# Red Data Book of European Butterflies (*Rhopalocera*)

Nature and Environment, No. 99

# Red Data Book of European Butterflies (Rhopalocera)

**Chris van SWAAY**
Dutch Butterfly Conservation, Wageningen, The Netherlands

and

**Martin WARREN**
British Butterfly Conservation, Wareham, United Kingdom

Convention on the Conservation
of European Wildlife and Natural Habitats

**Nature and Environment, No. 99**

Council of Europe Publishing


BUTTERFLY CONSERVATION

ENGLISH NATURE

Council of Europe
Conseil de l'Europe

landbouw, natuurbeheer en visserij

**Production:**

Dutch Butterfly Conservation
De Vlinderstichting
P.O. Box 506
NL-6700 AM Wageningen
The Netherlands
tel.: +31-317-467346
fax: +31-317-420296
email: vlinders@bos.nl
homepage: http://www.bos.nl/vlinderstichting

British Butterfly Conservation
P.O. Box 444
Wareham
Dorset BH20 5YA
United Kingdom
tel.: +44-1929-400209
fax: +44-1929-400210
email: mwarren@butterfly-conservation.org

**Financial support:**

Council of Europe
English Nature
Ministry of Agriculture, Nature Management and Fisheries, Directorate for Nature Management of The Netherlands

**Citation:**

Van Swaay, C.A.M. & Warren, M.S. (1999) *Red Data book of European butterflies (Rhopalocera)*. Nature and Environment, No. 99, Council of Europe Publishing, Strasbourg.

# CONTENTS

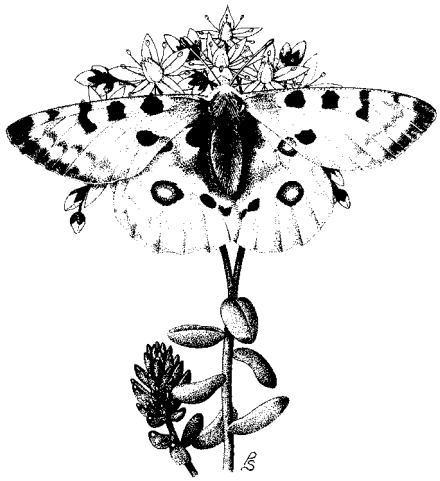
# EXECUTIVE SUMMARY

1. The rapid economic development of the twentieth century has brought about profound changes to the European environment which has led to the widespread decline of many wildlife groups, including butterflies. This report provides a new up-to-date review of the threat and conservation status of all 576 butterfly species known to occur in Europe. The geographical scope is continent-wide, and covers all 45 countries within the Council of Europe, including the Azores, Madeira, the Canary Islands, Russia to the Ural mountains and the whole of Turkey.

2. The report identifies butterfly species which are threatened at a European level and are most in need of conservation measures. Such species are described as Species of European Conservation Concern (SPECs).

3. Distribution and trend data were collected for each country through a network of over 50 expert national compilers who each completed a questionnaire in 1997. Data were obtained for all countries except Iceland and the Caucasian Republics. The resulting database allowed an objective quantitative assessment of each species' threat and conservation status. A provisional report was sent to compilers and other experts for checking and revision. Finally, datasheets were compiled on threatened species by sending a further questionnaire to compilers in 1998.

4. Threat status was assessed by following the 'new' IUCN criteria as closely as possible, adapting them for use with the distributional data available for butterflies. For species restricted to Europe (189 endemic species, 33% of the total) the new IUCN-criteria were applied directly while for species that also occur outside Europe the criteria were adapted for use at the continental level.



*Parnassius apollo* was reported in 28 countries. In the higher mountains of Europe the butterfly is still widespread and mostly not threatened, but it has disappeared from many lowland localities. As a result of this overall decline *P. apollo* is considered to be Vulnerable in Europe (SPEC 3).

*Drawing by Paul Schoenmakers, The Netherlands*

5. The new IUCN criteria are based on estimates of rates of decline and extinction risk as well as rarity, and produce a different, but more useful, assessment compared to the old criteria which had a more subjective basis. One result of the new criteria is the inclusion of widespread but rapidly declining species, highlighting large-scale changes that might otherwise have been ignored until species reached critical levels. The new criteria are felt to be the best available method for assessing conservation priorities and identifying species requiring conservation action.

6. The analysis showed that a total of 71 European species are threatened (12% of the total), comprising 19 threatened at a global level and 52 threatened at a European level. Amongst the globally threatened species (endemic to Europe): 1 is *Critically Endangered*; 4 are *Endangered*; and 14 are *Vulnerable*. The European threat status (for species also found outside Europe) was *Extinct* for 1 species, *Critically Endangered* for 6 species, *Endangered* for 14 and *Vulnerable* for 31 species. A further 43 species are classed as *Lower Risk (near threatened)*.

7. Assessment of conservation status (SPECs): Criteria were developed to identify Species of European Conservation Concern (SPECs) according to their global and European status, and to the proportion of their total distribution that occurs in Europe. A total of 274 species are considered to be of concern, while the remaining 269 species are far more secure, although 38 are classified as near-threatened and many are declining at the local or country level (NB 33 species were excluded from the analysis because they only reach the extreme edge of their natural range in Europe).

8. The SPEC categories and number of species is shown in figure 1. All European countries (except Malta) contain one or more threatened species, but the highest concentrations are in the east, notably the European part of Russia, Ukraine and the Asian part of Turkey (figure 2). Although low numbers of threatened species occur on the Azores and Madeira, these islands are of considerable importance for several endemic and globally threatened species (SPEC 1).

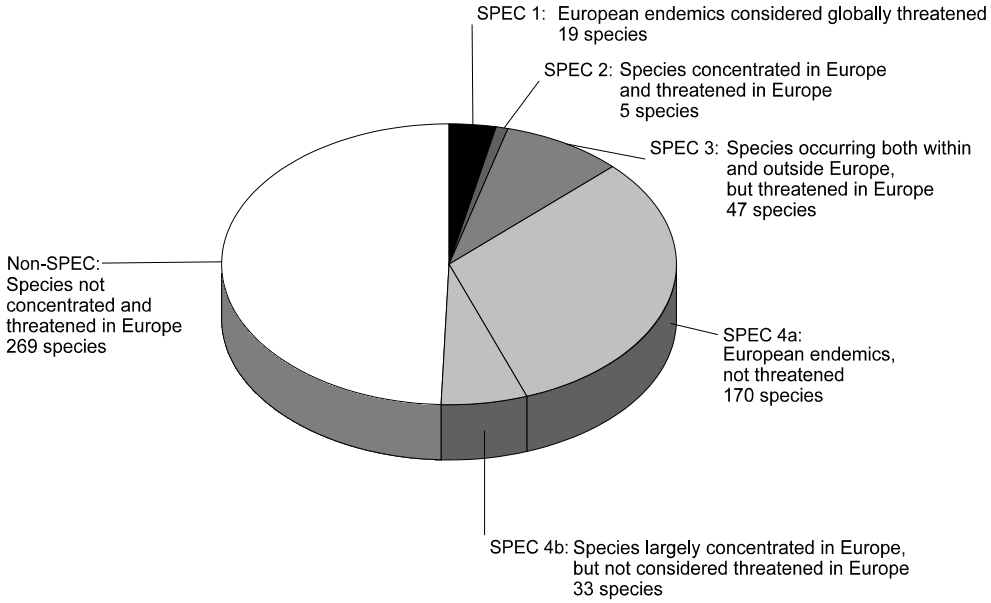



**Figure 1:** Proportion of European butterflies within each SPEC-category.

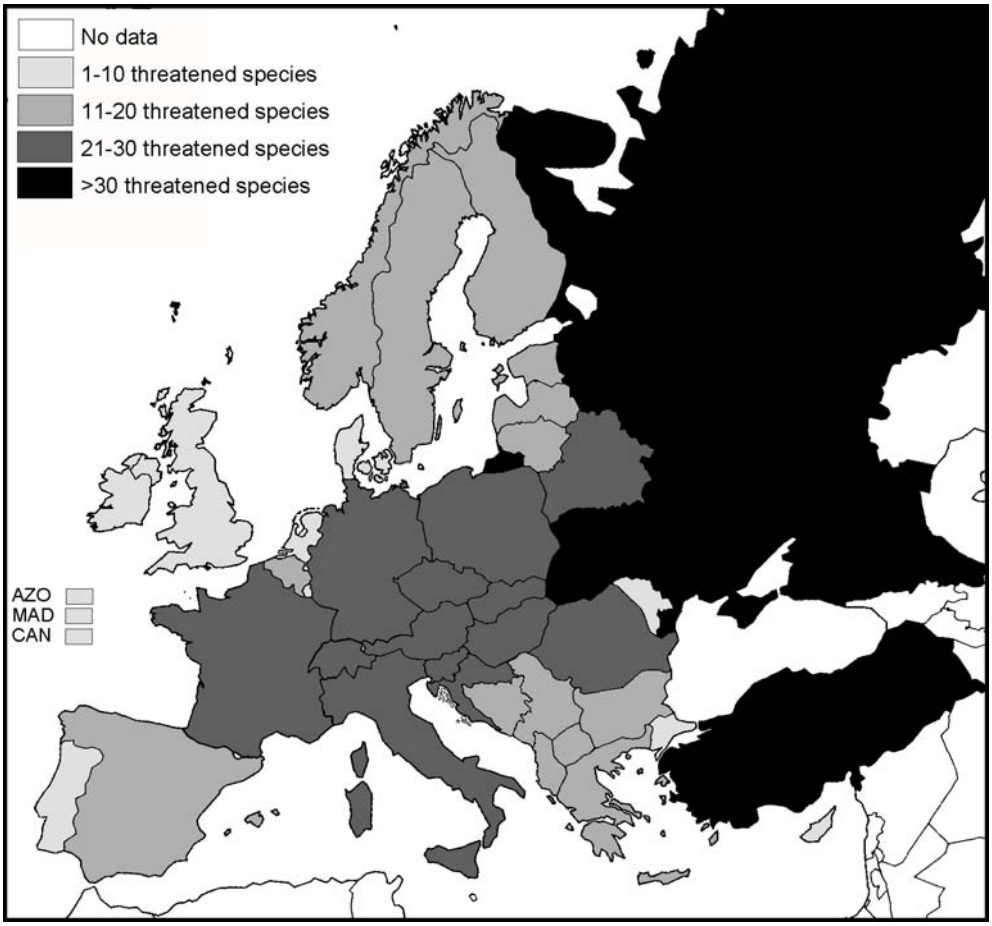



**Figure 2:** Number of threatened (SPEC 1-3) butterfly-species per country.

9. 40 species considered to be most threatened in Europe are proposed as candidates for Appendix II of the Bern Convention (all globally threatened SPEC 1 species and all European threatened SPEC 2 or 3 species classified as extinct, critically endangered or endangered).
   We also recommend that Species Action (Recovery) Plans are written for all 71 threatened species, grouping species together by habitat if appropriate.

10. The most important habitats used by threatened European butterflies are grasslands (over half of species), followed by woodland and scrub (about 22% of species); heath, bogs and fens (about 12%). Many of these habitats are not climax communities and are maintained by traditional systems of farming, for example extensive grazing or cutting for hay.

11. The chief threats reported are from agricultural improvements (e.g. conversion of unfertilised grasslands to arable crops and applications of artificial fertilisers) which are affecting 90% of threatened species; built developments (affecting 83%); increasing use of herbicides and pesticides (affecting 80%); and abandonment of agricultural land and changing habitat management (65%). The widespread loss and reduction in size of breeding habitats is also causing a growing threat from habitat isolation and fragmentation which is now affecting 83% of threatened species. However, the precise nature of these threats varies considerably between countries, reflecting the different habitats used across Europe and the many different political and cultural systems.

12. The general message from this report is clear: the status and overall diversity of

European butterflies are under serious threat from widespread environmental change, especially from rapidly changing land-use over the continent and the intensification of agricultural and forestry. A major new initiative for conserving European butterflies is therefore needed urgently and we hope that this review will provide the impetus for this to begin without delay.

13. We make a series of recommendations for the conservation of European butterflies:

- Revise all relevant pan-European wildlife legislation in the light of this review, specifically to add 35 of the most threatened European species to the Bern Convention (5 species are already listed) and relevant species to the EC Habitats and Species Directive. (NB New legislation should be directed towards the protection and proper management of important butterfly habitats, rather than the banning of collecting which may be counterproductive).

- Draw up Species Action (Recovery) Plans to cover all threatened European species (SPEC 1-3).

- Include European threatened species (SPEC 1-3) when revising relevant national and regional legislation.

- Improve the protection of butterfly habitats throughout Europe to include key individual sites and whole landscapes.

- Identify Prime Butterfly Areas in Europe to help focus action. In the European Union these should be integrated into the Natura 2000 network.

- Ensure that all semi-natural habitats are managed appropriately for threatened butterflies and ensure continuation of traditional management systems on which so many species depend.

- Establish a co-ordinated system of butterfly recording and monitoring in every European country to improve future priority assessments and assess the impact of conservation measures and future environmental change.

- Revise the list of threatened European butterflies regularly and when data become available.

- Conduct further ecological research on threatened European species and the adequate management of their habitats to underpin conservation programmes.

- Develop measures to conserve entire landscapes in Europe and reduce impact of habitat fragmentation and isolation.

- Develop an overall action plan for the conservation of European butterflies and their habitats in order to direct, co-ordinate and monitor the above recommendations.

# Part I

# Analysis and overview

# 1. INTRODUCTION

The rapid economic development of the twentieth century has brought about profound changes in the European environment. Agricultural intensification has been a major cause of the loss of remaining natural habitats and biodiverse semi-natural habitats, such as grasslands, wetlands and heathlands. Similarly, forestry expansion and intensification, urbanization, industrialization and increasing recreational demands have caused widespread damage through habitat loss, degradation and pollution.
It is expected that changes in land use will continue to increase in Europe. The changing economic importance of agriculture will lead to marginalization of some habitats and intensification of others. Without intervention these changes will cause abandonment and loss of traditional farming practices on which many butterflies depend.
It has been apparent for some time that recent land use changes have been accompanied by a widespread decline in butterfly populations, often to critical levels. However, our knowledge of this across Europe is very patchy and no comprehensive data are available on the status of European species since the first preliminary review by John Heath in 1981. This information is now very out of date and needs updating urgently if we are to identify priorities and plan an effective conservation strategy for this threatened and popular group of insects.

The principal conservation objective must be the avoidance of global extinction, and the maintenance of existing populations and distribution, and hence diversity. To achieve this efficiently it is necessary to identify those species that are threatened at global, supra-national and national levels.
Although lists of nationally threatened species have already been produced for some countries, national conservation aims and species selection criteria differ from those which are appropriate to a European scale. The aims of this review are to provide an up-to-date assessment of the threat status of all European butterflies and thus provide a continental framework for the conservation of butterflies in Europe.

**Acknowledgements**
This project was funded by the Council of Europe, English Nature, the Ministery of Agriculture, Nature Management and Fisheries, Directorate for Nature Management of The Netherlands and 'in kind' contributions from Dutch Butterfly Conservation and British Butterfly Conservation.

We are extremely grateful to the national compilers for their time and invaluable expertise. We would also like to thank:

- Eladio Fernandez Galiano of the Council of Europe and David Sheppard of English Nature for helping establish the project.
- Mark Avery of the Royal Society for the Protection of Birds (GB) for helpful comments on the design of the project;
- Georgina Mace of the Institute of Zoology, London (GB), for help with adapting the IUCN criteria;
- Otakar Kudrna (D), Roger Dennis (GB), P. Sigbert Wagener (D) and Konrad Fiedler (D) for their constructive remarks to the provisional report;
- Vladimir Lukhtanov (RUS) and P. Sigbert Wagener (D) for their revision of the Range Affinities (appendix I);
- Konrad Fiedler (D), Rienk de Jong (NL) and Christoph Häuser (D) for checking the datasheets (part II).
- Menno van Zuijen, Klaas Douwe Dijkstra and Mariska Harte (all NL) for getting all the data into the computer;
- last but not least Andrea Grill (A) for all her work, help and support to the project.

