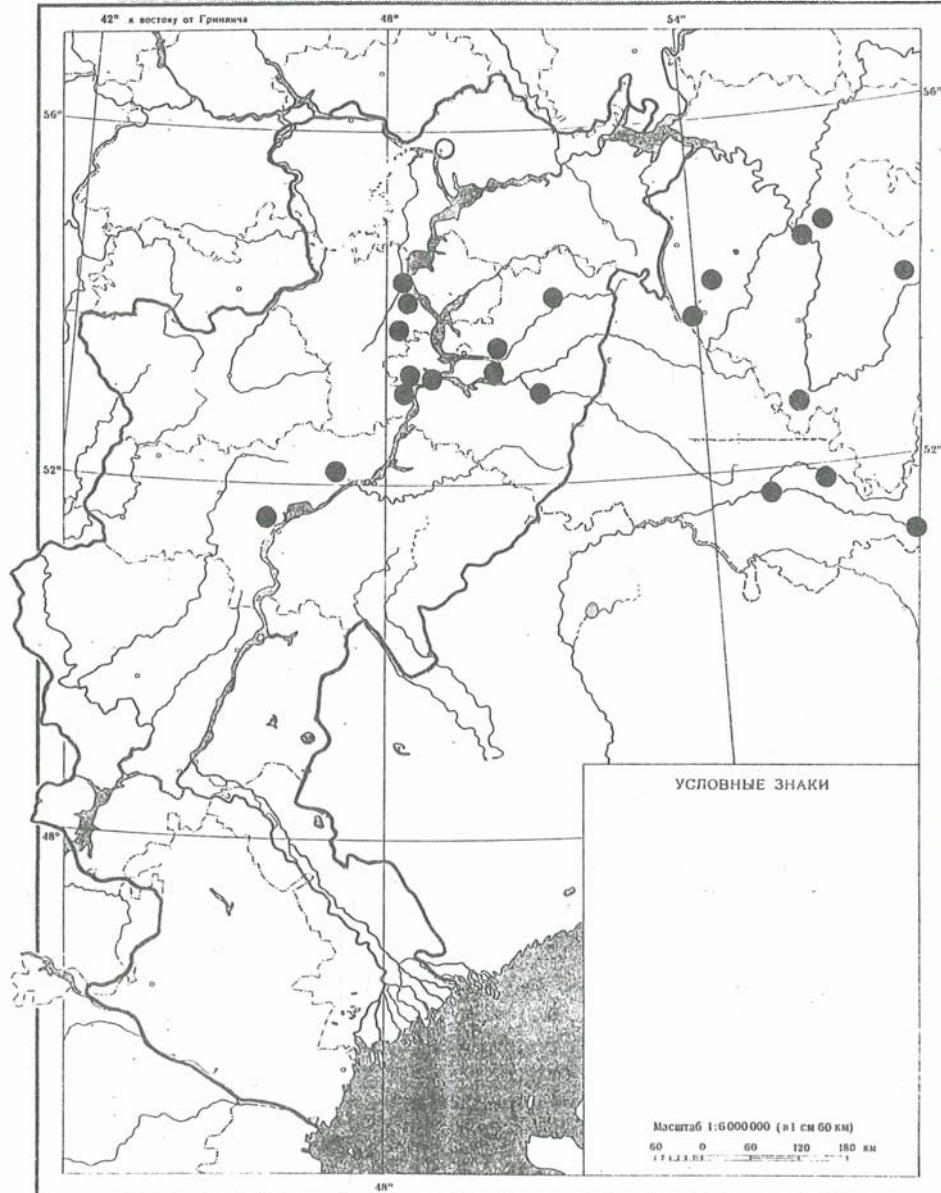
Map 6: Distribution of *Esperarge climene*



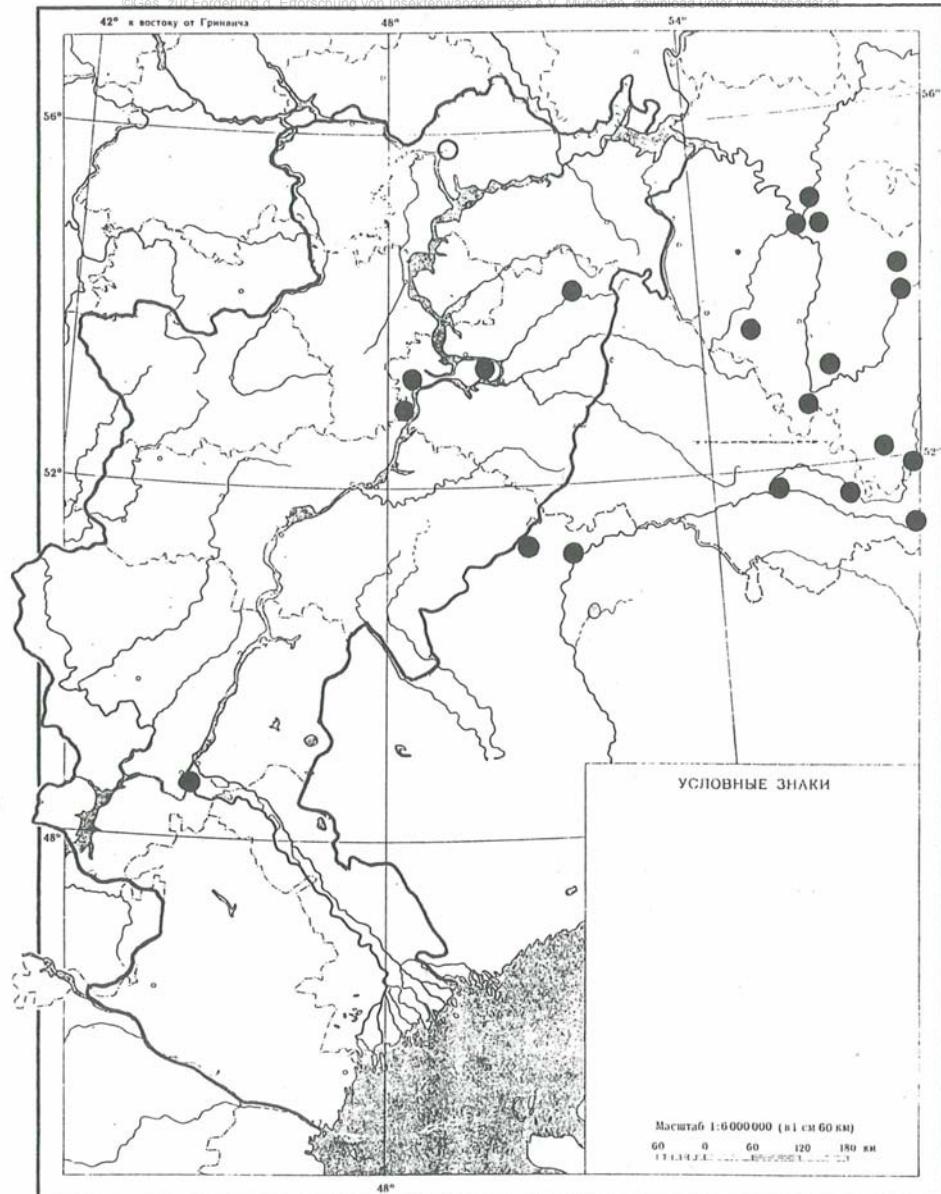
Map 7: Distribution of *Triphysa phryne*