# 2. METHODS AND CRITERIA

## 2.1 Collection of distribution and trend data

### Boundaries of Europe

For this report information was gathered from all European countries belonging to the Council of Europe, including Madeira, the Azores, the Canary Islands, Cyprus, the whole of Turkey and Russia east to the Urals. No participants were found on Iceland. This is not a very big problem, since according to literature there are no native butterflies in Iceland. No information was received for the Caucasian Republics.
Turkey is devided into the European part (west of the Bosporus) and the Asian part.
In Russia three regions are distinguished seperately:

- North-east European Russia: Komi, Udmurtia, Kizov, Perm regions;
- South-east European Russia: steppe and forest-steppe, from Volga to Urals;
- Yaroslavl region: the area around Yaruslavl, ± 200 km northeast of Moscow.

Figure 3 gives an overview of the countries and the abbrevations used in the tables.
Europe in this context is larger than as regarded by many authors from a zoogeographical point of view, where for example the Caucasus and the Asian part of Turkey are excluded.

### National compilers

In order to assess the status of Europe's butterflies reliably and comprehensively, it is necessary to collate relevant data on all threatened species in each European country. Data was primarily collated by distributing questionnaires to expert national compilers. These data are ultimately based on the field work carried out by hundreds or even thousands of amateur lepidopterists over many years, often drawing on detailed distribution data.

The compilers are listed per country:

**Albania**:
K. Misja; Museum of Natural Sciences; Tirana; Albania

**Andorra**:
C. Stefanescu & J. Dantart; St. Pere de Vilamajor; Spain

**Austria**:
G. Tarmann; Tiroler Landesmuseum Ferdinandeum, Nat. Wiss. Sammlungen; Innsbruck; Austria

**Belarus**:
A. Goldenkov; Minsk; Belarus

**Belgium**:
D. Maes; Instituut voor Natuurbehoud; Brussels; Belgium
P. Goffart; Université catolique de Louvain; Louvain-la-Neuve; Belgium

**Bosnia-Herzegovina**:
P. JakšiÉ; Priština; Yugoslavia

**Bulgaria**:
S. Abadjiev; Institute of Zoology, Bulgarian Academy of Sciences; Sofia; Bulgaria

**Croatia**:
B. Miloševiâ; Zagreb; Croatia
Z. Lorkoviâ; Zagreb; Croatia

**Cyprus**:
No specialist was found. For data on the present distribution Manil (1990) was used.

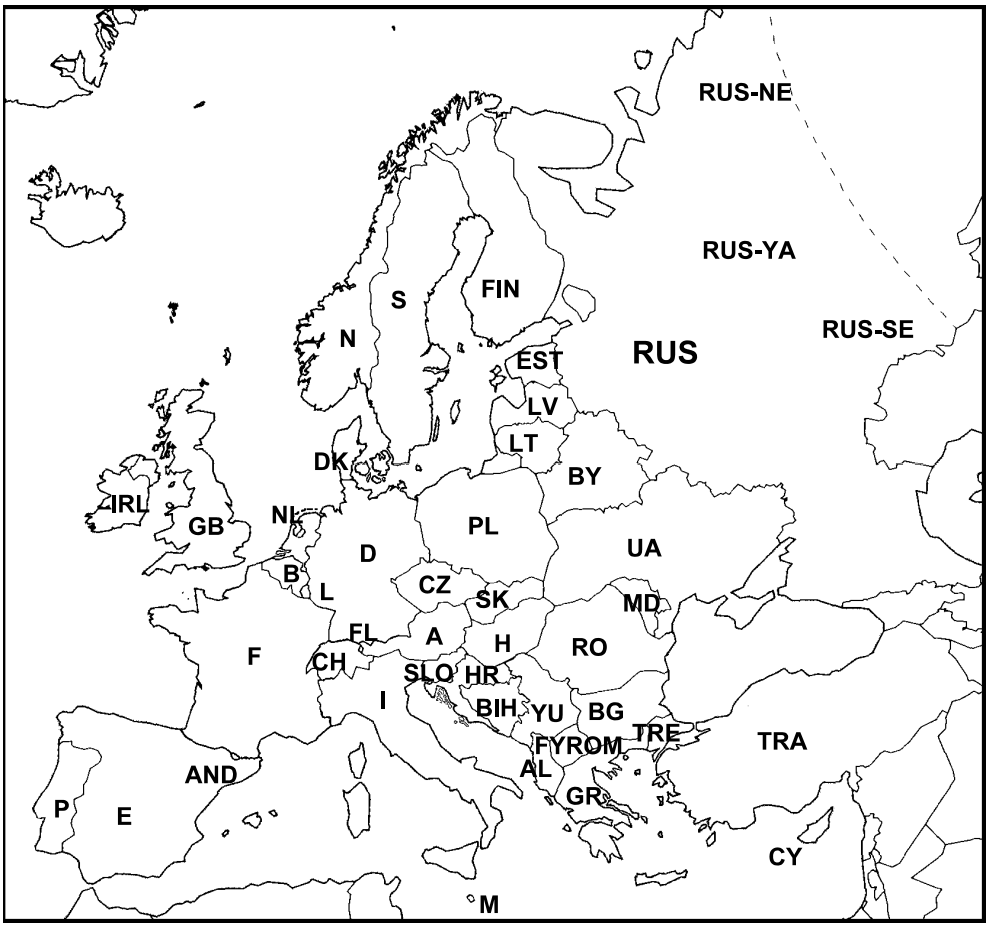



**Figure 3:** The geopolitical units for which data are presented in this report.

| | |
|---|---|
| AL | Albania |
| AND | Andorra |
| A | Austria |
| BY | Belarus |
| B | Belgium |
| BIH | Bosnia |
| BG | Bulgaria |
| HR | Croatia |
| CY | Cyprus |
| CZ | Czech Republic |
| DK | Denmark |
| EST | Estonia |
| FIN | Finland |
| F | France |
| D | Germany |
| GR | Greece |
| H | Hungary |
| IRL | Ireland |
| I | Italy |
| LV | Latvia |
| FL | Liechtenstein |
| LT | Lithuania |
| L | Luxemburg |
| FYROM | Former Yugoslav Republic of Macedonia |
| M | Malta |
| MD | Moldova |
| NL | Netherlands |
| N | Norway |
| PL | Poland |
| P | Portugal |
| AZO | Azores (not on the map) |
| MAD | Madeira (not on the map) |
| RO | Romania |
| RUS | Russia (European part): |
| | RUS-NE: Nort-east Russia |
| | RUS-SE: South-east Russia |
| | RUS-YA: Yaroslavl area |
| YU | Yugoslavia |
| SK | Slovakia |
| SLO | Slovenia |
| E | Spain |
| CAN | Canary Islands (not on the map) |
| S | Sweden |
| CH | Switzerland |
| TRA | Turkey (Asian part) |
| TRE | Turkey (European part) |
| UA | Ukraine |
| GB | United Kingdom |

**Czech Republic**:
Z. LaštÁvka ; Czech Entomological Society; Mendel University of Agriculture, Dept. of Zoology; Brno; Czech Republic
D. Povolný ; Czech Entomological Society; Mendel University of Agriculture, Dept. of Zoology; Brno; Czech Republic

**Denmark**:
J. Bittcher; Albertslund; Denmark

**Estonia**:
J. Luig; Tartu; Estonia

**Finland**:
J. Kullberg; Helsinki; Finland

**France**:
J. Lhonoré; Lavardin/Le Mans; France
M. Savourey, Saint Jean de Maurienne, France

**Germany**:
P. Pretscher; Bundesamt für Naturschutz; Bonn; Germany

**Greece:**
J.G. Coutsis; Athens; Greece

**Hungary**:
Z. Balint; Hungarian Natural History Museum, Zoological Department; Budapest; Hungary

**Ireland**:
M. Warren; British Butterfly Conservation; Wareham - Dorset; Great-Britain

**Italy**:
E. Balletto; Dipartimento di Biologia Animale; Torino; Italy

**Latvia**:
N. Savenkov; Latvian Museum of Natural History; Riga; Latvia

**Principality Liechtenstein**:
E. Aistleitner; Feldkirch; Austria

**Lithuania**:
G. Švitra; Ukmerge; Lithuania
D. Dapkus; Ukmerge; Lithuania
P. Ivinskis; Ukmerge; Lithuania
R. Kazlauskas; Ukmerge; Lithuania
V. Uselis; Ukmerge; Lithuania

**Luxembourg:**
M. Meyer; National Natural History Museum; Dept. of Zoology; Luxembourg; Luxembourg

**Former Yugoslav Republic of Macedonia**
P. JakšiĖ; Priština; Yugoslavia

**Malta**:
P.M. Sammut; Malta

**Moldova**:
S.G. Popov; Alexanor, Company for Science Implementation; Uzhgorod; Ukraine
M.G. Nagmatulin; Moldova

**The Netherlands**
C.A.M. van Swaay; Dutch Butterfly Conservation; Wageningen; The Netherlands

**Norway**:
K. Aagaard; Norwegian Institute for Nature Research; Trondheim; Norway
L.O. Hansen; Norwegian Institute for Nature Research; Trondheim; Norway

**Poland**:
J. Buszko; Institute of Biology and Environment Protection; Turun; Polen

**Portugal**

**Mainland**:
P. García Pereira; Dept. de Biologia (Zoologia), Unv. Autónoma de Madrid; Madrid; Spain

**Azores**:
M. Meyer; National Natural History Museum; Dept. of Zoology; Luxembourg; Luxembourg

**Madeira**:
M. Meyer; National Natural History Museum; Dept. of Zoology; Luxembourg; Luxembourg

**Romania**:
S. Mihut; Cluj-Napoca; Romania

**Russia**:
***Whole country***:
A.L. Devyatkin; Dept. of Entomology, Fac. of Biology, Moscow State University; Moscow; Russia
P.V. Bogdanov; State Darwin Museum; Moscow; Russia
V.K. Tuzov; Moscow Forest Protection Agency; Moscow; Russia
***North-East European Russia****:*
P.U. Gorbunov; Plant and Animal Ecology Inst. RAS; Ekaterinburg; Russia
***South-East European Russia:***
P.U. Gorbunov; Plant and Animal Ecology Inst. RAS; Ekaterinburg; Russia
***Yaroslavl region:***
M.A. Klepikov; Yaroslavl, Russia

**Yugoslavia:**
P. JakšiĖ; Priština; Yugoslavia

**Slovakia**:
M. Kulfan; Dept. of Zoology, Comenius University; Bratislava; Slovakia

**Slovenia**:
J. Carnelutti; Slovensko Entomolosico Drustvo; Stefana Michielija v Ljublajani; Bioloski Institut Zrg-Saxu; Ljubljana; Slovenia

**Spain**
**Mainland**:
M. Munguira; Universidad Autonoma de Madrid, Departeamento de Biologia; Madrid; Spain
E. Garcia-Barros; Universidad Autonoma de Madrid, Departeamento de Biologia; Madrid; Spain

**Canary islands**:
J. Bacallado Arágena; Santa Cruz de Tenerife; Canary Islands

**Sweden**:
N. Ryrholm; Dept. of Zoology; Uppsala; Sweden

**Switzerland**:
Y. Gonseth; CSCF; Neuchâtel; Switzerland

**Turkey**:
P.S. Wagener; Bocholt; Germany

**United Kingdom**:
M. Warren; British Butterfly Conservation; Wareham - Dorset; Great Britain

**Ukraine**:
S.G. Popov; Alexanor, Company for Science Implementation; Uzhgorod; Ukraine

## The questionnaire

The questionnaires distributed to each national compiler contain: a front page, where the compiler fills in his name and address and indicates the quality of the data used for his estimation, ranging from very good, good, moderate to poor. The questionnaire has to be completed only for native species, present in the country the whole year round in self-sustaining populations for at least 10 years.
It is divided into four main parts: Present abundance, Trend in distribution, old-IUCN status and Habitat (CORINE).

**Box A. Old IUCN-categories.**

Ex Extinct in your country or region. The species has not been located in the wild during the past 50 years.

E Endangered. Species in danger of extinction and whose survival is unlikely if the causal factors continue operating. Include butterflies whose numbers have been reduces to a critical level or whose habitats have been so drastically reduced that they are deemed to be in immediate danger of extinction.

V Vulnerable. Species believed likely to move into the 'Endangered' category in the near future if the causal factors continue operating. Incluse butterflies of which most or all the populations are decreasing because of over-exploitation, extensive destruction of habitat or other environmental disturbance.

R Rare. Species with small populations that are not at present 'Endangered' or 'Vulnerable', but at risk. Mostly these species are localised within restricted geographical areas or habitats or are thinly scattered over a more extensive range.

I Intermediate. Species known to be 'Endangered', 'Vulnerable' or 'Rare' but where there is not enough information to say which of the three categories is appropriate.

K Insufficiently known. Species that are suspected but not definitely known to belong to any of the above categories, because of lack of information.

**Present abundance**

Present abundance is regarded as the percentage of the total number of investigated grid squares where the species is reported after 1980. It is divided into 5 classes: <1%, 1-5%, 5-15%, >15% and unknown.

**Trend**

The trend is the change in species distribution over the last 25 years, in fact it is the comparison of the abundance about 25 years ago with the present abundance.
It is also divided into different classes: extinct, 75-100%, 50-75%, 25-50%, 15-25%, more or less stable, 125-200%, >200%, strong fluctuations, unknown.
If only sparse data are available, the compilers are asked to fill in the questionnaire according to best professional judgement. There is inevitably some subjectivity in the data gathered, but it will be based on the best available information from the national experts.

**Habitat**

The habitats used by species are chosen out of an extract from the list of the main CORINE habitats, listed in the manual which was sent to the compilers together with the questionnaire.

**Old IUCN-Status**

One column of the questionnaire requests the old IUCN-Status, which is especially interesting for species where the knowledge on trend and abundance is poor, but the compiler has a good idea whether the species is threatened. The old IUCN-categories are given in Box A.

**Nomenclature**

There are as many species lists as there are taxonomists. Since the main objective of this project is to establish a list of threatened butterflies in Europe which can be used for conservation purposes, and not long debates on taxonomy, it was decided to use the latest comprehensive list of butterflies in the whole of Europe:

*Ole Karsholt & Jósef Razowski (1996) The Lepidoptera of Europe.*
*A distributional Checklist. Apollo Books, Stenstrup, Denmark*

As this list does not include the Caucasian Republics, Turkey, the Azores, Madeira and the Canary Islands the contributors in these countries were asked to add extra species at the end of the questionnaire.

Nevertheless a few exceptions had to be made:

- *Pontia daplidice* and *Pontia edusa* are not separated in Karsholt & Razowski (1996). In most recent literature *P. edusa* is mentioned as an extra species. Here the two of them were combined to *Pontia daplidice complex,* because they are only biochemically distinct but morphologically inseparable in the field.
- *Leptidea sinapis* and *L. reali* can only be separated by differences in genitalia, because wing-characters are rather variable and inadequate for reliable determination. In most countries the status of *L. reali*, which was only recently described, is not known. For that reason both species were combined to *Leptidea sinapis complex*.

We are aware that there are taxonomic uncertainties about several other European species which may have implications for conservation. For example, a few of the species listed by Karsholt and Razowski are believed by some authors to comprise two or more distinct species (e.g. *Plebeius glandon*), while others such as *Aricia artaxerxes* could eventually be split into several species or combined with another (*Aricia agestis*). We hope that these issues will be resolved in coming years as more taxonomic information becomes available, for example from the use of the new molecular techniques to study DNA. For these and other reasons, the present analysis should be revised as new information becomes available.

**Data-collection**

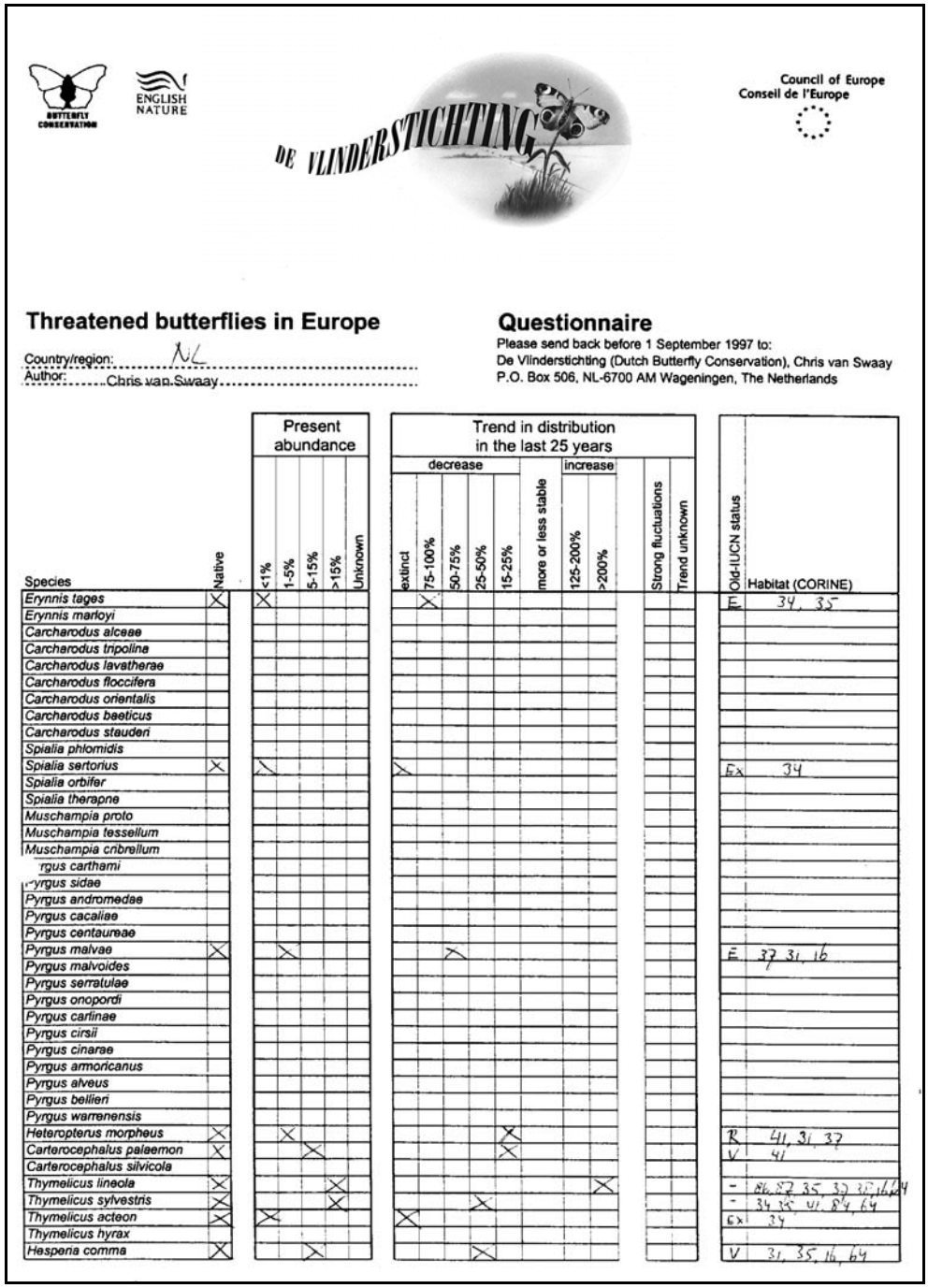
The questionnaires were sent to the national experts in June 1997 and, except for a few cases, were sent back by the end of September 1997. The questionnaires were returned partly via email as attached files, partly by fax or normal post. The latter ones were inserted into a database whereas those sent as a file could be added directly. The use of email and fax allowed a quick feedback in case of questions or different opinions concerning the interpretation of data or the manual. Without fax and email it would, in fact, have been nearly impossible to provide the data within such a tight schedule. All digitized data were analysed using the computer programme Paradox. After that a reprint of the database was sent to the compilers of all countries for checking.

**Area of the countries**

The area of each European country needed in the final assessment were obtained from the following two encyclopaedias**:**

*Encyclopaedia Britannica (1994). Inc. 15th Edition. London.*
*Brockhaus Enzyklopädie (1973). F.A. Brockhaus. Wiesbaden.*

**Example of a filled-in questionnaire**



BUTTERFLY CONSERVATION

ENGLISH NATURE

DE VLINDERSTICHTING

Council of Europe
Conseil de l'Europe

## Threatened butterflies in Europe

Country/region: NL
Author: Chris van Swaay

## Questionnaire

Please send back before 1 September 1997 to:
De Vlinderstichting (Dutch Butterfly Conservation), Chris van Swaay
P.O. Box 506, NL-6700 AM Wageningen, The Netherlands

| Species | Native | Present abundance: <1% | 1-5% | 5-15% | >15% | Unknown | Trend in distribution in the last 25 years: decrease: extinct | 75-100% | 50-75% | 25-50% | 15-25% | more or less stable | increase: 125-200% | >200% | Strong fluctuations | Trend unknown | Old-IUCN status | Habitat (CORINE) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Erynnis tages* | X | X | | | | | | X | | | | | | | | | E | 34, 35 |
| *Erynnis marloyi* | | | | | | | | | | | | | | | | | | |
| *Carcharodus alceae* | | | | | | | | | | | | | | | | | | |
| *Carcharodus tripolina* | | | | | | | | | | | | | | | | | | |
| *Carcharodus lavatherae* | | | | | | | | | | | | | | | | | | |
| *Carcharodus floccifera* | | | | | | | | | | | | | | | | | | |
| *Carcharodus orientalis* | | | | | | | | | | | | | | | | | | |
| *Carcharodus baeticus* | | | | | | | | | | | | | | | | | | |
| *Carcharodus stauderi* | | | | | | | | | | | | | | | | | | |
| *Spialia phlomidis* | | | | | | | | | | | | | | | | | | |
| *Spialia sertorius* | X | X | | | | | X | | | | | | | | | | Ex | 34 |
| *Spialia orbifer* | | | | | | | | | | | | | | | | | | |
| *Spialia therapne* | | | | | | | | | | | | | | | | | | |
| *Muschampia proto* | | | | | | | | | | | | | | | | | | |
| *Muschampia tessellum* | | | | | | | | | | | | | | | | | | |
| *Muschampia cribrellum* | | | | | | | | | | | | | | | | | | |
| *Pyrgus carthami* | | | | | | | | | | | | | | | | | | |
| *Pyrgus sidae* | | | | | | | | | | | | | | | | | | |
| *Pyrgus andromedae* | | | | | | | | | | | | | | | | | | |
| *Pyrgus cacaliae* | | | | | | | | | | | | | | | | | | |
| *Pyrgus centaureae* | | | | | | | | | | | | | | | | | | |
| *Pyrgus malvae* | X | | X | | | | | | X | | | | | | | | E | 37, 31, 16 |
| *Pyrgus malvoides* | | | | | | | | | | | | | | | | | | |
| *Pyrgus serratulae* | | | | | | | | | | | | | | | | | | |
| *Pyrgus onopordi* | | | | | | | | | | | | | | | | | | |
| *Pyrgus carlinae* | | | | | | | | | | | | | | | | | | |
| *Pyrgus cirsii* | | | | | | | | | | | | | | | | | | |
| *Pyrgus cinarae* | | | | | | | | | | | | | | | | | | |
| *Pyrgus armoricanus* | | | | | | | | | | | | | | | | | | |
| *Pyrgus alveus* | | | | | | | | | | | | | | | | | | |
| *Pyrgus bellieri* | | | | | | | | | | | | | | | | | | |
| *Pyrgus warrenensis* | | | | | | | | | | | | | | | | | | |
| *Heteropterus morpheus* | X | | X | | | | | | | X | | | | | | | R | 41, 31, 37 |
| *Carterocephalus palaemon* | X | | | X | | | | | | X | | | | | | | V | 41 |
| *Carterocephalus silvicola* | | | | | | | | | | | | | | | | | | |
| *Thymelicus lineola* | X | | | | X | | | | | | | | X | | | | - | 86, 87, 35, 37, 31, 16, 64 |
| *Thymelicus sylvestris* | X | | | | X | | | | | X | | | | | | | - | 34, 35, 41, 84, 64 |
| *Thymelicus acteon* | X | X | | | | | X | | | | | | | | | | Ex | 34 |
| *Thymelicus hyrax* | | | | | | | | | | | | | | | | | | |
| *Hesperia comma* | X | | | X | | | | | | X | | | | | | | V | 31, 35, 16, 64 |

## Problems encountered (and their solutions)

- **Establishing contacts**. For most countries it was quite easy to establish the first contacts. Some compilers even proposed themselves or were recommended by another person already collaborating. Problems occured when a few countries which had accepted to collaborate failed to supply information. Rectifying this situation was very time-consuming, but nevertheless all replies from the first questionnaires were received by the end of October 1997.
- **Nomenclature.** As expected, problems with nomenclature occured when people did not agree with the names used in Karshold & Razowski (1996). Only in two cases (see above) changes were made to the basic list for species where identification is very difficult.
- **Native species.** The participants were asked to fill in the questionnaire only for native species which have been present the whole year round as breeding populations for at least ten years. This means migrants, such as *Vanessa atalanta* are not considered native in most of Europe.
  A lot of mistakes were made with this criterium. For this reason the results of *Vanessa atalanta*, *V. cardui* and *Colias croceus*, all migrant species who cannot survive a winter in most of Europe, are not presented. None of these species are threatened in Europe.
- **Present abundance.** Some compilers had difficulties in estimating the present abundance. If a country is poorly investigated, data available can be adjusted by using reference species that are considered to be so widespread in a country that they occur in every square. If a certain country has for example 1000 grid-squares but the number of well investigated squares is only 500, an occurence in 30 squares does not mean a present abundance of 3% but 6%.
- **Quality of estimates.** In the results we indicate the species for which the data quality is poor or the trend is unknown in more than 50% of its range. This indication is heavily biased by the poor quality of the trend estimates in Russia. For almost every species occurring in Russia this country occupies more than the half of the European distribution.

## Checking of data

A provisional report of results was produced in 1997 (Van Swaay *et al.*, 1997) and circulated to all compilers and a few specialists on European butterflies for checking. As a result some data was revised.

## 2.2 Assessing the threat and conservation status of butterflies in Europe

To assess the threat status of butterflies in Europe the following procedure was followed (illustrated in figure 4):

***Step 1***

Exclude **Extra-European** species. Species just reaching their natural boundaries in Europe, perhaps having established temporary colonies are considered marginal to Europe and are not treated.

***Step 2***

Distinguish between **European endemics** and butterflies that **can also be found outside Europe**.

***Step 3***: **Threat status**

a. For **European endemics** the new IUCN criteria (1994) were adapted to be used with the data available for butterflies.
b. For **species that can also be found outside Europe**, the IUCN criteria (developed to be used at a global scale) cannot be used. Therefore we adapted the criteria to determine the **European threat status**.

***Step 4***: **Conservation status**

To assess the **conservation status**, the method developed by Tucker *et al.* (1994) was adapted for butterflies. The result is a classification of Species of European Conservation Concern (SPECs).

For the relationship between the species' European distribution and its world range the *Range Affinity* RA (Kudrna, 1986) is used (figure 5). In a few cases this Range Affinity was changed:

- for all the species not mentioned in Kudrna (1986), like the Hesperiidae;
- since the definition of Europe by Kudrna is different than in this report (Kudrna excludes the Asian part of Turkey and the Caucasian Republics), the Range Affinity sometimes had to be adapted;
- if new information on the distribution of butterflies is available.

Furthermore three experts were consulted to check the Range affinities. In appendix 1 the Range Affinity for every species is given.

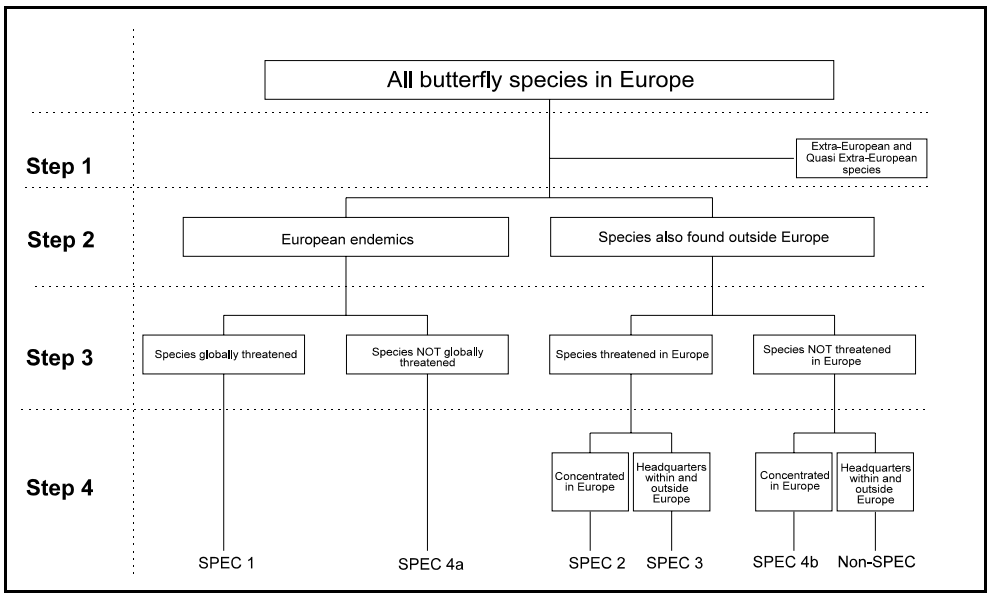



**Figure 4:** Illustration of the method used to assess the threat status (step 3) and conservation status (step 4) of butterflies in Europe.

**Box B:** Categories used to establish the Threat Status of butterflies compared to the IUCN criteria. These criteria are used only for species confined to Europe.

| **IUCN** | **Threat Status** |
|---|---|
| CRITICALLY ENDANGERED<br>A. Population reduction of at least 80% over the last 10 years.<br>B. Extend of occurrence less than 100 $km^2$ and two of the following:<br>1. severely fragmented or known to exist at only a single location;<br>2. continuing decline;<br>3. extreme fluctuations.<br>C. Population estimates less than 250 mature individuals and a strong decrease.<br>D. Population estimate less than 50 individuals.<br>E. Probability of extinction at least 50% within 10 years. | CRITICALLY ENDANGERED<br>A. Decrease in distribution of at least 80% over the last 25 years.<br>B. Present distribution less than 100 $km^2$ and two of the following:<br>1. severely fragmented or known to exist at only a single location;<br>2. continuing decline;<br>3. extreme fluctuations.<br>C. For insects absolute numbers are rarely available and so less relevant.<br>D. Not relevant.<br>E. With the material available this criterium cannot be used. |
| ENDANGERED<br>A. Population reduction of at least 50% over the last 10 years.<br>B. Extend of occurrence less than 5000 $km^2$ and two of the following:<br>1. severely fragmented or known to exist at no more than five locations;<br>2. continuing decline;<br>3. extreme fluctuations.<br>C. Population estimates less than 2500 mature individuals and a decrease.<br>D. Population estimate less than 250 individuals.<br>E. Probability of extinction at least 20% within 20 years. | ENDANGERED<br>A. Decrease in distribution of 50-80% over the last 25 years.<br>B. Present distribution less than 5000 $km^2$ and two of the following:<br>1. severely fragmented or known to exist at no more than five locations;<br>2. continuing decline;<br>3. extreme fluctuations.<br>C. For insects absolute numbers are rarely available and so less relevant.<br>D. Not relevant.<br>E. With the material available this criterium cannot be used. |
| VULNERABLE<br>A. Population reduction of at least 20% over the last 10 years.<br>B. Extend of occurrence less than 20000 $km^2$ and two of the following:<br>1. severely fragmented or known to exist at no more than ten locations;<br>2. continuing decline;<br>3. extreme fluctuations.<br>C. Population estimates less than 10000 mature individuals and a decrease.<br>D. Population estimate less than 1000 individuals.<br>E. Probability of extinction at least 10% within 100 years. | VULNERABLE<br>A. Decrease in distribution of 20-50% over the last 25 years.<br>B. Present distribution less than 20000 $km^2$ and two of the following:<br>1. severely fragmented or known to exist at no more than ten locations;<br>2. continuing decline;<br>3. extreme fluctuations.<br>C. For insects absolute numbers are rarely available and so less relevant.<br>D. Not relevant.<br>E. With the material available this criterium cannot be used. |
| LOWER RISK<br>Three subcategories:<br>1. Conservation dependent (cd). Taxa on the focus of conservation programmes, the cessation of which would result in qualification for one of the threatened categories above a period of five years.<br>2. Near threatened (nt). Taxa not qualifying for Conservation dependent but close to qualifying for vulnerable.<br>3. Least concern. Taxa not qualifying for conservation dependent or Near Threatened. | LOWER RISK<br>Three subcategories:<br>1. Conservation dependent (cd). This criterium will not be used in this context.<br>2. Near threatened (nt).<br>Decrease of more than 15% correlated with present abundance less than 1%.<br>3. Least concern. All taxa not satisfying one of the upper categories. They are not listed in the list of threatened species. |
| DATA DEFICIENT<br>There is inadequate information to make an assessment of extinction risk based on distribution or population status. | DATA DEFICIENT<br>There is no data available about abundance or trend during the last 25 years. |

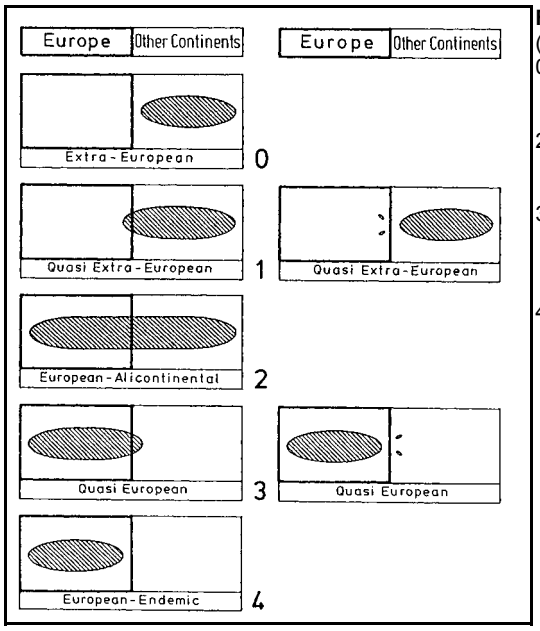



**Figure 5:** Types of Range Affinity as defined by Kudrna (1986):

0-1. Extra-European and Quasi Extra-European species just reaching their natural boundaries in Europe.