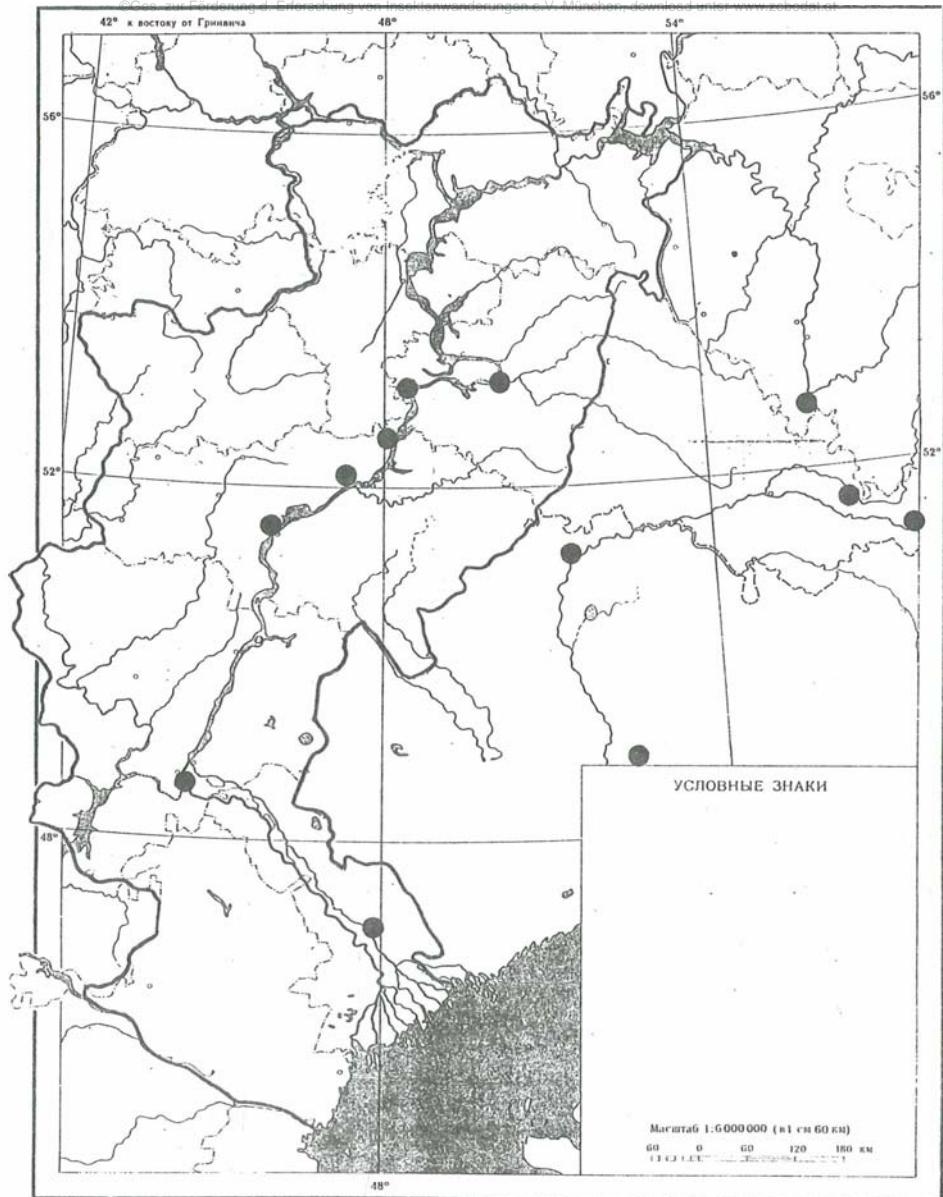
Map 8: Distribution of *Proterebia afra*