2. 'Neutral' species with distribution 'headquarters' both within and outside Europe, regardless of the respective range proportions.

3. Species with their 'headquarters' in Europe, but known also from Asia, Africa or America (the European colonies are particularly significant for the survival of these species).

4. Endemic species peculiar to Europe.

## *Step 1*: Excluding Extra-European species

Species just reaching their natural boundaries in Europe, perhaps having established only temporary, are considered marginal to Europe and are not treated in this review. In Kudrna (1986) these species are classified as RA 1.

## *Step 2*: Distinguish between European endemics and butterflies that can also be found outside Europe.

European endemics are species only found in Europe, classified in Kudrna (1986) as RA 4.
Species found both within and outside Europe are classified as RA 2 and 3.

## *Step 3*: Threat status

**a. Identifying globally threatened species**

For butterfly species confined to Europe, the new IUCN criteria (1994) have been used to identify globally threatened species. We have had to make some adaptations to make them applicable to the data available for butterflies. These are shown in Box B.

The main differences are that data on trends in butterfly populations are mostly available over the last 25 years, rather than the 10 year period used by IUCN. Another problem is that the IUCN criteria refer to trends in population size whereas the data available for butterflies in Europe is nearly always based on distributions. However, for many colonial butterflies, range declines assessed from distribution data have been shown to seriously underestimate population decline (e.g. by an average of 32% at mapping scales of 10km$^2$, Thomas & Abery, 1995). Thus we have adjusted the IUCN criteria which are based on population decline over a 10 year period to a roughly equivalent distribution decline over a 25 year period for which data are available on European butterflies. We have therefore made allowance for this important factor and derived equivalent criteria for butterflies in Europe in Box B.

Nevertheless for most species our data were not precise enough. Therefore local

**Box C:** Criteria to determine the threat status for butterflies that can also be found outside Europe.
Threatened in Europe:
CR = critically endangered
EN = endangered
VU = vulnerable
LR(nt) = lower risk, near threatened
- = not threatened in Europe

| Distribution change within Europe in the last 25 years* | Present abundance <1% | 1-5% | 5-15% | >15% |
|---|---|---|---|---|
| Decrease | | | | |
| 80-100% | CR | CR | CR | CR |
| 50-80% | CR | EN | EN | EN |
| 20-50% | EN | VU | VU | VU |
| 15-20% | VU | LR(nt) | LR(nt) | LR(nt) |
| Stable | LR(nt) | - | - | - |
| Increase | | | | |
| 125-200% | - | - | - | - |
| >200% | - | - | - | - |

* The method for calculating overall change in distribution in Europe is shown in Appendix 2.

specialists were consulted for more detailed information if necessary.

More information on the calculation of trend in Europe is given in Appendix 2.

**Result**:

Threat status on a global scale assessed using adapted new IUCN-categories.

**b. Identification of species threatened in Europe**

For species that can also be found outside Europe, the new IUCN criteria for assessing global threat cannot be used straightforward since no information is available on the trend and abundance outside Europe. However, we can assess European threat by adapting IUCN criteria for use at a European level.

With the data we have gathered in this review, it is relatively easy to apply the IUCN criteria for rates of decline (criterion A) but it is far more difficult to interpret the other criteria (B,C & D) which relate to rarity. In the absence of guidelines, and with the data we have available, we have chosen to concentrate on criteria A, and to incorporate rarity only for very rare species that occur in less than 1% of Europe. The criteria used to identify European threat categories are shown in Box B. We believe this follows the IUCN criteria as closely as possible with the data currently available.

**Result:**

Threat status of butterflies in Europe.

We have based our estimate of trend in Europe on data provided by each country compiler, giving weight to the size of each country (see Appendix 2 for details).

## *Step 4*: Conservation status

The aim of this assessment is to identify species that are of conservation concern at a European scale, following the concept used for birds by Tucker & Heath (1994). These butterflies are termed Species of European Conservation Concern (SPECs) and are divided into four categories depending on their global conservation status, their European Threat Status and the proportion of their world range in Europe:

**SPEC 1**: Species of global conservation concern because they are restricted to Europe (result of Step 2: Range Affinity 4) and considered globally threatened (result of Step 3: Critically endangered, Endangered or Vulnerable).

**SPEC 2**: Species whose global distribution is concentrated in Europe (Range Affinity 3) and are considered threatened in Europe (result of Step 3: Critically endangered, Endangered or Vulnerable).

**SPEC 3**: Species whose global distribution is not concentrated in Europe (Range Affinity 2), but are considered threatened in Europe (Result of Step 3: Critically endangered, Endangered or Vulnerable).

**SPEC 4**:

- **4a:** Species whose global distribution are restricted to Europe (result of Step 2: Range Affinity 4), but are not considered threatened either globally or in Europe (result of Step 3).
- **4b:** Species whose global distribution are concentrated in Europe (Range Affinity 3), but are not considered threatened either globally or in Europe (result of Step 3).

## Quality of data

Participants have been asked to indicate the quality of the estimation of present abundance and trend. If more than half of the present European distribution of a species is in countries where the quality of trend estimation is considered 'poor' by the national participants or where the trend is unknown, then this is indicated in the tables with the results.

### Implications of using the new IUCN criteria

Because the new IUCN criteria are based on estimates of rates of decline and extinction risk as well as rarity, they produce a different, but more useful, assessment compared to the old criteria which are based on more subjective and less explecit criteria. One result of the new criteria is that widespread but rapidly declining species are included for the first time, highlighting large scale changes that might otherwise have been ignored until species reached critical levels. The new criteria are consequently felt to be a far preferable method for assessing conservation priorities amongst European butterflies and identifying species requiring conservation action. They have also been adapted successfully for use at the national level in Britain (Warren *et al*, 1997) and Flanders (N-Belgium) and The Netherlands (Maes & Van Swaay, 1997).

# 3. OVERVIEW OF BUTTERFLIES IN EUROPE

This review reveals that a total of 576 species are thought to breed somewhere in Europe. However 33 of these have Range affinity 1 and are considered to be Extra-European or Quasi Extra-European species just reaching their natural boundaries in Europe (figure 6). They are excluded from futher calculations. From the remaining 543 species, 189 (35%) are restricted to Europe (Range affinity 4) and 38 (7%) are concentrated in Europe (Range affinity 3).

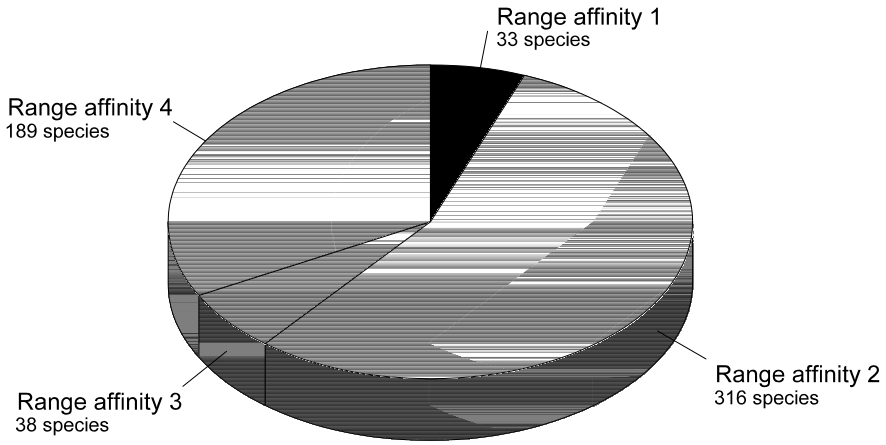



**Figure 6:** Range affinity of European butterflies (after Kudrna, 1986).
Range affinity 1: Extra-European or Quasi Extra-European species just reaching their natural boundaries in Europe.
Range affinity 2: Species with their distribution 'headquarters' both within and outside Europe.
Range affinity 3: Species with their 'headquarters' in Europe, but known also from other continents. The European colonies are particularly siginificant for the survival of the species.
Range affinity 4: Endemic species restricted to Europe.

Figure 7 shows the number of native species per country in Europe. The asian part of Turkey is espcially rich in butterfly-species, 120 species are even restricted to this area.

The quality of the estimate for present distribution and trend as indicated by the compilers is shown in appendix 3; the present distribution for every species per country is given in appendix 4 and the trend-estimate is presented in appendix 5. The old-IUCN status as indicated by the compilers is shown in appendix 6.

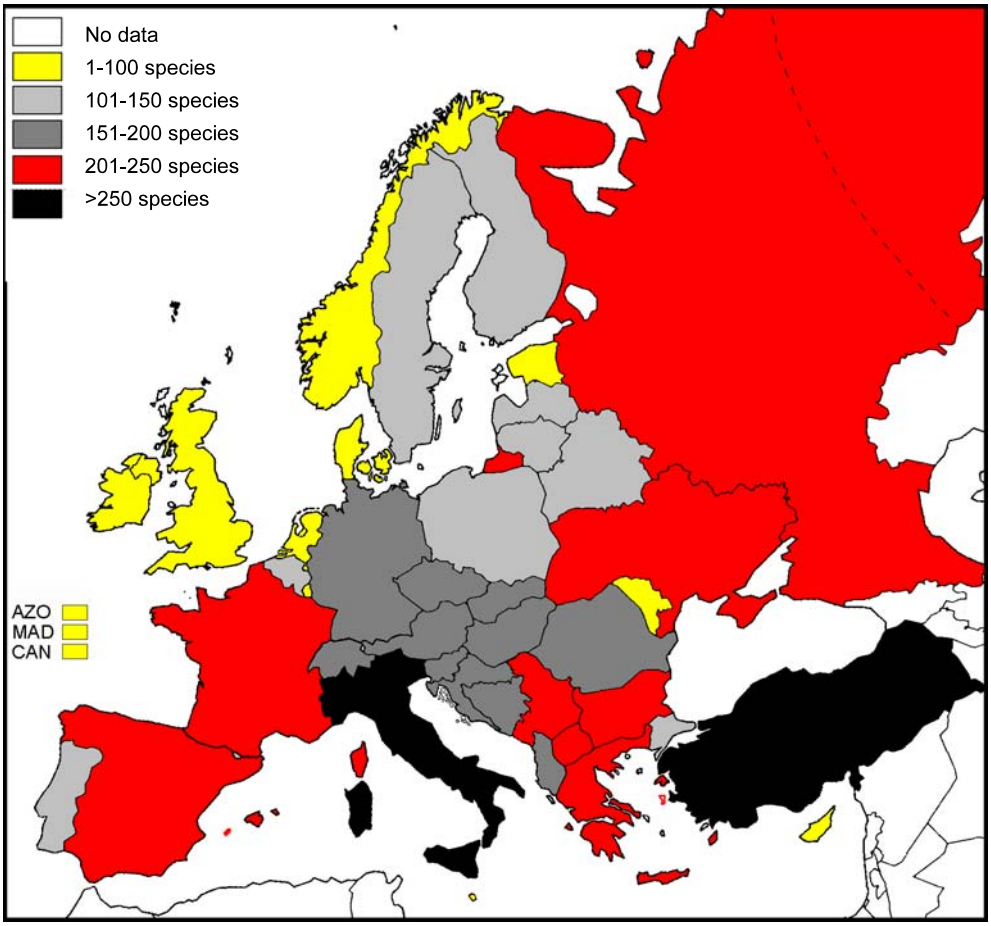



**Figure 7:** Number of native species per country.

# 4. THREAT STATUS OF EUROPEAN BUTTERFLIES

The following section describes the threat status of all native butterflies in Europe using the method given in section 2.2. An overview of the trend and present distribution, calculated from the data in appendix 4 and 5 is given in section 5.3.

## 4.1 European endemics

Table 1 shows the global threat status for threatened butterflies restricted to Europe using the IUCN (1994) criteria adapted according to Box B.
As might be expected this list is dominated by butterflies occurring on isolated islands, like Madeira and the Azores. However the list includes more widespread species, like *Maculinea rebeli,* because they are declining in almost every country.
The species which are in the category Lower Risk - near threatened are also listed. These will be the first species to move up to the category vulnerable if their status deteriorates.

**Table 1:** Global threat status of threatened butterflies restricted to Europe.

| Species | Global threat status | number of countries reported | number of countries extinct |
|---|---|---|---|
| *Pieris wollastoni* | CR | 1 | |
| *Gonepteryx maderensis* | EN | 1 | |
| *Polyommatus humedasae** | EN | 1 | |
| *Polyommatus dama* | EN | 1 | |
| *Hipparchia occidentalis* | EN | 1 | |
| *Pyrgus cirsii** | VU | 10 | 1 |
| *Zerynthia caucasica* | VU | 1 | |
| *Pieris cheiranthi* | VU | 1 | |
| *Lycaena ottomanus* | VU | 8 | 1 |
| *Maculinea rebeli** | VU | 17 | 1 |
| *Plebeius trappi** | VU | 2 | |
| *Plebeius hesperica* | VU | 1 | |
| *Erebia christi** | VU | 2 | |
| *Erebia sudetica* | VU | 5 | 1 |
| *Erebia epistygne** | VU | 2 | |
| *Hipparchia maderensis* | VU | 1 | |
| *Hipparchia azorina* | VU | 1 | |
| *Hipparchia miguelensis* | VU | 1 | |
| *Pseudochazara euxina** | VU | 2 | |
| *Pyrgus cinarae* | LR(nt) | 8 | 1 |
| *Pararge xiphia* | LR(nt) | 1 | |
| *Erebia melas* | LR(nt) | 10 | 1 |
| *Hipparchia mersina* | LR(nt) | 2 | |

*: data-quality poor or trend unknown in more than 50% of the range.

## 4.2 Species also found outside Europe

Table 2 shows the threat status for threatened butterflies also found outside Europe using the criteria in Box C.