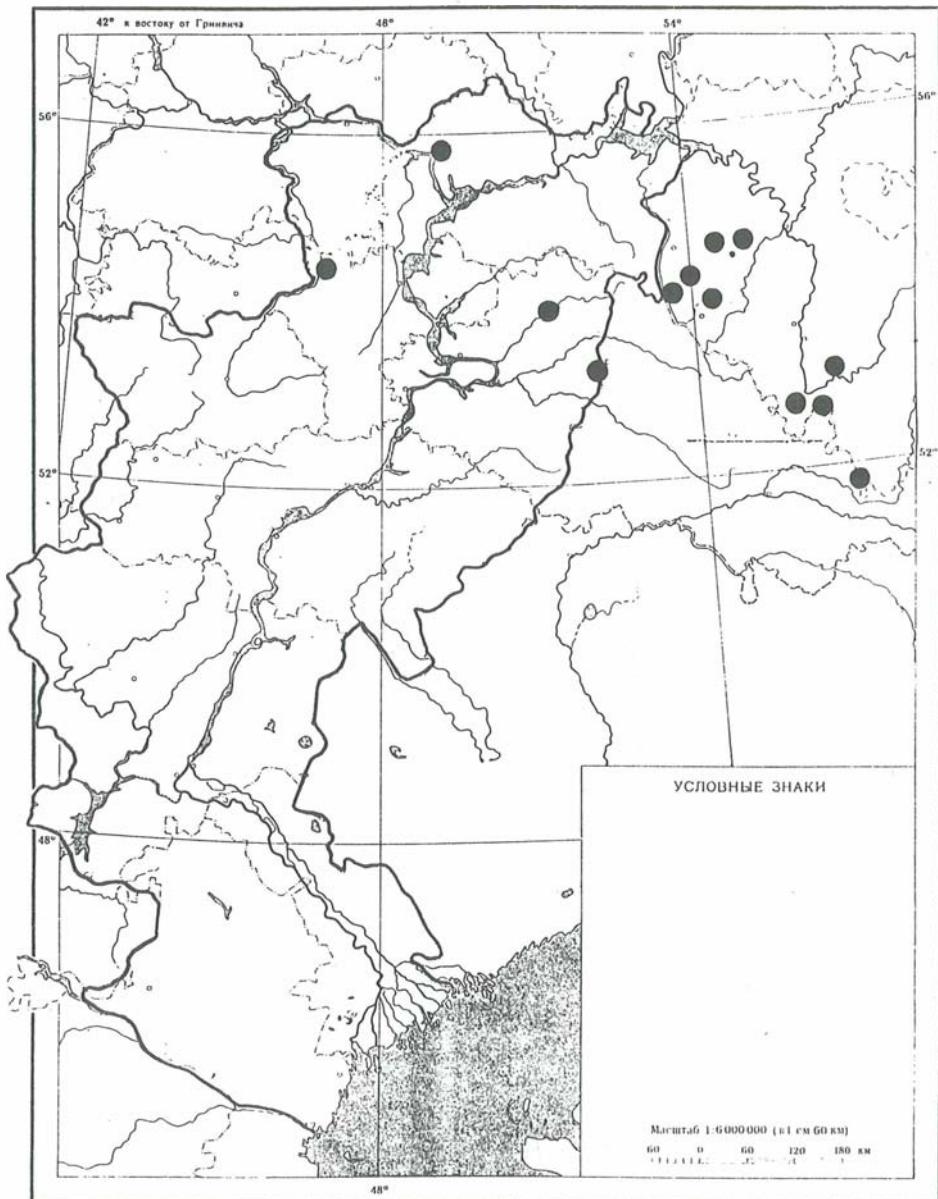
Map 9: Distribution of *Oeneis tarpeia*



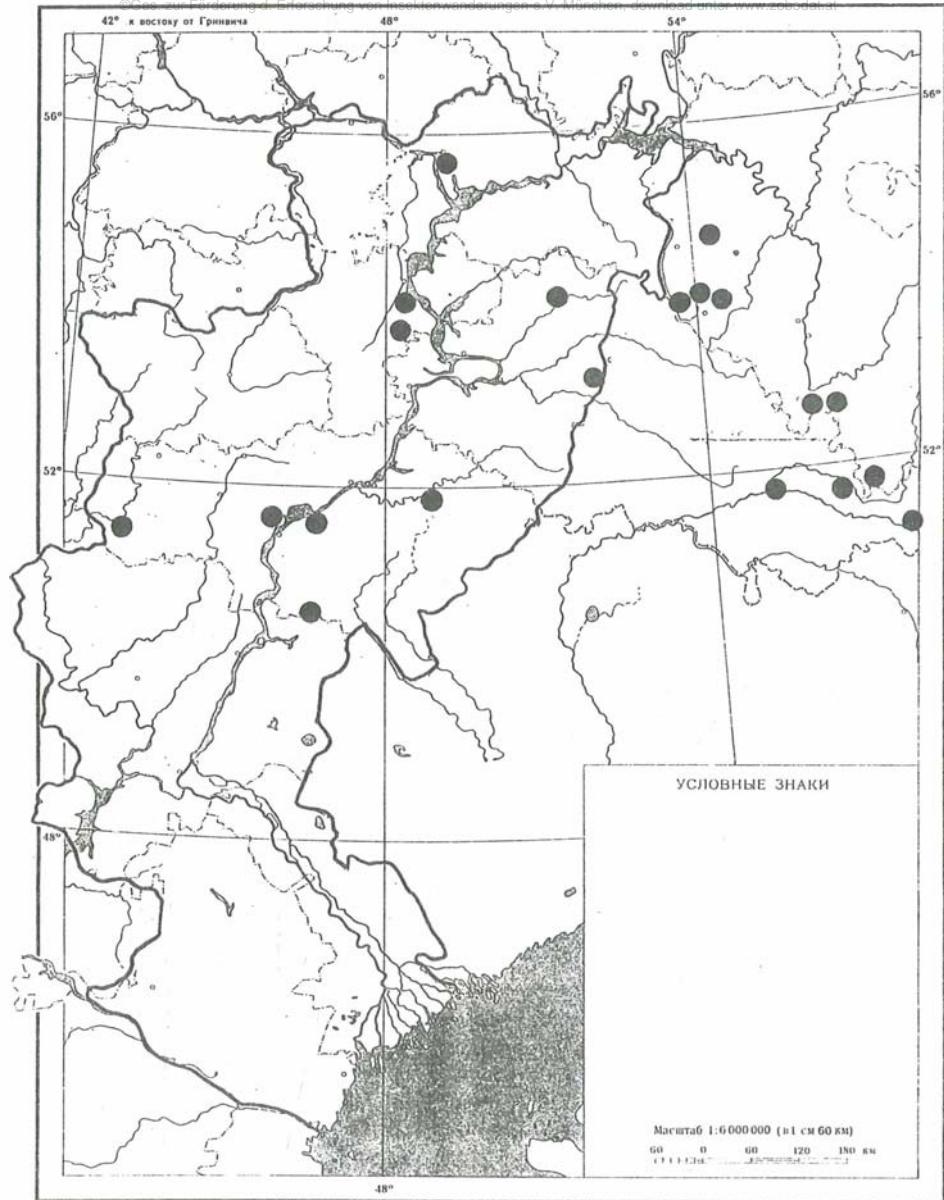
Map 10: Distribution of *Neolycaena rhymnus*



Map 11: Distribution of *Plebejus pylaon*



Map 12: Distribution of *Polyommatus damon*



Map 13: Distribution of *Polyommatus damone*

N	Species	E V E R S M A A N N	A S T R O G K H R A A N D	V S L A T R A N O A V I K L R I K R A K	S A M J R N K H I V S I K U B A S J K S A R A L A R U	Flight period	Comments				
1	2	3	4	5	6	7	8	9	10	11	12

- 1*. *Erynnis tages* L., 1758 V-bVI; VIII in 1–2 G Forest glades, meadows.
L: Fabaceae.
2. *Carcharodes alceae* Esp., 1780 V–VI; VIII–IX in 2 G Forest-steppes, steppes. Was cited by E. as *Malvarum*.
L: Malvaceae, *Althaea officinalis**.
3. *Carcharodes lavatherae* Esp., 1780 eV–bVII Steppes, forest-steppes.
L: *Stachys*, tree-mallow (*Lavatera*).
4. *Carcharodes flocciferus* ZELL., 1847 VI Forest-steppes, steppes.
L: *Stachys*.
5. *Spialia orbifer* HBN., 1823 + ? VI–bVII Meadows. L: *Potentilla**, *Rubus*, burnet (*Sanguisorba*).
in 1 G
- 6.* *Muschampia cribrellum* Ev., 1841 + ? VI Meadows and meadow steppes, very local. Foodplants are unknown.
in 1 G
7. *Muschampia tessellum* HBN., 1841 eV–bVII Waterless meadows and meadow steppes. L: *Phlomis*.
- 8.* *Muschampia proto* OCHS., 1808 V–VII Steppe slopes of the lime hills.
in 1 G These records are remarkably remote from the species' known area.
9. *Pyrgus malvae* L., 1758 V–VIII Meadows, glades. Was cited by E. as *Alveolum*. L: Fabaceae* and herbaceous Rosaceae.
10. *Pyrgus armoricanus* OBERTH., 1910 V–bVI; VII Forest-steppes. L: *Potentilla*, *Fragaria*.
in 2 G
11. *Pyrgus alveus* HBN., 1803 VI–bVII Meadows. L: *Potentilla*, *Rubus*.
in 1 G
12. *Pyrgus cinarae* RMB., 1839 VII Findings in Bashkiria have to be confirmed.
L: *Potentilla*.
13. *Pyrgus serratulae* RMB., 1839 VII Meadows. L: *Potentilla*.
in 1 G
- 14*. *Pyrgus sidae* Esp., 1782 VI–VII Stepped meadows, steppes, forest glades. L: Malvaceae.
(map 2) in 1 G
15. *Pyrgus fritillarius* PODA, 1761 VI–VII Meadows, meadow steppes. Was cited by E. as *Fritillium*.
in 1 G L: *Malva*, *Potentilla*.
16. *Carterocephalus palaemon* + PALL., 1771 V–VI Flooding lands and forest glades previously. Was cited by E. as *Paniceus*.
in 1 G L: *Bromus*. TL: Novodevichje of Samara Distr.

1	2	3 4 5 6 7 8 9 10	11	12
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17. *Carterocephalus silvicola*
MEIG., 1829 ? ? + + VI
in 1 G TOKARSKY & DIXON(1904) noted this species for Saratov Distr., STSCHER-BINOVSKY (1919) for Samara Distr. Was cited by E. as *Silvius*.
18. *Heteropterus morpheus*
PALL., 1771 eV–VI
in 1 G Forest glades, meadows. Was cited by E. as *Steropes*. L: Poaceae.
19. *Thymelicus lineola*
OCHS., 1808 + + + + + + + eV–VIII
in 2 G Meadows. L: Poaceae*.
20. *Thymelicus sylvestris*
PODA, 1761 VI–VII
in 1 G Meadows. Was cited by E. as *Linea*. L: Poaceae.
21. *Thymelicus acteon*
ROTT., 1775 ? VI Steppes. BECKER (1854) and JAKOVLEV (1861) noted this species for Saratov Distr., GROSSER (1983, 1987) for Bashkiria. All these records have to be confirmed.
22. *Hesperia comma* L., 1758 V–VIII
in 1 G Dry meadows, local. L: Poaceae.
23. *Ochlodes faunus*
TURATI, 1905 V–IX
in 2 G Meadows. Forest glades. L: Poaceae. We consider *faunus* TURATI to be a separate species, *venatus* BREMER & GREY being limited to Amur region and Primorie.
- 24*. *Parnassius apollo* L., 1758 +
(map 3) VI–VII
in 1 G Dry meadows, rocky steppes, sparse pine forests on sands and chalks, rare and local. L: *Sedum purpureum**, *S. telephium**, changes in steppes possibly to *S. acre*. JAKHONTOV (1935) related specimens of *apollo* from Volga region to ssp. *democratus* KRUL.
25. *Parnassius mnemosyne*
L., 1758 V–VII
in 1 G Meadows, forest glades, not rare but local. L: *Corydalis**. A. KREITZBERG (pers. comm.) relates specimens from Volga populations to ssp. *craspedonitis* FRUHST.
26. *Zerynthia polyxena*
DEN. & SCHIFF., 1775 ? eIV–bVI
in 1 G Forest glades and rivers floods. L: *Aristolochia clematitis**.
27. *Iphiclides podalirius*
L., 1758 V–VIII
in 2 G Forest-steppes. L: arboreous and shrub Rosaceae: *Prunus**, *Crataegus*, *Cerasus**.
28. *Papilio machaon* L., 1758 eIV–VIII
in 2 G Eurybiont. L: Apiaceae: *Heracleum**, *Anethum**.
29. *Leptidea morsei*
FENT., 1881 V–VIII
in 1-2 G Meadows, forest glades. L: *Lathyrus*.
30. *Leptidea sinapis* L., 1758 V–VIII
in 2 G Meadows, forest glades. L: Fabaceae, *Lathyrus**
31. *Anthocharis cardamines*
L., 1758 V–VI
in 1 G Meadows, forest glades. L: Brassicaceae.

1	2	3 4 5 6 7 8 9 10	11	12
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- 32*. *Euchloe ausonia volgensis* KRUL., 1897
(map 4)
Euchloe simplonia FRR., 1829
- V – bVI
VII–VIII
in 2 G
- Steppes, stepped lime slopes.
L: Brassicaceae.
TL: environs of Saratov.
- 33*. *Zegris eupheme* Esp., 1805 +
(map 5)
- V – VI
in 1 G
- Steppes.
L: Brassicaceae.
- 34*. *Microzegris pyrothoe* Ev., 1832
- V
in 1 G
- Record from Saratov Distr. (KUMAKOV & KORSHUNOV, 1979) (map 4) probably is a chance meeting.
- 35*. *Pontia chloridice* HBN., 1813
- VI–VII
- Rare in steppes and meadow steppes, perhaps a migrant.
36. *Pontia daplidice* L., 1758
and *Pontia edusa* F., 1777
- V – IX
in 2 G
- Eurybiont. L: Brassicaceae: *Arabis**, *Lepidium ruderale**. Some authors (GEIGER et al., 1988; WAGENER, 1988) analyzing the charakters of different populations of "*P. daplidice*" elicited an obvious heterogeneity of this taxon. Status of *P. edusa* is not clear perhaps, *edusa* and *daplidice* are two parapatric species. As was shown in a preliminary study by V. Tuzov (pers. comm.), *P. edusa* inhabits the steppes and forest-steppe regions of Volga river valley, Crimea, Middle Asia and the Caucasus and *P. daplidice* inhabits territory to the North and East from the line Rovno – Kiev – Kaluga – N. Novgorod – Cheljabinsk till Primorye. We have no conclusive argument disputing such a distribution of this taxa and take this point of view but refer to its preliminary characteristics.
37. *Aporia crataegi* L., 1758
- VI – VII
in 1 G
- Forest steppes, mixed and deciduous forests, orchards.
L: *Crataegus**, *Prunus**, *Malus**.
38. *Pieris brassicae* L., 1758
- VI – IX
in 2 G
- Eurybiont.
L: Brassicaceae: *Brassica**.
39. *Pieris rapae* L., 1758
- V – X
in 2 – 3 G
- Eurybiont.
L: Brassicaceae: *Armoracia**
40. *Pieris napi* L., 1758
- V – IX
in 2 G
- Eurybiont. L: Brassicaceae:
*Armoracia**, *Brassica**.

1	2	3 4 5 6 7 8 9 10	11	12
41.	<i>Colias erate</i> ESP., 1808	+ + o + + + + VI-IX in 2 G	Stepped meadows, perhaps a migrant. Was cited by E. as <i>Neriene</i> . L: Fabaceae.	
42.	<i>Colias hyale</i> L., 1758	+ + ? + VI-VIII in 2-3 G	Eurybiont. L: Fabaceae.	
43.	<i>Colias alfacariensis</i> BERGER, 1948	+ + ? + VI-VIII in 1-2 G	Meadows. Specimens from Volga region need a careful revision. We take the authorship of <i>alfacariensis</i> as of BERGER, 1948 (non RIEBE, 1905) following NEKRUTENKO (1990).	
44.	<i>Colias palaeno</i> L., 1761	VIII in 1 G	Peatbogs. L: Bilberry (<i>Vaccinium</i>).	
45.	<i>Colias croceus</i> FOURCR., 1785	mV-mVIII in 1-2 G	Local in steppes. Was cited by E. as <i>Edusa</i> . L: Fabaceae.	
46.	<i>Colias chrysostheme</i> ESP., 1780	+ ? + + + + V-VI; VII- VIII in 2 G	Meadows, steppes. L: <i>Vicia</i> .	
47.	<i>Colias myrmidone</i> Esp., 1780	V-VI; VII- VIII in 2 G	Stepped meadows, forest glades. L: <i>Cytisus</i> .	
48.	<i>Gonepteryx rhamni</i> L., 1758	VII-V in 1 G	Eurybiont. L: <i>Frangula</i> *, <i>Rhamnus cathartica</i> *.	
49*.	<i>Esperarge climene</i> ESP., 1783 (map 6)	VI-VII in 1 G	Local in forest-steppes. L: Poaceae.	
50.	<i>Pararge aegeria</i> L., 1758	V-VI; VII-VIII in 1-2 G	Forests, forest-steppes, local. L: Poaceae.	
51.	<i>Lopinga achine</i> Sc., 1763	VI-VII in 1 G	Forest, forest-glades. Was cited by E. as <i>Dejanira</i> . L: Poaceae.	
52.	<i>Lasiommata maera</i> L., 1758	VI-bVIII in 1 G	Forest glades and clay-precipices. L: Poaceae.	
53.	<i>Lasiommata petropolitana</i> F., 1787	VI-VII in 1 G	Coniferous forests. L: Poaceae.	
54.	<i>Lasiommata megera</i> L., 1767	VII in 1 G	Forests. L: Poaceae.	
55.	<i>Melanargia russiae</i> ESP., 1783	+ ? VI-bVII in 1 G	Steppes and steppe meadows. Was cited by E. as <i>Clotho</i> . L: Poaceae.	
56.	<i>Melanargia galathea</i> L., 1758	VI-VII in 1 G	Meadows and forest glades. L: Poaceae.	
57.	<i>Coenonympha tullia</i> MULL., 1764	? ? ?	Humid meadows. L: Poaceae.	
58.	<i>Coenonympha glycerion</i> BORKH., 1788	VI-VII in 1 G	Meadows and forest glades. Was cited by E. as <i>Iphis</i> . L: Poaceae.	
59*.	<i>Coenonympha hero</i> L., 1761	VI-VII in 1 G	Rare and local on meadows. L: Poaceae.	
60.	<i>Coenonympha arcania</i> L., 1761	VI-VII	Meadows, forest glades. L: Poaceae.	