**Table 2:** European threat status of 52 threatened butterflies also found outside Europe. Species of the category Lower Risk (near threatened) are in table 3.
r.i.: *M. teleius* and *M. nausithous* were extinct and reintroduced in The Netherlands, *M. arion* in the UK.

| Species | Threat status | number of countries reported | number of countries extinct |
|---|---|---|---|
| *Polyommatus caeruleus* | Ex | 1 | 1 |
| *Spialia osthelderi* | CR | 1 | |
| *Leptidea morsei* | CR | 14 | 1 |
| *Polyommatus eroides** | CR | 12 | 1 |
| *Euphydryas orientalis* | CR | 1 | |
| *Coenonympha oedippus** | CR | 14 | 3 |
| *Triphysa phryne** | CR | 3 | 1 |
| *Muschampia proteides* | EN | 1 | |
| *Archon apollinus* | EN | 3 | |
| *Archon apollinaris* | EN | 1 | |
| *Euchloe simplonia** | EN | 3 | |
| *Tomares nogelii* | EN | 4 | 2 |
| *Tomares callimachus** | EN | 3 | |
| *Neolycaena rhymnus** | EN | 2 | |
| *Pseudophilotes bavius* | EN | 7 | |
| *Maculinea arion** | EN | 37 | 1 r.i. |
| *Polyommatus poseidon* | EN | 2 | |
| *Nymphalis vaualbum** | EN | 14 | 3 |
| *Euphydryas intermedia** | EN | 7 | |
| *Melitaea aetherie** | EN | 3 | |
| *Melanargia titea* | EN | 1 | |
| *Pyrgus centaureae* | VU | 4 | |
| *Thymelicus acteon** | VU | 31 | 1 |
| *Parnassius phoebus* | VU | 7 | |
| *Parnassius apollo* | VU | 28 | 3 |
| *Anthocharis damone* | VU | 5 | 1 |
| *Colias nastes** | VU | 4 | |
| *Colias hecla* | VU | 4 | |
| *Colias myrmidone** | VU | 15 | 1 |
| *Colias chrysotheme** | VU | 8 | |
| *Lycaena helle** | VU | 20 | 4 |
| *Tomares ballus* | VU | 3 | |
| *Pseudophilotes vicrama** | VU | 23 | |
| *Scolitantides orion** | VU | 28 | 1 |
| *Glaucopsyche alexis** | VU | 36 | |
| *Maculinea teleius** | VU | 20 | 1 r.i. |
| *Maculinea nausithous** | VU | 19 | 1 r.i. |
| *Maculinea alcon** | VU | 27 | |
| *Polyommatus damone** | VU | 2 | |
| *Boloria titania** | VU | 19 | 2 |
| *Boloria thore** | VU | 12 | 1 |
| *Boloria frigga* | VU | 8 | |
| *Nymphalis xanthomelas** | VU | 21 | 3 |
| *Euphydryas maturna* | VU | 24 | 2 |
| *Euphydryas aurinia** | VU | 38 | 1 |
| *Melitaea aurelia** | VU | 25 | |
| *Melitaea britomartis** | VU | 16 | |
| *Lopinga achine** | VU | 26 | 3 |
| *Coenonympha tullia** | VU | 28 | 2 |
| *Coenonympha hero** | VU | 19 | 4 |
| *Erebia embla* | VU | 6 | |
| *Erebia medusa** | VU | 26 | 2 |

*: data-quality poor or trend unknown in more than 50% of the range.

**Table 3:** 39 Butterfly-species also found outside Europe with the status Lower Risk (near threatened).

| Species | Threat status | number of countries reported | number of countries extinct |
|---|---|---|---|
| *Erynnis marloyi* | LR(nt) | 7 | 1 |
| *Spialia phlomidis* | LR(nt) | 7 | 1 |
| *Muschampia poggei* | LR(nt) | 1 | |
| *Muschampia cribrellum** | LR(nt) | 4 | |
| *Pyrgus onopordi* | LR(nt) | 7 | 2 |
| *Thymelicus novus* | LR(nt) | 1 | |
| *Gegenes pumilio* | LR(nt) | 10 | 1 |
| *Pelopidas thrax* | LR(nt) | 3 | |
| *Zerynthia cerisy* | LR(nt) | 11 | |
| *Euchloe belemia** | LR(nt) | 4 | |
| *Euchloe charlonia** | LR(nt) | 2 | |
| *Euchloe penia** | LR(nt) | 6 | |
| *Pieris krueperi** | LR(nt) | 5 | |
| *Colias palaeno* | LR(nt) | 19 | 1 |
| *Hamearis lucina** | LR(nt) | 34 | 2 |
| *Lycaena virgaureae** | LR(nt) | 33 | |
| *Lycaena hippothoe* | LR(nt) | 31 | 1 |
| *Lycaena candens** | LR(nt) | 7 | |
| *Satyrium ledereri** | LR(nt) | 2 | |
| *Tarucus theophrastus* | LR(nt) | 1 | |
| *Tarucus balkanica* | LR(nt) | 10 | |
| *Zizeeria knysna* | LR(nt) | 4 | |
| *Cupido lorquinii* | LR(nt) | 2 | |
| *Pseudophilotes abencerragus* | LR(nt) | 2 | |
| *Plebeius argyrognomon** | LR(nt) | 29 | |
| *Polyommatus eros** | LR(nt) | 11 | |
| *Polyommatus damon* | LR(nt) | 20 | 1 |
| *Boloria chariclea** | LR(nt) | 4 | |
| *Boloria improba** | LR(nt) | 4 | |
| *Neptis sappho** | LR(nt) | 18 | 2 |
| *Apatura metis** | LR(nt) | 13 | 1 |
| *Erebia aethiops** | LR(nt) | 28 | 2 |
| *Erebia polaris** | LR(nt) | 4 | |
| *Erebia ottomana** | LR(nt) | 10 | |
| *Melanargia hylata* | LR(nt) | 1 | |
| *Hipparchia pellucida* | LR(nt) | 5 | |
| *Pseudochazara geyeri** | LR(nt) | 5 | |
| *Oeneis bore** | LR(nt) | 4 | |
| *Oeneis jutta* | LR(nt) | 9 | |

*: data-quality poor or trend unknown in more than 50% of the range.

One species is considered extinct in the investigated part of Europe. There is a chance *Polyommatus caeruleus* is still present in one of the Caucasian Republics for where no information is available in this report.
Table 7 shows the species with status Lower Risk (near threatened). These will be the ones most likely to move up to the category vulnerable if no actions for conservation are taken.

# 5. CONSERVATION STATUS OF EUROPEAN BUTTERFLIES

This section describes the conservation status of European butterflies, grouping them by their SPEC-status (Species of European Conservation Concern) according to their global and European status and to the proportion of their total distribution that occurs in Europe. Figure 8 shows the proportion of European butterflies within each SPEC-category.

## 5.1 Species of European Conservation Concern (SPECs)

### SPEC 1: Species of global conservation concern (table 4)

This category covers species restricted to Europe and considered globally threatened. They are clearly of the highest conservation importance, requiring stringent conservations measures wherever they occur regularly.

**Table 4: Species in SPEC 1: global conservation concern.** For every species the number of countries is given where the trend is extinct, decreasing, stable, increasing or unknown.

| | Number of countries where the trend of the species is: | | | | |
|---|---|---|---|---|---|
| Species | extinct | decrease | stable | increase | unknown |
| *Pyrgus cirsii* | 1 | 2 | 1 | | 6 |
| *Zerynthia caucasica* | | 1 | | | |
| *Pieris wollastoni* | | 1 | | | |
| *Pieris cheiranthi* | | 1 | | | |
| *Gonepteryx maderensis* | | | | | 1 |
| *Lycaena ottomanus* | 1 | 1 | 3 | | 3 |
| *Maculinea rebeli* | 1 | 3 | 3 | 1 | 9 |
| *Plebeius trappi* | | | 1 | | 1 |
| *Plebeius hesperica* | | 1 | | | |
| *Polyommatus humedasae* | | | | | 1 |
| *Polyommatus dama* | | 1 | | | |
| *Erebia christi* | | 1 | | | 1 |
| *Erebia sudetica* | 1 | 1 | 3 | | |
| *Erebia epistygne* | | 1 | | | 1 |
| *Hipparchia maderensis* | | 1 | | | |
| *Hipparchia azorina* | | 1 | | | |
| *Hipparchia occidentalis* | | 1 | | | |
| *Hipparchia miguelensis* | | 1 | | | |
| *Pseudochazara euxina* | | 1 | | | 1 |

### SPEC 2: Species concentrated and threatened in Europe (table 5)

This category covers species whose global distribution is concentrated in Europe and are considered threatened in Europe.

**Table 5: Species in SPEC 2: concentrated and threatened in Europe.** For every species the number of countries is given where the trend is extinct, decreasing, stable, increasing or unknown.

| | Number of countries where the trend of the species is: | | | | |
|---|---|---|---|---|---|
| Species | extinct | decrease | stable | increase | unknown |
| *Thymelicus acteon* | 1 | 11 | 5 | 1 | 13 |
| *Colias myrmidone* | 1 | 9 | | | 5 |
| *Tomares ballus* | | 2 | | | 1 |
| *Tomares nogelii* | 2 | 2 | | | |
| *Tomares callimachus* | | 1 | | | 2 |

## SPEC 3: Species threatened in Europe, but with headquarters both within and outside Europe (table 6)

This category covers species whose global distribution has headquarters both within and outside Europe, but are considered threatened in Europe.

**Table 6: Species in SPEC 3: threatened in Europe, but global distribution not concentrated in Europe.** For every species the number of countries is given where the trend is extinct, decreasing, stable, increasing or unknown.

| Species | Number of countries where the trend of the species is: extinct | decrease | stable | increase | unknown |
|---|---|---|---|---|---|
| *Spialia osthelderi* | | 1 | | | |
| *Muschampia proteides* | | 1 | | | |
| *Pyrgus centaureae* | | 1 | 1 | | 2 |
| *Archon apollinus* | | 2 | 1 | | |
| *Archon apollinaris* | | 1 | | | |
| *Parnassius phoebus* | | 1 | 3 | | 3 |
| *Parnassius apollo* | 3 | 12 | 5 | | 8 |
| *Leptidea morsei* | 1 | 8 | | | 5 |
| *Anthocharis damone* | 1 | 1 | 1 | | 2 |
| *Euchloe simplonia* | | 1 | | | 2 |
| *Colias nastes* | | 2 | 1 | | 1 |
| *Colias hecla* | | 2 | | | 2 |
| *Colias chrysotheme* | | 7 | | | 1 |
| *Lycaena helle* | 4 | 9 | 2 | 1 | 4 |
| *Neolycaena rhymnus* | | 1 | | | 1 |
| *Pseudophilotes vicrama* | | 11 | 7 | | 5 |
| *Pseudophilotes bavius* | | 4 | 1 | | 2 |
| *Scolitantides orion* | 1 | 12 | 8 | | 7 |
| *Glaucopsyche alexis* | | 11 | 12 | 1 | 12 |
| *Maculinea arion* | 1 | 20 | 7 | | 9 |
| *Maculinea teleius* | 1 | 13 | 1 | | 5 |
| *Maculinea nausithous* | | 12 | 3 | | 4 |
| *Maculinea alcon* | | 15 | 4 | | 8 |
| *Polyommatus eroides* | 1 | 3 | 4 | | 4 |
| *Polyommatus poseidon* | | 2 | | | |
| *Polyommatus caeruleus* | 1 | | | | |
| *Polyommatus damone* | | 1 | | | 1 |
| *Boloria titania* | 2 | 5 | 4 | | 8 |
| *Boloria thore* | 1 | 3 | 1 | 1 | 6 |
| *Boloria frigga* | | 4 | 1 | | 3 |
| *Nymphalis xanthomelas* | 3 | 5 | 3 | | 10 |
| *Nymphalis vaualbum* | 3 | 3 | 1 | | 7 |
| *Euphydryas intermedia* | | 2 | 3 | | 2 |
| *Euphydryas maturna* | 2 | 12 | 6 | | 4 |
| *Euphydryas aurinia* | 1 | 17 | 7 | 1 | 12 |
| *Euphydryas orientalis* | | 1 | | | |
| *Melitaea aetherie* | | 1 | | | 2 |
| *Melitaea aurelia* | | 12 | 5 | | 8 |
| *Melitaea britomartis* | | 8 | 5 | | 3 |
| *Lopinga achine* | 3 | 12 | 4 | 1 | 6 |
| *Coenonympha tullia* | 2 | 15 | 7 | | 4 |
| *Coenonympha oedippus* | 3 | 6 | 1 | | 4 |
| *Coenonympha hero* | 4 | 12 | 2 | | 1 |
| *Triphysa phryne* | 1 | 1 | | | 1 |
| *Erebia embla* | | 2 | 1 | | 3 |
| *Erebia medusa* | 2 | 8 | 7 | 2 | 7 |
| *Melanargia titea* | | 1 | | | |

## SPEC 4a: Global distribution restricted to Europe, but not threatened (table 7)

Species in this category are European endemics which are not considered threatened at present. Nevertheless they are of conservation concern, since their distribution is restricted to Europe.

**Table 7:** Species in SPEC 4a: not threatened in Europe, but global distribution restricted to Europe.

*Carcharodus baeticus*
*Spialia therapne*
*Pyrgus andromedae*
*Pyrgus cacaliae*
*Pyrgus malvoides*
*Pyrgus carlinae*
*Pyrgus cinarae*
*Pyrgus bellieri*
*Pyrgus warrenensis*
*Pyrgus bolkariensis*
*Pyrgus aladaghensis*
*Zerynthia cretica*
*Parnassius nordmanni*
*Papilio hospiton*
*Anthocharis euphenoides*
*Euchloe insularis*
*Pieris bowdeni*
*Pieris balcana*
*Colias phicomone*
*Colias caucasica*
*Gonepteryx cleobule*
*Lycaena euphratica*
*Cyclyrius webbianus*
*Cupido decolorata*
*Pseudophilotes baton*
*Pseudophilotes barbagiae*
*Glaucopsyche paphos*
*Glaucopsyche astraea*
*Plebeius rosei*
*Plebeius psylorita*
*Plebeius pyrenaica*
*Plebeius glandon*
*Aricia morronensis*
*Aricia teberdinus*
*Aricia hyacinthus*
*Aricia torulensis*
*Aricia anteros*
*Aricia nicias*
*Polyommatus diana*
*Polyommatus fatima*
*Polyommatus golgus*
*Polyommatus nivescens*
*Polyommatus myrrha*
*Polyommatus cornelia*
*Polyommatus ciloicus*
*Polyommatus buzulmavi*
*Polyommatus andronicus*
*Polyommatus menelaos*
*Polyommatus dezinus*
*Polyommatus coridon*
*Polyommatus caelestissima*
*Polyommatus philippi*
*Polyommatus ossmar*
*Polyommatus corydonius*
*Polyommatus hispana*
*Polyommatus albicans*
*Polyommatus fabressei*
*Polyommatus galloi*
*Polyommatus aroaniensis*
*Polyommatus nephohiptamenos*
*Polyommatus eriwanensis*
*Polyommatus antidolus*
*Polyommatus kurdistanicus*
*Polyommatus virgilia*
*Polyommatus dolus*
*Polyommatus menalcas*
*Polyommatus hopfferi*
*Polyommatus lycius*
*Polyommatus sertavulensis*
*Polyommatus theresiae*
*Polyommatus ninae*
*Polyom. aserbeidschanus*
*Polyommatus actis*
*Polyommatus merhaba*
*Polyommatus cyaneus*
*Polyommatus turcicus*
*Polyommatus huberti*
*Polyommatus carmon*
*Polyommatus charmeuxi*
*Polyommatus tankeri*
*Polyommatus baytopi*
*Argynnis elisa*
*Boloria caucasica*
*Boloria graeca*
*Euphydryas cynthia*
*Melitaea varia*
*Melitaea parthenoides*
*Melitaea asteria*
*Melitaea caucasogenita*
*Pararge xiphioides*
*Pararge xiphia*
*Coenonympha rhodopensis*
*Coenonympha gardetta*
*Coenonympha darwiniana*
*Coenonympha corinna*
*Coenonympha elbana*
*Coenonympha symphyta*
*Coenonympha thyrsis*
*Maniola cypricola*
*Maniola halicarnassus*
*Maniola nurag*
*Maniola chia*
*Maniola megala*
*Hyponephele urartua*
*Hyponephele kocaki*
*Erebia eriphyle*
*Erebia manto*
*Erebia claudina*
*Erebia flavofasciata*
*Erebia epiphron*
*Erebia orientalis*
*Erebia pharte*
*Erebia melampus*
*Erebia triaria*
*Erebia hewitsonii*
*Erebia alberganus*
*Erebia pluto*
*Erebia gorge*
*Erebia rhodopensis*
*Erebia aethiopella*
*Erebia mnestra*
*Erebia gorgone*
*Erebia graucasica*
*Erebia melancholica*
*Erebia tyndarus*
*Erebia nivalis*
*Erebia calcaria*
*Erebia cassioides*
*Erebia hispania*
*Erebia pronoe*
*Erebia lefebvrei*
*Erebia scipio*
*Erebia stirius*
*Erebia styx*
*Erebia montana*
*Erebia zapateri*
*Erebia neoridas*
*Erebia melas*
*Erebia oeme*
*Erebia meolans*
*Erebia palarica*
*Erebia sthennyo*
*Melanargia lachesis*
*Melanargia syriaca*
*Melanargia grumi*
*Melanargia larissa*
*Melanargia arge*
*Melanargia pherusia*
*Satyrus actaea*
*Hipparchia fagi*
*Hipparchia neomiris*
*Hipparchia aristaeus*
*Hipparchia cretica*
*Hipparchia semele*
*Hipparchia mersina*
*Hipparchia volgensis*
*Hipparchia christenseni*
*Hipparchia wyssii*
*Hipparchia bacchus*
*Hipparchia gomera*
*Hipparchia tilosi*
*Chazara egina*
*Pseudochazara graeca*
*Pseudochazara amymone*
*Pseudochazara orestes*
*Pseudochazara lydia*
*Pseudochazara mniszechii*
*Pseudochazara cingovskii*
*Pseudochazara anthelea*
*Oeneis glacialis*

*Thymelicus acteon* is a butterfly still widely distributed over Europe. Outside Europe it is only found in a relatively small area in the Middle-East.
In Europe *T. acteon* is declining in Central-Europe, but stable around the Mediterranean.
For these reasons it has been assessed as a SPEC 2-species.

*Drawing by Paul Schoenmakers, The Netherlands.*

## SPEC 4b: Global distribution concentrated in Europe, but not threatened (table 8)

Species in this category are not threatened at present, but have a global distribution with its 'headquarters' in Europe.

**Table 8:** Species in SPEC 4b: not threatened in Europe, but global distribution concentrated in Europe.

| | | |
|---|---|---|
| *Erynnis tages* | *Satyrium acaciae* | *Polyommatus damocles* |
| *Carcharodus lavatherae* | *Glaucopsyche melanops* | *Euphydryas desfontainii* |
| *Pyrgus jupei* | *Iolana iolas* | *Melitaea deione* |
| *Eogenes alcides* | *Plebeius alcedo* | *Thaleropis ionia* |
| *Thymelicus sylvestris* | *Aricia cramera* | *Coenonympha dorus* |
| *Colias chlorocoma* | *Polyommatus escheri* | *Melanargia galathea* |
| *Colias alfacariensis* | *Polyommatus dorylas* | *Hipparchia statilinus* |
| *Cigaritis cilissa* | *Polyommatus eros* | *Hipparchia fidia* |
| *Laeosopis roboris* | *Polyommatus daphnis* | *Brintesia circe* |
| *Callophrys avis* | *Polyommatus admetus* | *Chazara prieuri* |
| *Satyrium esculi* | *Polyommatus mithridates* | *Pseudochazara mamurra* |

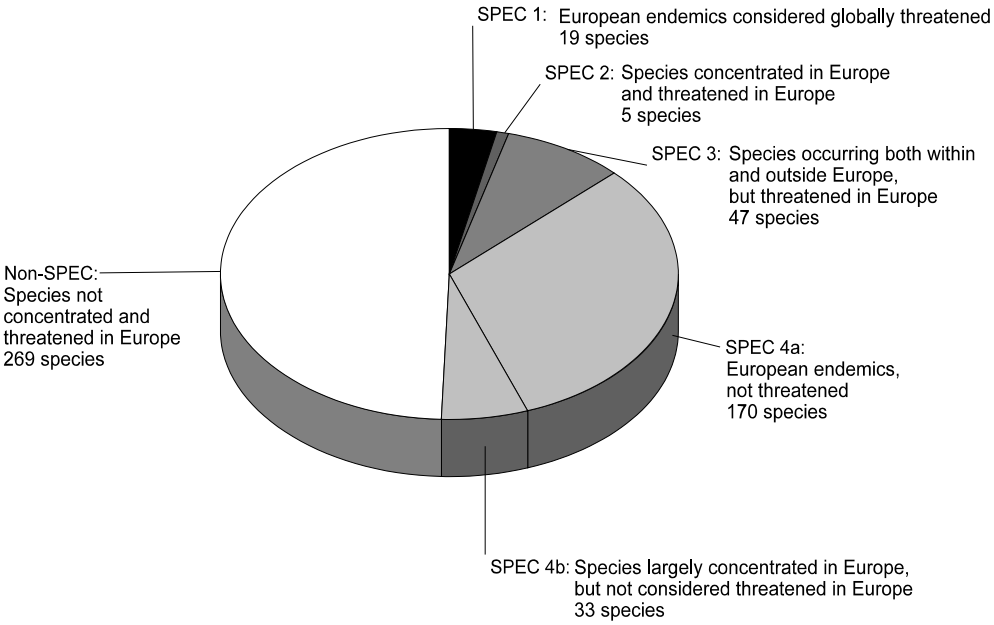



**Figure 8:** Proportion of European butterflies within each SPEC-category.

## Number of SPECs per country

Appendix 7 lists all threatened species (SPEC 1-3) per country. The number of SPECs in each country are given in figure 9 and table 9. Although this simple analysis does not take into account the proportion of each species' European population in each country it does indicate broad levels of responsibility for the conservation of SPECs. Most important, all countries (except Malta) have SPECs and therefore all have responsibilities for the conservation of these species. It shows the particular importance of a number of individual countries, for example of Russia, which holds 63 SPECs within its European sector, 40 of which are threatened. Obviously the large number of SPECs in European Russia is due partly to the great size of the region and the associated high diversity of habitats.

The highest number of SPECs are found in the Asian part of Turkey, Italy and France. The highest number of SPECs which are also threatened (SPEC 1-3) are found in the European part of Russia, Ukraine and (again) the Asian part of Turkey.

This underlines the high importance of the Asian part of Turkey, being very rich in habitats and species.

Although low numbers of SPECs occur on the Azores and Madeira, these islands are of considerable importance for their SPEC 1 species which are endemic to them.

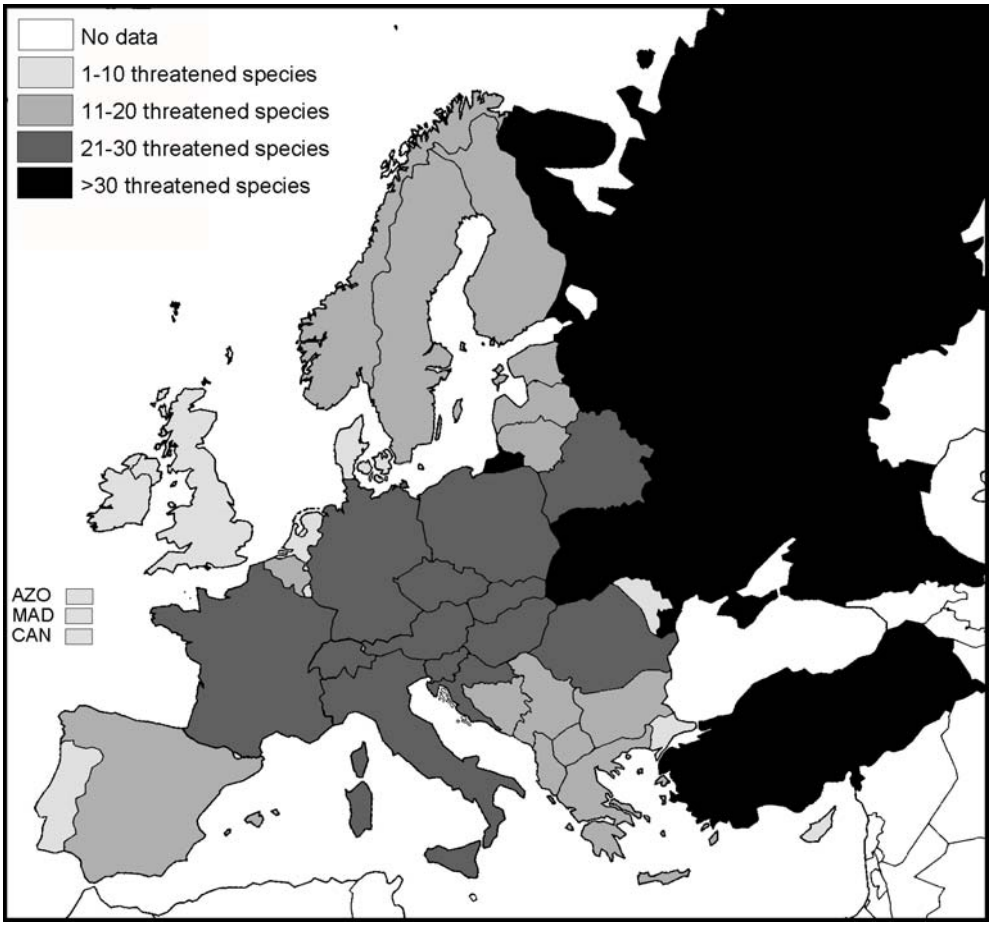



**Figure 9:** Number of threatened (SPEC 1-3) butterfly-species per country.

**Table 9:** The number of SPECs (Species of European Conservation Concern) per country in the region covered by this review).

| Country | SPEC category 1 | 2 | 3 | Subtotal SPEC's 1-3 (threatened species) | SPEC category 4a | 4b | Total |
|---|---|---|---|---|---|---|---|
| Albania | 1 | 1 | 12 | 14 | 20 | 13 | 47 |
| Andorra | 2 | 1 | 4 | 7 | 22 | 15 | 44 |
| Austria | 2 | 2 | 25 | 29 | 36 | 11 | 76 |
| Belarus | | 1 | 25 | 26 | 2 | 5 | 33 |
| Belgium | 1 | 1 | 12 | 14 | 3 | 7 | 24 |
| Bosnia | 1 | 2 | 14 | 17 | 23 | 14 | 54 |
| Bulgaria | 2 | 2 | 15 | 19 | 28 | 13 | 60 |
| Croatia | 1 | 2 | 18 | 21 | 16 | 14 | 51 |
| Cyprus | | 1 | 1 | 2 | 2 | 1 | 5 |
| Czech Republic | 2 | 2 | 22 | 26 | 6 | 9 | 41 |
| Denmark | | | 5 | 5 | 1 | 2 | 8 |
| Estonia | | | 14 | 14 | 1 | 2 | 17 |
| FYR of Macedonia | 1 | 1 | 12 | 14 | 26 | 14 | 54 |
| Finland | | | 17 | 17 | 4 | | 21 |
| France | 4 | 2 | 20 | 26 | 53 | 22 | 101 |
| Germany | 2 | 2 | 23 | 27 | 25 | 11 | 63 |
| Greece | 1 | 1 | 14 | 16 | 37 | 13 | 66 |
| Hungary | 2 | 2 | 20 | 24 | 4 | 12 | 40 |
| Ireland | | | 2 | 2 | 2 | 1 | 5 |
| Italy | 5 | 1 | 22 | 28 | 65 | 19 | 112 |
| Latvia | | | 16 | 16 | 1 | 3 | 20 |
| Liechtenstein | 1 | | 12 | 13 | 21 | 5 | 39 |
| Lithuania | | | 14 | 14 | 2 | 4 | 20 |
| Luxemburg | | 1 | 9 | 10 | 3 | 6 | 19 |
| Malta | | | | 0 | | | 0 |
| Moldova | | 1 | 6 | 7 | 1 | 5 | 13 |
| Netherlands | | 1 | 7 | 8 | 1 | 3 | 12 |
| Norway | | | 12 | 12 | 3 | 1 | 16 |
| Poland | 2 | 2 | 21 | 25 | 8 | 8 | 41 |
| Portugal | 1 | 2 | 3 | 6 | 9 | 13 | 28 |
| Azores | 3 | | | 3 | | | 3 |
| Madeira | 3 | | | 3 | 1 | | 4 |
| Romania | 1 | 3 | 22 | 26 | 13 | 12 | 51 |
| Russia (European part) | 2 | 3 | 35 | 40 | 13 | 10 | 63 |
| Slovakia | 1 | 2 | 24 | 27 | 9 | 12 | 48 |
| Slovenia | 2 | 2 | 22 | 26 | 19 | 12 | 57 |
| Spain | 4 | 2 | 10 | 16 | 40 | 23 | 79 |
| Canary Islands | 1 | 1 | | 2 | 7 | 1 | 10 |
| Sweden | | | 18 | 18 | 4 | 2 | 24 |
| Switzerland | 5 | 1 | 21 | 27 | 35 | 13 | 75 |
| Turkey (Asian part) | 4 | 3 | 24 | 31 | 62 | 21 | 114 |
| Turkey (European part) | | 1 | 9 | 10 | 6 | 10 | 26 |
| Ukraine | 1 | 4 | 29 | 34 | 21 | 11 | 66 |
| United Kingdom | | 1 | 3 | 4 | 3 | 3 | 10 |
| Yugoslavia | 1 | 2 | 16 | 19 | 26 | 14 | 59 |

## 5.2 Candidates for Appendix II of the Bern Convention and species requiring action plans

On the basis of the analysis in this report and bearing in mind the Standing Committee's criteria for selection, we propose that the following species are added to the appendix II of the Bern Convention (table 10):

1. All species assessed to be threatened globally (SPEC 1).
2. All species assessed to be either *extinct, critically endangered* or *endangered* in Europe (i.e. SPEC 2 and 3 species excluding those with threat status *vulnerable*).

This list attempts to focus first on world priorities and then on continental European priorities. All globally threatened endemic European species are included because these cannot be conserved elsewhere in the world, while European threatened species also found outside Europe (SPEC 2 and 3) have been included only if they are *extinct, critically endangered* or *endangered*. There is perhaps a good case for also including *vulnerable* SPEC 2 and 3 species, but this considerably lengthens the list and may deflect the focus and action from other, higher priorities.

**Table 10:** Candidates for Appendix II of the Convention of Bern (strictly protected species) in systematic order. For more information on the SPEC categories see section 5.1. This table only lists the threatened species not already on Appendix II.

| **SPEC 1** | **SPEC 2 or 3, threat status extinct, critically endangered or endangered** |
|---|---|
| *Pyrgus cirsii* | *Spialia osthelderi* |
| *Zerynthia caucasica* | *Muschampia proteides* |
| *Pieris wollastoni* | *Archon apollinus* |
| *Pieris cheiranthi* | *Archon apollinaris* |
| *Gonepteryx maderensis* | *Leptidea morsei* |
| *Lycaena ottomanus* | *Euchloe simplonia* |
| *Maculinea rebeli* | *Tomares nogelii* |
| *Plebeius trappi* | *Tomares callimachus* |
| *Plebeius hesperica* | *Neolycaena rhymnus* |
| *Polyommatus dama* | *Pseudophilotes bavius* |
| *Erebia epistygne* | *Polyommatus eroides* |
| *Hipparchia maderensis* | *Polyommatus poseidon* |
| *Hipparchia azorina* | *Polyommatus caeruleus* |
| *Hipparchia occidentalis* | *Nymphalis vaualbum* |
| *Hipparchia miguelensis* | *Euphydryas intermedia* |
| *Pseudochazara euxina* | *Euphydryas orientalis* |
| | *Melitaea aetherie* |
| | *Triphysa phryne* |
| | *Melanargia titea* |
| **16 species** | **19 species** |

We suggest that all butterflies assessed as threatened in Europe and already listed in the Bern Convention remain, eiter because they fall into these highly threatened categories (4 species) or they are linked with European habitats under severe threat (table 11).

We also recommend that all 71 species assessed as threatened in Europe (i.e. classified as SPEC 1, 2 or 3) are subject to ***Species Action Plans***, either individually or by grouping species with similar requirements within the same overall plan. These species should be included in national legislation and protection plans as soon as possible.

Although data quality is poor for many threatened species, we believe that action should be taken now because there is evidence of serious problems in at least some countries and that the same problems may already exist in poorly surveyed regions, or will develop very soon. It thus seems sensible to take precautionary action and review the situation regularly as new data become available.