1	2	3	4	5	6	7	8	9	10	11	12
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61*. <i>Coenonympha leander</i> ESP., 1784		VI in 1G	Dry meadows L. Poaceae
62. <i>Coenonympha pamphilus</i> L., 1758		V-IX in 2-3 G	Everywhere L. Poaceae
63. <i>Coenonympha amaryllis</i> STOLL., 1782		VI-VII in 1 G	Humid meadows L. Poaceae
64. <i>Coenonympha oedippus</i> F., 1787		VI in 1 G	Meadows and forest glades L. Poaceae
65*. <i>Triphysa phryne</i> PALL., 1771 (map 7)		V-VI in 1 G	Steppes, steppe plots on lime hills. L. Poaceae.
66. <i>Erebia ligea</i> L., 1758		VII in 1 G	Meadows steppes. L. Poaceae.
67. <i>Erebia euryale</i> ESP., 1805		VII in 1 G	Pinary glades on chalk. L: Poaceae
68. <i>Erebia aethiops</i> ESP., 1777		VI-VII in 1 G	Meadows and birch woods. Was cited by E. as <i>Medea</i> . L. Poaceae.
69. <i>Erebia medusa</i> DEN. & SCHIFF., 1775	?	V-VI in 1 G	Meadows. L. Poaceae.
70. <i>Erebia cyclopius</i> EV., 1844		VI-bVII in 1 G	Meadows. L: Poaceae.
71*. <i>Proterebia afra</i> F., 1787 (map 8)		eV-VI in 1 G	Meadows, steppes, very local. Was cited by E. as <i>Afer</i> L: Poaceae
72. <i>Aphantopus hyperantus</i> L., 1758		VI-VIII in 1 G	Meadows, forest steppes and forest glades. L: Poaceae.
73. <i>Hyponephele lycanon</i> ROTT., 1775		VI-VII in 1 G	Everywhere. L. Poaceae.
74. <i>Hyponephele lupina</i> COSTA, 1836		VI-VII in 1 G	Steppes and stepped meadows. Was cited by E. as <i>Eudora</i> . L. Poaceae. Taxonomic status of infraspecific forms of <i>lupina</i> needs a special investigation for all areas.
75. <i>Hyponephele narica</i> L., 1758	?	VI in 1 G	"In Aposynum thickets" (LVOVSKY, 1971). L. Poaceae.
76. <i>Maniola jurtina</i> L., 1758		VI-VII in 1 G	Meadows, forest glades. was cited by E. as <i>Janira</i> . L: Poaceae.
77. <i>Oeneis jutta</i> HBN., 1806		VII in 1G	Meadows. L. Poaceae.
78. <i>Oeneis tarpeia</i> PALL., 1771 (map 9)		eV-mVI in 1 G	Steppes and stepped meadows, local. L: Poaceae.
79. <i>Hipparchia fagi</i> Sc., 1763		VI-VII in 1 G	Forest-steppes, lime slopes, oak forests. Was cited by E. as <i>Hermione</i> . L: Poaceae.
80. <i>Hipparchia autonoe</i> ESP., 1783		VI-VII in 1 G	Chalk slopes, steppe plots of lime hills. L: Poaceae.

1	2	3 4 5 6 7 8 9 10	11	12
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- 81*. *Hipparchia semele volgensis* MAZ.-PORSH., 1952 + + o + + VI in 1 G Forest-steppes, steppe plots. L: Poaceae. *Volgensis* was described from the environs of Volgograd as subspecies of *semele* L. (MAZOCHIN-PORSHNIJAKOV, 1952). Types are kept in Zoological Museum of Moscow University (ANTONOVA, 1981). KUDRNA (1977) considered *volgensis* as separate species but KORSHUNOV (1990) reduced its status again to subspecific level. We also consider *volgensis* only as a subspecies of *semele*. This species was erroneously noted for Samara. Distr. (SACHKOV, 1986) because of the wrong synonymization with *H. semele* L.
- Hipparchia pellucida*
STAUD., 1923
82. *Hipparchia alcione*
DEN. & SCHIFF., 1775 VI in 1 G Stepped meadows. L: Poaceae.
- 83*. *Hipparchia statilinus*
HFN., 1766 VI in 1 G Forest steppes, stepped hills. Extremely rare and local. L: Poaceae.
- Satyrus actaea* ESP., 1780 ? All records of this species for the former USSR are faulty and really refer to other species (NEKRUTENKO, 1985). Distribution of *actaea* is limited to Western Europe (HIGGINS & RILEY, 1978).
84. *Satyrus ferula virbius*
H.-S., 1843 VI-VIII in 1 G Slopes of lime hills. Was cited by E. as *Gordula*. JAKHONTOV (1935) designated this taxon as *S. actaea virbius*. NEKRUTENKO (1985) revised the status of taxon and established it as *Satyrus ferula virbius*. In 1989 he gave a specific status for *virbius*. We consider *virbius* as subspecies of *ferula* because of the small material of these taxa and their strong variability.
85. *Satyrus dryas* Sc., 1763 VII-VIII in 1 G Forest steppes, meadows and forest glades. Was cited by E. as *Phaedra*. L: Poaceae.
86. *Pseudochazara hippolyte*
ESP., 1777 VII-VIII in 1 G Steppes. L: Poaceae.
87. *Chazara briseis* L., 1764 VII-bIX in 1 G Dry plots, steppes, rocky slopes. L: Poaceae.
88. *Chazara anthe* HFMSSG, 1804 - + + + + + + VII-VIII in 1 G Local in rocky steppes and rare in steppes. L: Poaceae.
- (= *persephone* HBN., 1805)
89. *Arethusana arethusa*
DEN. & SCHIFF., 1775 VII in 1 G Local in stepped meadows. L: Poaceae.

	1	2	3	4	5	6	7	8	9	10	11	12
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90. *Brithesia circe* F., 1775 VII Very rare, perhaps a migrant. Was cited by E. as *proserpina*.
in 1 G
- 91*. *Apatura iris* L., 1758 VII Rare in forests. L: Salicaceae.
in 1 G
92. *Apatura ilia* + + + + + + ? VI-VII; Forests. L: *Populus tremula**.
DEN. & SCHIFF., 1775 VIII-IX
in 1-2 G
93. *Apatura metis bunea* VI-VII Willow-beds and sandy plots near the H.-S., 1845 in 1 G waters, local. L: *Populus*.
94. *Neptis sappho* PALL., 1771 VI-VII Forests. Was cited by E. as *Aceris*.
in 1 G L: *Lathyrus**.
95. *Neptis rivularis* Sc., 1763 VI-VIII Forests, forest glades, steppe plots, in 1 G forest-steppes. Was cited by E. as *Lucilla*. L: *Spiraea crenata**.
96. *Limenitis populi* L., 1758 + + + + + ? VI-VII Forest roads and glades, rivers' banks. L: *Populus tremula**.
in 1 G
97. *Limenitis camilla* L., 1764 VI-VII Forests and forests roads. Was cited in 1 G by E. as *Sibilla*. L: *Lonicera* (*tatarica**,
*xylosteum**).
- 98*. *Limenitis reducta* VI-VII Rare in forests. L: *Lonicera*.
STGR., 1901 in 1 G
99. *Polygonia c-album* VI-VII; Eurybiont. L: *Ulmus glabra**, *Ribes**
L., 1758 VII-V *Grossularia**.
in 2 G
100. *Polygonia egea* ? KUMAKOV & KORSHUNOV (1978) noted this species for Saratov Distr., but this record has to be confirmed by additional material.
CRAM., 1778
101. *Nymphalis vau-album* VII-V Forest, orchards, parks.
DEN. & SCHIFF., 1775 in 1 G L: *Salix*, *Ulmus*.
- 102*. *Nymphalis xanthomelas* VI-V Very rare in forests.
ESP., 1780 in 1 G L: *Salix*.
103. *Nymphalis polychloros* VII-V Forests. L: Salicaceae.
L., 1758 in 1 G
104. *Nymphalis antiopa* VII-V Forests, forest glades and parks.
L., 1758 in 1 G L: *Salix**, *Betula pendula**.
105. *Inachis io* L., 1758 VI-V Everywhere. L: *Urtica**.
in 2 G
106. *Aglais urticae* L., 1758 VI-V Everywhere. L: *Urtica dioica**.
in 2 G
107. *Vanessa atalanta* L., 1758 VII-V Eurybiont. L: *Urtica*.
in 2 G
108. *Cynthia cardui* L., 1758 VI-V Eurybiont.
in 2 G L: *Urtica dioica**, *Arctium lappa*.

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109. <i>Araschnia levana</i> L., 1758			IV–V; VII–VIII in 2–3 G	Forests, forest-steppes. L: <i>Urtica dioica</i> *.
110*. <i>Hypodryas maturna</i> L., 1758	+ + + + ?	VI–VII in 1 G	Meadows and mixed forest glades, rare. L: <i>Plantago</i> .	
111. <i>Hypodryas intermedia</i> MEN., 1859		IV–VII in 1 G	Meadows and forest glades. L: <i>Plantago</i> .	
112*. <i>Eurodryas aurinia</i> ROTT., 1775		VI in 1 G	Meadows. Was cited by E. as <i>Artemis</i> . L: <i>Scabiosa</i> .	
113. <i>Melitaea athalia</i> ROTT., 1775		VI–VII in 1 G	Meadows and forest glades. L: <i>Plantago</i> *; <i>Veronica</i> .	
114. <i>Melitaea britomartis</i> ASSM., 1847		VI–VII in 1 G	Meadows. L: <i>Plantago</i> , <i>Veronica</i> .	
115. <i>Melitaea aurelia</i> NICK., 1850		VI in 1 G	Forest glades, rare. Was cited by E. as <i>Parthenie</i> . L: <i>Plantago</i> .	
116. <i>Melitaea didyma</i> ESP., 1779		V–VI; VII–VIII in 2 G	Meadows, steppous plots and forest glades. L: <i>Plantago</i> , <i>Viola</i> , <i>Veronica</i> *. Subspecific status of Volga popula- tions isn't clear because of the strongly developing polymorphism.	
117. <i>Melitaea trivia</i> DEN. & SCHIFF., 1775	+ + + + ?	VI–VII in 1 G	Meadows steppes, stepped mea- dows. L: <i>Verbascus</i> . Subspecific sta- tus of the local population isn't clear.	
118. <i>Melitaea arduinna</i> ESP., 1784		eV–mVI in 1 G	Lime hill, rocky steppes, rare. Foodplants are unknown.	
119. <i>Melitaea cinxia</i> L., 1758	+ + + + ?	VI–mVIII in 1 G	Meadows, forest glades. L: <i>Plantago</i> .	
120. <i>Melitaea diamina</i> LANG., 1789		VI in 1 G	Meadows. Was cited by E. as <i>Dictynna</i> . L: <i>Plantago</i> .	
121. <i>Melitaea phoebe</i> DEN. & SCHIFF., 1775		VI–VII in 1 G	Dry meadows, forest-steppes. L: <i>Cirsium</i> , <i>Centaurea</i> .	
122. <i>Boloria eunomia</i> ESP., 1779		VII in 1 G	Humid meadows, forests. L: <i>Polygonum</i> , <i>Viola</i> , <i>Vaccinium</i> .	
123. <i>Boloria selenis</i> Ev., 1837		VI–VII in 1 G	Meadows. L: <i>Viola</i> .	
124. <i>Boloria selene</i> DEN. & SCHIFF., 1775	+ + + + ?	VI in 1 G	Meadows, forest glades. L: <i>Viola</i> .	
125. <i>Boloria euphrosyne</i> L., 1758	+ + + + ?	V–VI in 1 G	Meadows, flooded forests, forest glade. L: <i>Rubus</i> , <i>Viola</i> .	
126. <i>Boloria dia</i> L., 1767		V; VII–VIII in 2 G	Meadows. L: <i>Viola</i> .	
127. <i>Boloria thore</i> HBN., 1804		VII in 1 G	Marshlands. L: <i>Viola</i> .	
128. <i>Boloria titania</i> ESP., 1793		VII in 1 G	Meadows. Was cited by E. as <i>Amathusia</i> . L: <i>Viola</i> .	

1	2	3 4 5 6 7 8 9 10	11	12
129.	<i>Brenthis ino</i> ROTT., 1775		VI–VII in 1 G	Forest glades. L: <i>Rubus</i> , <i>Sanguisorba</i> .
130.	<i>Brenthis daphne</i> DEN. & SCHIFF., 1775		VI–VII in 1 G	Forest steppes, forest glades. L: <i>Viola</i> .
131.	<i>Brenthis hecate</i> DEN. & SCHIFF., 1775		VI in 1 G	Forest glades. L: <i>Lathyrus</i> .
132.	<i>Argynnis niobe</i> L., 1758		VI–VII in 1G	Rare on meadows. L: <i>Viola</i> .
133.	<i>Argynnis adippe</i> ROTT., 1775		VI–VIII in 1 G	Meadows, forest glades and forest- steppes. L: <i>Viola</i> .
134.	<i>Argynnis aglaja</i> L., 1758		VI–VII in 1 G	Forest glades, meadows. L: <i>Viola</i> .
135*	<i>Argynnis laodice</i> PALL., 1771	? +	VI–VII in 1 G	Humid meadows. L: <i>Viola palustris</i> .
136.	<i>Argynnis pandora</i> DEN. & SCHIFF., 1775		VII in 1 G	BECKER(1855) noted this species for Sarepta, perhaps a migrant.
137.	<i>Argynnis paphia</i> L., 1758		mVI–VIII in 1 G	Meadows, forest glades, forest steppes. L: <i>Rubus</i> , <i>Viola</i> .
138.	<i>Issoria lathonia</i> L., 1758		V–IX in 2 G	Everywhere. L: <i>Viola</i> .
139.	<i>Hamearis lucina</i> L., 1758		VI	Meadows and forest glades, local. L: <i>Primula</i> .
140.	<i>Thecla betulae</i> L., 1758		VII–IX in 1 G	Forests, parks, forest-steppes. L: <i>Betula</i> , <i>Corylus</i> , <i>Crataegus</i> .
141.	<i>Neozephyrus quercus</i> L., 1758		VI–VIII in 1 G	Oak forests and parks. L: <i>Quercus (robur)*</i> .
142.	<i>Fixenia pruni</i> L., 1758		VI–VII in 1 G	Forest-steppes and forest glades. L: <i>arboreus Rosaceae</i> .
143.	<i>Nordmannia ilicis</i> ESP., 1777		VI in 1 G	Oak forest glades. L: <i>Quercus</i> .
144.	<i>Nordmannia acaciae</i> F., 1787	+ + ?	VI in 1 G	Bush thickets. KRULIKOVSKY (1915) noted this species for Samara Distr. L: <i>Prunus</i> .
145.	<i>Nordmannia spini</i> DEN. & SCHIFF., 1775		VI–VII in 1 G	Forest, forest glades. L: <i>Rhamnus</i> , <i>Prunus</i> , <i>Quercus</i> .
146.	<i>Nordmannia w-album</i> KNOCH, 1782		eV–VII in 1G	Forest glades. L: <i>Ulmus</i> .
147*	<i>Neolycaena rhymnus</i> EV., 1832 (map 10)		V–VI in 1 G	Steppe foothills and saline lands. L: <i>Fabaceae</i> .
148.	<i>Callophrys rubi</i> L., 1758	+ + + ?	eIV–bVII in 1 G	Forest glades and forest steppes. L: <i>Rubus</i> , <i>Genista</i> , <i>Hedysarum</i> .
149.	<i>Callophrys butlerovi</i> MIGRANOV, 1991		eV–bVII in 1 G	Steppe hills. Taxonomic status isn't clear. Valid description was made – inspite of its bad quality – by MIGRANOV in 1991 and he cited it as a redescription in 1992.