**Table 11:** Species already on Appendix II of the Bern Convention at present and considered threatened in Europe.

| **SPEC 1** | **SPEC 2 or 3, threat status extinct, critically endangered or endangered** | **SPEC 2 or 3, threat status vulnerable** |
|---|---|---|
| *Polyommatus humedasae*<br>*Erebia christi*<br>*Erebia sudetica* | *Maculinea arion*<br>*Coenonympha oedippus* | *Parnassius apollo*<br>*Maculinea teleius*<br>*Maculinea nausithous*<br>*Euphydryas maturna*<br>*Euphydryas aurinia*<br>*Lopinga achine*<br>*Coenonympha hero* |
| **3 species** | **2 species** | **7 species** |

Not all species presently in the Appendix II are assessed as threatened or near-threatened in our new analysis. They are listed in table 12. For most of these species more detailed background information for the situation in the European Union is given by Van der Made & Wynhoff (1996). In most cases large and fairly stable populations outside the European Union cause an overall stable trend or only a small decrease. *P. golgus* and *P. galloi* are all rare and localized species restricted to a few populations in Europe. They did not fulfill one of the other criteria in Box B (continuing decline or extreme fluctuations) and are therefore not considered globally threatened. This status might change for *P. galloi* if more information for Italy becomes available (at present trend is 'unknown').

**Table 12:** Species on Appendix II of the Bern Convention at present, but not in SPEC 1, 2 or 3. *: trend estimation poor or unknown in more than 50% of present range.

| Species | SPEC | Present status in European Union (Van der Made & Wynhoff, 1996) |
|---|---|---|
| *Zerynthia polyxena* | | endangered |
| *Parnassius mnemosyne* | | threatened |
| *Papilio hospiton* | 4a | vulnerable |
| *Papilio alexanor** | | vulnerable, but not threatened |
| *Lycaena dispar** | | vulnerable |
| *Polyommatus golgus* | 4a | vulnerable |
| *Polyommatus galloi** | 4a | - |
| *Argynnis elisa* | 4a | not threatened |
| *Apatura metis** | | not threatened |
| *Erebia calcaria* | 4a | not threatened |
| *Melanargia arge** | 4a | not threatened |

## 5.3 Summary of status of all European butterflies

A summary of the status of all 576 native European species is given in table 13.

Table 13: Summary of status of all European butterflies. For detailed information on the separate countries see appendix 4, 5 and 6. For more information and explanation see the section 2 of part I on Methods.
*: data-quality poor or trend unknown in more than 50% of the range.

| Species | Range affinity | SPEC | Global threat status | European threat status | Present distributio n class (%) | European trend class | Number of countries | Number countries extinct |
|---|---|---|---|---|---|---|---|---|
| *Erynnis tages** | 3 | 4b | | | >15 | stable | 39 | 1 |
| *Erynnis marloyi* | 2 | | | LR(nt) | <1 | stable | 7 | 1 |
| *Carcharodus alceae** | 2 | | | | >15 | stable | 30 | |
| *Carcharodus lavatherae** | 3 | 4b | | | 5-15% | stable | 23 | 2 |
| *Carcharodus floccifera** | 2 | | | | >15 | stable | 28 | |
| *Carcharodus orientalis** | 2 | | | | 5-15% | stable | 10 | |
| *Carcharodus baeticus** | 4 | 4a | | | 1-5% | stable | 6 | 1 |
| *Carcharodus stauderi* | 1 | | | | <1 | decr. 20-50% | 2 | |
| *Spialia phlomidis* | 2 | | | LR(nt) | <1 | stable | 7 | 1 |
| *Spialia osthelderi* | 2 | 3 | | CR | <1 | decr. 50-80% | 1 | |
| *Spialia sertorius* | 2 | | | | 5-15% | stable | 21 | 2 |
| *Spialia orbifer** | 2 | | | | >15 | stable | 14 | |
| *Spialia therapne** | 4 | 4a | | | <1 | unknown | 2 | |
| *Muschampia proto* | 2 | | | | 1-5% | stable | 11 | |
| *Muschampia proteides* | 2 | 3 | | EN | <1 | decr. 20-50% | 1 | |
| *Muschampia poggei* | 2 | | | LR(nt) | <1 | stable | 1 | |
| *Muschampia plurimacula** | 2 | | | | <1 | unknown | 1 | |
| *Muschampia tessellum** | 2 | | | | >15 | stable | 8 | 1 |
| *Muschampia cribrellum** | 2 | | | LR(nt) | <1 | stable | 4 | |
| *Pyrgus carthami** | 2 | | | | 5-15% | stable | 28 | 2 |
| *Pyrgus sidae** | 2 | | | | 5-15% | stable | 18 | 2 |
| *Pyrgus andromedae** | 4 | 4a | | | 1-5% | stable | 16 | |
| *Pyrgus cacaliae* | 4 | 4a | | | <1 | stable | 10 | |
| *Pyrgus centaureae* | 2 | 3 | | VU | 5-15% | decr. 20-50% | 4 | |
| *Pyrgus malvae** | 2 | | | | >15 | stable | 38 | |
| *Pyrgus melotis* | 2 | | | | 1-5% | stable | 1 | |
| *Pyrgus malvoides* | 4 | 4a | | | 1-5% | stable | 8 | |
| *Pyrgus serratulae** | 2 | | | | >15 | stable | 31 | |
| *Pyrgus onopordi* | 2 | | | LR(nt) | <1 | stable | 7 | 2 |
| *Pyrgus carlinae** | 4 | 4a | | | <1 | stable | 3 | |
| *Pyrgus cirsii** | 4 | 1 | VU | | 1-5% | decr. 20-50% | 10 | 1 |
| *Pyrgus cinarae* | 4 | 4a | LR(nt) | | <1 | decr. 15-20% | 8 | 1 |
| *Pyrgus armoricanus** | 2 | | | | >15 | stable | 26 | 1 |
| *Pyrgus alveus** | 2 | | | | >15 | stable | 32 | |
| *Pyrgus bellieri** | 4 | 4a | | | <1 | stable | 4 | |
| *Pyrgus warrenensis** | 4 | 4a | | | <1 | stable | 5 | |
| *Pyrgus jupei** | 3 | 4b | | | <1 | unknown | 1 | |
| *Pyrgus bolkariensis** | 4 | 4a | | | <1 | unknown | 1 | |
| *Pyrgus aladaghensis** | 4 | 4a | | | <1 | unknown | 1 | |
| *Heteropterus morpheus** | 2 | | | | >15 | stable | 26 | 1 |
| *Carterocephalus palaemon** | 2 | | | | >15 | stable | 32 | |
| *Carterocephalus silvicola** | 2 | | | | >15 | stable | 13 | 1 |
| *Eogenes alcides** | 3 | 4b | | | <1 | unknown | 1 | |
| *Eogenes lesliei** | 2 | | | | <1 | unknown | 1 | |
| *Thymelicus lineola** | 2 | | | | >15 | stable | 38 | |
| *Thymelicus sylvestris** | 3 | 4b | | | >15 | stable | 35 | |
| *Thymelicus novus* | 2 | | | LR(nt) | <1 | stable | 1 | |
| *Thymelicus acteon** | 3 | 2 | | VU | 5-15% | decr. 20-50% | 31 | 1 |
| *Thymelicus hyrax** | 2 | | | | <1 | unknown | 2 | |
| *Hesperia comma* | 2 | | | | >15 | stable | 38 | |
| *Ochlodes venata* | 2 | | | | >15 | stable | 37 | |
| *Gegenes pumilio* | 2 | | | LR(nt) | <1 | stable | 10 | 1 |
| *Gegenes nostrodamus* | 2 | | | | 1-5% | stable | 12 | 1 |
| *Borbo borbonica** | 2 | | | | <1 | unknown | 1 | |
| *Pelopidas thrax* | 2 | | | LR(nt) | <1 | stable | 3 | |
| *Zerynthia rumina* | 2 | | | | 1-5% | stable | 4 | 1 |
| *Zerynthia polyxena* | 2 | | | | 1-5% | stable | 22 | 2 |
| *Zerynthia cerisy* | 2 | | | LR(nt) | 1-5% | decr. 15-20% | 11 | |
| *Zerynthia deyrollei** | 2 | | | | 1-5% | unknown | 1 | |
| *Zerynthia caucasica* | 4 | 1 | VU | | <1 | decr. 20-50% | 1 | |
| *Zerynthia cretica* | 4 | 4a | | | <1 | stable | 1 | |
| *Archon apollinus* | 2 | 3 | | EN | <1 | decr. 20-50% | 3 | |
| *Archon apollinaris* | 2 | 3 | | EN | <1 | decr. 20-50% | 1 | |
| *Parnassius mnemosyne** | 2 | | | | 5-15% | stable | 32 | |

Table 13: Summary of status of all European butterflies. For detailed information on the separate countries see appendix 4, 5 and 6. For more information and explanation see the section 2 of part I on Methods.
*: data-quality poor or trend unknown in more than 50% of the range.

| Species | Range affinity | SPEC | Global threat status | European threat status | Present distributio n class (%) | European trend class | Number of countries | Number countries extinct |
|---|---|---|---|---|---|---|---|---|
| *Parnassius nordmanni* | 4 | 4a | | | <1 | stable | 1 | |
| *Parnassius phoebus* | 2 | 3 | | VU | <1 | decr. 15-20% | 7 | |
| *Parnassius apollo* | 2 | 3 | | VU | 5-15% | decr. 20-50% | 28 | 3 |
| *Iphiclides podalirius* | 2 | | | | >15 | stable | 29 | 1 |
| *Papilio machaon** | 2 | | | | >15 | stable | 41 | 1 |
| *Papilio hospiton* | 4 | 4a | | | <1 | stable | 2 | |
| *Papilio alexanor** | 2 | | | | 1-5% | stable | 9 | 3 |
| *Leptidea sinapis complex** | 2 | | | | >15 | stable | 39 | |
| *Leptidea duponcheli* | 2 | | | | 1-5% | stable | 10 | |
| *Leptidea morsei* | 2 | 3 | | CR | <1 | decr. 50-80% | 14 | 1 |
| *Anthocharis cardamines** | 2 | | | | >15 | stable | 41 | |
| *Anthocharis euphenoides* | 4 | 4a | | | 1-5% | stable | 5 | |
| *Anthocharis damone* | 2 | 3 | | VU | <1 | decr. 15-20% | 5 | 1 |
| *Anthocharis gruneri* | 2 | | | | 1-5% | stable | 5 | |
| *Zegris eupheme** | 2 | | | | 5-15% | stable | 4 | |
| *Zegris pyrothoe** | 1 | | | | <1 | unknown | 1 | |
| *Euchloe belemia** | 2 | | | LR(nt) | 1-5% | decr. 15-20% | 4 | |
| *Euchloe crameri* | 2 | | | | 5-15% | stable | 4 | |
| *Euchloe simplonia** | 2 | 3 | | EN | <1 | decr. 20-50% | 3 | |
| *Euchloe ausonia** | 2 | | | | 5-15% | stable | 18 | |
| *Euchloe tagis* | 2 | | | | 1-5% | stable | 4 | |
| *Euchloe insularis** | 4 | 4a | | | <1 | stable | 2 | |
| *Euchloe charlonia** | 2 | | | LR(nt) | <1 | stable | 2 | |
| *Euchloe penia** | 2 | | | LR(nt) | <1 | stable | 6 | |
| *Aporia crataegi** | 2 | | | | >15 | stable | 37 | 3 |
| *Pieris brassicae** | 2 | | | | >15 | stable | 42 | |
| *Pieris wollastoni* | 4 | 1 | CR | | <1 | decr. 80-100% | 1 | |
| *Pieris cheiranthi* | 4 | 1 | VU | | <1 | decr. 20-50% | 1 | |
| *Pieris krueperi** | 2 | | | LR(nt) | <1 | stable | 5 | |
| *Pieris mannii* | 2 | | | | 1-5% | stable | 19 | |
| *Pieris rapae** | 2 | | | | >15 | stable | 44 | |
| *Pieris ergane* | 2 | | | | 1-5% | stable | 15 | |
| *Pieris napi** | 2 | | | | >15 | stable | 40 | |
| *Pieris bryoniae* | 2 | | | | 5-15% | stable | 15 | |
| *Pieris bowdeni** | 4 | 4a | | | <1 | unknown | 1 | |
| *Pieris balcana* | 4 | 4a | | | <1 | stable | 6 | |
| *Pontia callidice** | 2 | | | | >15 | stable | 11 | 1 |
| *Pontia daplidice complex** | 2 | | | | >15 | stable | 30 | |
| *Pontia chloridice** | 2 | | | | >15 | stable | 10 | 2 |
| *Colotis evagore* | 1 | | | | <1 | unknown | 1 | |
| *Catopsilia florella* | 1 | | | | <1 | incr. 125-200% | 1 | |
| *Colias phicomone* | 4 | 4a | | | 1-5% | decr. 15-20% | 9 | |
| *Colias nastes** | 2 | 3 | | VU | 5-15% | decr. 20-50% | 4 | |
| *Colias palaeno* | 2 | | | LR(nt) | 5-15% | decr. 15-20% | 19 | 1 |
| *Colias erate** | 2 | | | | >15 | stable | 14 | |
| *Colias croceus** | 2 | | | | | | | |
| *Colias chlorocoma** | 3 | 4b | | | <1 | unknown | 1 | |
| *Colias hecla* | 2 | 3 | | VU | 1-5% | decr. 20-50% | 4 | |
| *Colias myrmidone** | 3 | 2 | | VU | 5-15% | decr. 20-50% | 15 | 1 |
| *Colias chrysotheme** | 2 | 3 | | VU | 5-15% | decr. 20-50% | 8 | |
| *Colias aurorina** | 2 | | | | 1-5% | stable | 4 | |
| *Colias caucasica* | 4 | 4a | | | <1 | stable | 6 | 1 |
| *Colias thisoa** | 2 | | | | <1 | unknown | 1 | |
| *Colias hyale** | 2 | | | | >15 | stable | 25 | |
| *Colias alfacariensis* | 3 | 4b | | | 5-15% | stable | 25 | |
| *Gonepteryx rhamni** | 2 | | | | >15 | stable | 39 | |
| *Gonepteryx farinosa* | 2 | | | | 1-5% | stable | 7 | 1 |
| *Gonepteryx cleopatra* | 2 | | | | 1-5% | stable | 15 | |
| *Gonepteryx maderensis** | 4 | 1 | EN | | <1 | unknown | 1 | |
| *Gonepteryx cleobule* | 4 | 4a | | | <1 | stable | 1 | |
| *Hamearis lucina** | 2 | | | LR(nt) | 5-15% | decr. 15-20% | 34 | 2 |
| *Cigaritis maxima** | 2 | | | | <1 | unknown | 1 | |
| *Cigaritis cilissa** | 3 | 4b | | | <1 | unknown | 1 | |
| *Cigaritis acamas** | 2 | | | | <1 | unknown | 2 | |
| *Lycaena phlaeas** | 2 | | | | >15 | stable | 43 | |
| *Lycaena helle** | 2 | 3 | | VU | 5-15% | decr. 20-50% | 20 | 4 |
| *Lycaena dispar** | 2 | | | | >15 | stable | 32 | 1 |
| *Lycaena virgaureae** | 2 | | | LR(nt) | >15 | decr. 15-20% | 33 | |
| *Lycaena ottomanus* | 4 | 1 | VU | | <1 | decr. 20-50% | 8 | 1 |
| *Lycaena tityrus* | 2 | | | | >15 | stable | 33 | 1 |
| *Lycaena alciphron* | 2 | | | | >15 | stable | 29 | |
| *Lycaena hippothoe* | 2 | | | LR(nt) | 5-15% | decr. 15-20% | 31 | 1 |

Table 13: Summary of status of all European butterflies. For detailed information on the separate countries see appendix 4, 5 and 6. For more information and explanation see the section 2 of part I on Methods.
*: data-quality poor or trend unknown in more than 50% of the range.