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150*. <i>Tomares callimachus</i> EV., 1848	? + +	? V in 1 G	Rocky steppes and slopes. L: <i>Astragalus</i> .
151*. <i>Tomares nogelii</i> H.-S., 1851		VII in 1 G	KUMAKOV & KORSHUNOV (1979) noted this species for Saratov Distr., but those records have to be confirmed by additional material.
152. <i>Lycaena helle</i> DEN. & SCHIFF., 1775	+ + + + ?	VI in 1 G	Local on humid meadows. L: <i>Polygonum, Rumex</i> .
153. <i>Lycaena phlaeas</i> L., 1761		V-VIII in 2 G	Everywhere. L: <i>Rumex</i> .
154. <i>Lycaena tityrus</i> PODA, 1761	+	V-VIII in 2 G	Meadows, dry and chalk pinaries. Was cited by E. as <i>Circe</i> .
155. <i>Lycaena virgaureae</i> L., 1758		VI-VII in 2 G	Meadows, forest glades and forest- steppes. L: <i>Rumex</i> .
156. <i>Lycaena dispar rutilus</i> WRNB., 1864		VI-VIII in 1-2 G	Meadows, forest glades and forest- steppes. L: <i>Rumex</i> .
157. <i>Lycaena alciphron</i> ROTT., 1775		VI-VII in 1 G	Stepped meadows and pinary glades. L: <i>Rumex</i> .
158. <i>Lycaena thersamon</i> ESP., 1784		V-VIII in 2 G	Dry meadows, steppes. L: <i>Rumex, Fabaceae</i> .
159*. <i>Lycaena hippothoe</i> L., 1761	+ + + + + ?	VI-VII in 1 G	Humid meadows, rare and local L: <i>Rumex</i> .
160*. <i>Lamprides boeticus</i> L., 1767	? +	VII in 1 G	To the noth of Astrakhan Distr. as a migrant.
161. <i>Everis argiades</i> PALL., 1771		V-VII in 2 G	Everywhere. Was cited by E. as <i>Amynatas</i> and <i>Polysperchon</i> . L: <i>Medicago, Trifolium</i> .
162. <i>Everis alceltas</i> HFFMSG., 1804		VI-VII in 1 G	Forest glades. L: <i>Coronilla</i> .
163. <i>Tongeia fischeri</i> EV., 1843	+ ?	V-VIII in 2 G	Steppes and forest steppes. L: <i>Fabaceae</i> .
164. <i>Cupido minimus</i> FUESSLY, 1775		eV-VIII in 2 G	Everywhere. Was cited by E. as <i>Aisus</i> . L: <i>Fabaceae</i> .
165. <i>Cupido osiris</i> MEIG., 1829		VI-VII in 1 G	Meadows, forest glades, lime slopes, very local. L: <i>Fabaceae</i> .
166. <i>Celastina argiolus</i> L., 1758	+ + + + + + + +	IV-VI in 2 G	Everywhere. Was cited by E. as <i>Acis</i> . L: <i>Frangula, Rhamnus*</i> .
167. <i>Glaucopsyche alexis</i> PODA, 1761		V-VI in 1 G	Dry meadows. Was cited by E. as <i>Cylarus</i> . L: <i>Fabaceae</i> .
168. <i>Scolitantides orion</i> PALL., 1771		V-VI in 1 G	Forest-steppes, chalky pinary. Was cited by E. as <i>Battus</i> . L: <i>Sedum</i> .
169. <i>Pseudophilotes vicrama</i> MOORE, 1865		VI in 1 G	Meadows, forest-steppes, forest glades. Was cited by E. as <i>Baton</i> . L: <i>Thymus</i> .

1	2	3	4	5	6	7	8	9	10	11	12
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170. *Pseudophilotes panope*
Ev., 1851

Pseudophilotes baton ? ?
Bgstr., 1779
171. *Rubrapterus bavius*
Ev., 1832 ? + VI
in 1 G
172. *Maculinea nausithous*
Bgstr., 1779 VI
in 1 G
173. *Maculinea alcon*
DEN. & SCHIFF., 1775 + + + + + ? eV-VI
in 1 G
174. *Maculinea arion* L., 1758 + + + + + + eV-VI
in 1 G

"Lycaena baschkiria"
KRAUL., 1879
175. *Maculinea teleius*
Bgstr., 1779 ? VI-VII
in 1 G
- 176*. *Plebejus pylaon*
1832 (map 11) VI
in 1 G
177. *Plebejus argus* L., 1758 VI-VII
in 1 G
178. *Plebejus idas* L., 1758 + + + + + + + VI-bVIII
in 1-2 G
179. *Plebejus argyrogynomon*
Bgstr., 1779 VII
in 1 G
- 180*. *Vacciniina optilete*
KNOCH., 1781 ? VII-VIII
in 1 G
181. *Albulina atys* HBN., 1804 VII
in 1 G
182. *Polyommatus(Polyommatus) + - erooides* FAV., 1835 VII
in 1 G
- Species was described by E. in 1851 from 3 specimens from Idersk Lake. Types are deposited in Zoological Museum of Russian Academy of Sciences (St. Petersburg). STSCHERBINOVSKY (1919) noted this species for Samara and E. (1844) noted it for Saratov but probably erroneously because *baton* isn't known reliably from the territory of the former USSR. We delete this species from the list.
- This species described from Bashkiria is now absent from its type locality (MIGRANOV, 1991).
- Steppes, stepped meadows. Was cited by E. as *Erebus*. L: *Lotus*.
- Stepped meadows. L: *Lotus*.
- Meadows, forest glades, forest-steppes. L: *Lotus*.
- Holotype (design. as "Lectotypus" of *Lycaena baschkiria* KRAUL., design. ZHDANKO, 1993, is kept in the Zoological Institute of the Russian Academy of Sciences (St. Petersburg) and is only a form of *M. arion* L.
- Forest glades, meadows, steppes, forest-steppes, meadows. Was cited by E. as *Euphemus*. L: *Sanguisorba*.
- Meadows, forest glades.
L: *Medicago*, *Veronica*. TL: *Sarepta*.
- Meadows, forest glades. Was cited by E. as *Aegon*. L: *Fabaceae*.
- Meadows, forest glades. Was cited by E. as *Argus*. L: *Fabaceae*.
- Meadows, forest-steppes.
L: *Fabaceae*.
- Peatbogs. KUMAKOV & KORSHUNOV (1979) noted this species for Saratov Distr.
- Forest-steppes. L: *Astragalus*.
- Stepped meadows, rare and local. Was cited by E. as *Eros*. Foodplants are unknown.

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Polyommatus (<i>P.</i>) <i>eros</i> OCHS., 1804	?	BECKER (1855) and TOKARSKY & DIXON (1904) noted <i>eros</i> for Saratov Distr. but probably erroneously because this species is absent in the limits of the former USSR and its ssp. <i>erotides</i> STGR. from Siberia is separate species. We delete it from the list.
183. <i>Polyommatus (P.) icarus</i> ROTT., 1775	+ + + + + + + + mV-VIII in 2 G	Everywhere. L: Fabaceae.
<i>Polyommatus (P.) escheri</i> HBN., 1823		Was cited by E. as <i>Alexis</i> var. <i>B.</i> <i>Escheri</i> . This species was also noted by STHERBINOVSKY (1919) for Samara but perhaps by a mistake because <i>escheri</i> is absent from the territory of the former USSR and its area is limited to Western Europe. We delete this species from the list.
184. <i>Polyommatus (P.) amandus</i> SCHNEIDER, 1792	+ + + + + VI-VII in 2 G	Meadows, forest-steppes, forest glades. L: Fabaceae.
185. <i>Polyommatus (P.) thersites</i> CANT., 1884	VII-VIII in 1 G	Dry meadows. Was cited by E. as <i>Alexis</i> . L: <i>Onobrychis</i> .
186. <i>Polyommatus (P.) dorylas</i> DEN. & SCHIFF., 1775	VII-VIII in 1 G	Meadows. Was cited by E. as <i>Hylas</i> . L: <i>Thymus</i> , Fabaceae.
187. <i>Polyommatus (Aricia) agestis</i> DEN. & SCHIFF., 1775	+ + + + VI-VII in 1 G	Meadows, forest-steppes. L: <i>Erodium</i> , <i>Geranium</i> , <i>Helianthemum</i> .
188. <i>Polyommatus (Aricia) allous</i> GEYER, 1819	VII in 2 G	Meadows, forest glades, dry pinaries. L: <i>Geranium</i> .
189. <i>Polyommatus (Aricia) nicias</i> MEIG., 1874	?	Was cited by E. as <i>Donzelii</i> .
190. <i>Polyommatus (Eumedonia) eumedon</i> ESP., 1780	V-bVII in 1 G	Dry meadows and steppes. L: <i>Geranium</i> .
191. <i>Polyommatus (Cyaniris) semiargus</i> ROTT., 1775	V-VI; VII-VIII in 2 G	Forest glades. L: <i>Anthyllis</i> .
192*. <i>Polyommatus (Lysandra) bellargus</i> ROTT., 1775	VI-VII in 1 G	Dry meadows. L: Fabaceae.
193. <i>Polyommatus (Lysandra) coridon</i> PODA, 1761	+ + + + ? VI-VIII in 1 G	Dry meadows, steppes and forest-steppes. L: Fabaceae.
194*. <i>Polyommatus (Lysandra) cyane</i> EV., 1837	VII in 1 G	Meadows, forest glades. Biology wasn't studied.
195*. <i>Polyommatus (Neolysandra) coelestinus</i> EV., 1843	+ + mV-mVI in 1 G	Steppe lime hills and chalk slopes. L: Fabaceae.
196*. <i>Polyommatus (Agrodietus) damon</i> DEN. & SCHIFF., 1775 (map 12)	+ + + + ? eVI-VII in 1 G	Meadows, forest glades. L: <i>Onobrychus</i> .
197*. <i>Polyommatus (Agrodietus) damone</i> EV., 1841 (map 13)	+ + + + ? VI-VII in 1 G	Stepped meadows, steppes. Foodplants are unknown.

1	2	3 4 5 6 7 8 9 10	11	12
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198. <i>Polyommatus (Agrodiaetus) + ripartii</i> FRR., 1830	VI in 1 G	Meadows steppes. Foodplants are unknown. AIBASOV (1974) noted <i>ripartii</i> FRR. as <i>admetus</i> Esp. for Ural river valley.
<i>Polyommatus (Agrodiaetus) – admetus</i> Esp., 1785	?	Noted by AIBASOV (1974) for Ural river valley. This is faulty because this Western Palearctic species is absent from the territory of Russia.
199. <i>Polyommatus (Meleageria) + daphnis</i> DEN. & SCHIFF., 1775	+ + + + + eV – VII in 1 G	Meadows, meadows steppes and forest steppes. L: <i>Lathyrus</i> .

The reasons for the changes in the Rhopalocera fauna of the Volgo-Ural region

It is natural, that great changes have taken place in the landscape of the Volgo-Ural region during the past 150 years. The almost unlimited amount of virgin steppes and flood forests which EVERSMANN was acquainted with at the beginning and middle of the last century, have now changed considerably.

The breaking up of large areas of virgin land i.e. during the 50s of the last century, had a bad effect on the condition of the natural landscape. The large plots of cultivated land with monocultures, substituted grass and feather-grass steppes. This resulted in a decrease of lepidopteran food base and to the destruction of their habitats. This is the main reason for the huge population decline which has been observed in many species, especially those restricted to steppe biotopes such as *Muschampia tessellum*, *Pyrgus sidae*, *Esparage climene*, *Triphysa phryne*, *Proterebia afra*, *Oeneis tarpeia* and *Polyommatus damone*. The results show small "islands" of isolated populations and without interpopulational exchange of specimens. This enforced reduction of the number of species and reduced the vitality of the micropopulations.

Large scale reclamations took place for the maintenance of soil fertility and harvest increase after the breaking up of the soil. Irrigation increased the general soil salinity, not only in the enormous areas used in crop rotation, but also in those simply adjacent to them. A tendency to degradation of the remaining steppe associations and an increase of halophilous plants has been observed in the last decades. This greatly affected the population densities of *Zegris eupheme*, *Tomares callimachus*, *Neolycaena rhymnus* and *Plebejus pylaon*.

Large areas of flooded land plots on the left-bank area with meadows and wood-bush vegetation were drowned during the erection of a series of hydroelectric stations on the Volga river. This has primarily influenced Heterocera, but has also effected the specimen numbers of Rhopalocera, such as *Parnassius apollo*, *P. mnemosyne*, *Zerynthia polyxena*, *Hypodryas maturna*, *Apatura iris* and *Limenitis reducta*.

Intact plots of more or less typical steppes and wooded steppes have only been preserved only on the ravine slopes, gullies, flooded terraces and other places which are too costly for agriculture purposes. But these places also are under severe anthropogenic pressure because of the intensive cattle-keeping, which have already resulted in irreversible grass

deterioration. The negative influence on species composition and numbers is also due to building up, local grass burning during spring and/or autumn, the appliance of insecticides and herbicides, etc. The industrial pollution also has an influence. We just list the acid rain as the common factor of the negative influence of industry on nature of the Volga region. Unfortunately the condition of the natural landscapes in the Volgo-Ural region is still deteriorating and it is possible that within the next 15–20 years many species, mainly steppe inhabitants, will disappear. This is if no effective measures are taken to change the present situation. If this situation continues, any study carried out 150 years from now, would be most frightening.

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