| Species | Range affinity | SPEC | Global threat status | European threat status | Present distributio n class (%) | European trend class | Number of countries | Number countries extinct |
|---|---|---|---|---|---|---|---|---|
| *Lycaena candens** | 2 | | | LR(nt) | <1 | stable | 7 | |
| *Lycaena thersamon* | 2 | | | | 5-15% | stable | 19 | 1 |
| *Lycaena lampon** | 2 | | | | <1 | unknown | 1 | |
| *Lycaena thetis** | 2 | | | | 1-5% | stable | 3 | 1 |
| *Lycaena asabinus** | 2 | | | | <1 | unknown | 1 | |
| *Lycaena ochimus** | 2 | | | | 1-5% | unknown | 1 | |
| *Lycaena phoenicurus** | 2 | | | | <1 | unknown | 1 | |
| *Lycaena euphratica** | 4 | 4a | | | <1 | unknown | 1 | |
| *Thecla betulae** | 2 | | | | >15 | stable | 39 | |
| *Neozephyrus quercus** | 2 | | | | >15 | stable | 40 | |
| *Laeosopis roboris* | 3 | 4b | | | 1-5% | stable | 4 | |
| *Tomares ballus* | 3 | 2 | | VU | 1-5% | decr. 20-50% | 3 | |
| *Tomares romanovi** | 2 | | | | <1 | unknown | 1 | |
| *Tomares nogelii* | 3 | 2 | | EN | <1 | decr. 20-50% | 4 | 2 |
| *Tomares nesimachus ** | 2 | | | | <1 | unknown | 1 | |
| *Tomares callimachus** | 3 | 2 | | EN | <1 | decr. 20-50% | 3 | |
| *Callophrys rubi** | 2 | | | | >15 | stable | 40 | |
| *Callophrys mystaphia** | 2 | | | | <1 | unknown | 1 | |
| *Callophrys suaveola** | 2 | | | | <1 | unknown | 1 | |
| *Callophrys butleri* | 1 | | | | 0 | unknown | 1 | |
| *Callophrys avis** | 3 | 4b | | | <1 | unknown | 3 | |
| *Satyrium w-album** | 2 | | | | >15 | stable | 37 | |
| *Satyrium pruni** | 2 | | | | >15 | stable | 32 | |
| *Satyrium spini** | 2 | | | | >15 | stable | 29 | |
| *Satyrium marcidum** | 2 | | | | <1 | unknown | 1 | |
| *Satyrium ilicis** | 2 | | | | >15 | stable | 35 | |
| *Satyrium esculi* | 3 | 4b | | | 1-5% | stable | 5 | |
| *Satyrium acaciae** | 3 | 4b | | | 5-15% | incr. 125-200% | 26 | 1 |
| *Satyrium abdominalis** | 2 | | | | 1-5% | unknown | 1 | |
| *Satyrium myrtale** | 2 | | | | <1 | unknown | 1 | |
| *Satyrium ledereri** | 2 | | | LR(nt) | <1 | stable | 2 | |
| *Satyrium hyrcanicum** | 2 | | | | <1 | unknown | 1 | |
| *Neolycaena rhymnus** | 2 | 3 | | EN | <1 | decr. 20-50% | 2 | |
| *Lampides boeticus* | 2 | | | | 5-15% | stable | 23 | 1 |
| *Cacyreus marshalli* | 1 | | | | 1-5% | incr. 125-200% | 1 | |
| *Leptotes pirithous** | 2 | | | | 5-15% | stable | 20 | |
| *Cyclyrius webbianus* | 4 | 4a | | | <1 | stable | 1 | |
| *Tarucus theophrastus* | 2 | | | LR(nt) | <1 | stable | 1 | |
| *Tarucus balkanica* | 2 | | | LR(nt) | <1 | stable | 10 | |
| *Zizeeria knysna* | 2 | | | LR(nt) | <1 | stable | 4 | |
| *Zizeeria karsandra** | 1 | | | | <1 | unknown | 1 | |
| *Cupido minimus** | 2 | | | | >15 | stable | 39 | 1 |
| *Cupido osiris* | 2 | | | | 5-15% | stable | 21 | 1 |
| *Cupido lorquinii* | 2 | | | LR(nt) | <1 | stable | 2 | |
| *Cupido argiades** | 2 | | | | >15 | stable | 31 | 2 |
| *Cupido decolorata* | 4 | 4a | | | 1-5% | stable | 16 | |
| *Cupido alcetas** | 2 | | | | 5-15% | stable | 20 | |
| *Celastrina argiolus** | 2 | | | | >15 | stable | 41 | |
| *Pseudophilotes baton* | 4 | 4a | | | 1-5% | stable | 14 | 2 |
| *Pseudophilotes vicrama** | 2 | 3 | | VU | 5-15% | decr. 20-50% | 23 | |
| *Pseudophilotes abencerragus* | 2 | | | LR(nt) | <1 | stable | 2 | |
| *Pseudophilotes barbagiae** | 4 | 4a | | | <1 | unknown | 1 | |
| *Pseudophilotes bavius* | 2 | 3 | | EN | <1 | decr. 20-50% | 7 | |
| *Scolitantides orion** | 2 | 3 | | VU | >15 | decr. 20-50% | 28 | 1 |
| *Glaucopsyche alexis** | 2 | 3 | | VU | >15 | decr. 20-50% | 36 | |
| *Glaucopsyche paphos** | 4 | 4a | | | <1 | unknown | 1 | |
| *Glaucopsyche astraea** | 4 | 4a | | | <1 | unknown | 1 | |
| *Glaucopsyche melanops* | 3 | 4b | | | 1-5% | stable | 4 | |
| *Iolana iolas** | 3 | 4b | | | 1-5% | stable | 16 | 1 |
| *Maculinea arion** | 2 | 3 | | EN | 5-15% | decr. 50-80% | 37 | 1 |
| *Maculinea teleius** | 2 | 3 | | VU | 5-15% | decr. 20-50% | 20 | 1 |
| *Maculinea nausithous** | 2 | 3 | | VU | 5-15% | decr. 20-50% | 19 | |
| *Maculinea alcon** | 2 | 3 | | VU | 5-15% | decr. 20-50% | 27 | |
| *Maculinea rebeli** | 4 | 1 | VU | | 1-5% | decr. 20-50% | 17 | 1 |
| *Lachides galba** | 2 | | | | <1 | unknown | 2 | |
| *Turanana endymion** | 2 | | | | 1-5% | stable | 2 | |
| *Turanana cytis** | 2 | | | | <1 | unknown | 1 | |
| *Chilades trochylus** | 2 | | | | 1-5% | stable | 3 | |
| *Plebeius pylaon* | 2 | | | | 1-5% | stable | 10 | |
| *Plebeius trappi** | 4 | 1 | VU | | <1 | unknown | 2 | |
| *Plebeius hesperica* | 4 | 1 | VU | | <1 | decr. 20-50% | 1 | |
| *Plebeius argus** | 2 | | | | >15 | stable | 39 | |

Table 13: Summary of status of all European butterflies. For detailed information on the separate countries see appendix 4, 5 and 6. For more information and explanation see the section 2 of part I on Methods.
*: data-quality poor or trend unknown in more than 50% of the range.

| Species | Range affinity | SPEC | Global threat status | European threat status | Present distributio n class (%) | European trend class | Number of countries | Number countries extinct |
|---|---|---|---|---|---|---|---|---|
| *Plebeius idas* | 2 | | | | >15 | stable | 35 | 2 |
| *Plebeius argyrognomon** | 2 | | | LR(nt) | 5-15% | decr. 15-20% | 29 | |
| *Plebeius christophi** | 2 | | | | <1 | unknown | 1 | |
| *Plebeius alcedo** | 3 | 4b | | | <1 | unknown | 1 | |
| *Plebeius rosei** | 4 | 4a | | | <1 | unknown | 1 | |
| *Plebeius morgianus** | 2 | | | | <1 | unknown | 1 | |
| *Plebeius optilete** | 2 | | | | 5-15% | stable | 22 | |
| *Plebeius loewii* | 1 | | | | 1-5% | stable | 2 | |
| *Plebeius eurypilus* | 1 | | | | 1-5% | stable | 2 | |
| *Plebeius psylorita* | 4 | 4a | | | <1 | stable | 1 | |
| *Plebeius pyrenaica** | 4 | 4a | | | <1 | stable | 8 | |
| *Plebeius glandon** | 4 | 4a | | | 1-5% | stable | 12 | |
| *Plebeius orbitulus* | 2 | | | | 1-5% | stable | 9 | |
| *Aricia eumedon** | 2 | | | | >15 | stable | 30 | |
| *Aricia cramera* | 3 | 4b | | | 1-5% | stable | 6 | |
| *Aricia agestis** | 2 | | | | >15 | stable | 36 | |
| *Aricia artaxerxes** | 2 | | | | >15 | stable | 29 | |
| *Aricia morronensis* | 4 | 4a | | | <1 | stable | 1 | |
| *Aricia teberdinus** | 4 | 4a | | | <1 | unknown | 2 | |
| *Aricia hyacinthus** | 4 | 4a | | | <1 | unknown | 1 | |
| *Aricia torulensis** | 4 | 4a | | | <1 | unknown | 1 | |
| *Aricia isaurica** | 2 | | | | <1 | unknown | 1 | |
| *Aricia anteros* | 4 | 4a | | | 1-5% | stable | 10 | |
| *Aricia nicias** | 4 | 4a | | | 5-15% | stable | 8 | |
| *Polyommatus semiargus** | 2 | | | | >15 | stable | 39 | 1 |
| *Polyommatus coelestina** | 2 | | | | 1-5% | stable | 4 | |
| *Polyommatus diana** | 4 | 4a | | | <1 | unknown | 1 | |
| *Polyommatus fatima** | 4 | 4a | | | <1 | unknown | 1 | |
| *Polyommatus escheri* | 3 | 4b | | | 1-5% | stable | 14 | 1 |
| *Polyommatus dorylas* | 3 | 4b | | | 5-15% | stable | 29 | 3 |
| *Polyommatus golgus* | 4 | 4a | | | <1 | stable | 1 | |
| *Polyommatus nivescens* | 4 | 4a | | | <1 | stable | 1 | |
| *Polyommatus amandus** | 2 | | | | >15 | stable | 33 | |
| *Polyommatus cyane** | 1 | | | | <1 | unknown | 1 | |
| *Polyommatus thersites* | 2 | | | | >15 | stable | 24 | 1 |
| *Polyommatus myrrha** | 4 | 4a | | | <1 | unknown | 1 | |
| *Polyommatus aedon** | 2 | | | | <1 | unknown | 1 | |
| *Polyommatus cornelia** | 4 | 4a | | | 1-5% | unknown | 1 | |
| *Polyommatus ciloicus** | 4 | 4a | | | <1 | unknown | 1 | |
| *Polyommatus buzulmavi** | 4 | 4a | | | <1 | unknown | 1 | |
| *Polyommatus icarus** | 2 | | | | >15 | stable | 43 | |
| *Polyommatus andronicus* | 4 | 4a | | | <1 | stable | 1 | |
| *Polyommatus eroides** | 2 | 3 | | CR | <1 | decr. 50-80% | 12 | 1 |
| *Polyommatus eros** | 3 | 4b | | LR(nt) | <1 | stable | 12 | |
| *Polyommatus menelaos* | 4 | 4a | | | <1 | stable | 1 | |
| *Polyommatus daphnis* | 3 | 4b | | | 5-15% | stable | 26 | |
| *Polyommatus bellargus* | 2 | | | | >15 | stable | 32 | |
| *Polyommatus syriacus** | 2 | | | | <1 | unknown | 1 | |
| *Polyommatus dezinus** | 4 | 4a | | | <1 | unknown | 1 | |
| *Polyommatus coridon* | 4 | 4a | | | 5-15% | stable | 30 | |
| *Polyommatus caelestissima* | 4 | 4a | | | <1 | stable | 1 | |
| *Polyommatus philippi* | 4 | 4a | | | <1 | stable | 1 | |
| *Polyommatus ossmar** | 4 | 4a | | | <1 | unknown | 1 | |
| *Polyommatus corydonius* | 4 | 4a | | | <1 | stable | 2 | |
| *Polyommatus hispana** | 4 | 4a | | | <1 | unknown | 3 | |
| *Polyommatus albicans* | 4 | 4a | | | 1-5% | stable | 1 | |
| *Polyommatus alcestis** | 2 | | | | <1 | unknown | 1 | |
| *Polyommatus demavendi** | 2 | | | | <1 | unknown | 1 | |
| *Polyommatus admetus* | 3 | 4b | | | 1-5% | stable | 13 | |
| *Polyommatus fabressei* | 4 | 4a | | | <1 | stable | 1 | |
| *Polyommatus humedasae** | 4 | 1 | EN | | <1 | unknown | 1 | |
| *Polyommatus ripartii** | 2 | | | | 5-15% | stable | 13 | 2 |
| *Polyommatus budashkini* | 1 | | | | 0 | unknown | 1 | |
| *Polyommatus galloi** | 4 | 4a | | | <1 | unknown | 1 | |
| *Polyommatus aroaniensis* | 4 | 4a | | | <1 | stable | 2 | |
| *Polyommatus* | 4 | 4a | | | <1 | unknown | 2 | |
| *Polyommatus eriwanensis** | 4 | 4a | | | <1 | unknown | 1 | |
| *Polyommatus mithridates** | 3 | 4b | | | <1 | unknown | 1 | |
| *Polyommatus antidolus** | 4 | 4a | | | <1 | unknown | 1 | |
| *Polyommatus kurdistanicus** | 4 | 4a | | | <1 | unknown | 1 | |
| *Polyommatus virgilia** | 4 | 4a | | | <1 | unknown | 1 | |
| *Polyommatus dolus* | 4 | 4a | | | <1 | stable | 3 | |

Table 13: Summary of status of all European butterflies. For detailed information on the separate countries see appendix 4, 5 and 6. For more information and explanation see the section 2 of part I on Methods.
*: data-quality poor or trend unknown in more than 50% of the range.

| Species | Range affinity | SPEC | Global threat status | European threat status | Present distributio n class (%) | European trend class | Number of countries | Number countries extinct |
|---|---|---|---|---|---|---|---|---|
| *Polyommatus fulgens** | 1 | | | | <1 | unknown | 1 | |
| *Polyommatus menalcas** | 4 | 4a | | | 1-5% | unknown | 1 | |
| *Polyommatus poseidon* | 2 | 3 | | EN | <1 | decr. 20-50% | 2 | |
| *Polyommatus hopfferi** | 4 | 4a | | | <1 | unknown | 1 | |
| *Polyommatus dama* | 4 | 1 | EN | | <1 | decr. 50-80% | 1 | |
| *Polyommatus caeruleus* | 2 | 3 | | Ex | 0 | extinct | 1 | 1 |
| *Polyommatus lycius** | 4 | 4a | | | <1 | unknown | 1 | |
| *Polyommatus wagneri** | 2 | | | | <1 | unknown | 1 | |
| *Polyommatus sertavulensis** | 4 | 4a | | | <1 | unknown | 1 | |
| *Polyommatus altivagans** | 2 | | | | <1 | unknown | 1 | |
| *Polyommatus firdussii** | 2 | | | | <1 | unknown | 1 | |
| *Polyommatus theresiae** | 4 | 4a | | | <1 | unknown | 1 | |
| *Polyommatus elbursicus** | 2 | | | | <1 | unknown | 1 | |
| *Polyommatus ninae** | 4 | 4a | | | <1 | unknown | 1 | |
| *Polyommatus iphigenia** | 1 | | | | <1 | stable | 2 | |
| *Polyom. aserbeidschanus** | 4 | 4a | | | <1 | unknown | 1 | |
| *Polyommatus actis** | 4 | 4a | | | <1 | unknown | 1 | |
| *Polyommatus merhaba** | 4 | 4a | | | <1 | unknown | 1 | |
| *Polyommatus cyaneus** | 4 | 4a | | | <1 | unknown | 1 | |
| *Polyommatus turcicus** | 4 | 4a | | | <1 | unknown | 1 | |
| *Polyommatus huberti** | 4 | 4a | | | <1 | unknown | 1 | |
| *Polyommatus carmon** | 4 | 4a | | | <1 | unknown | 1 | |
| *Polyommatus charmeuxi** | 4 | 4a | | | <1 | unknown | 1 | |
| *Polyommatus tankeri** | 4 | 4a | | | <1 | unknown | 1 | |
| *Polyommatus damon* | 2 | | | LR(nt) | 1-5% | decr. 15-20% | 20 | 1 |
| *Polyommatus baytopi** | 4 | 4a | | | <1 | unknown | 1 | |
| *Polyommatus phyllis** | 2 | | | | <1 | unknown | 1 | |
| *Polyommatus damone** | 2 | 3 | | VU | 1-5% | decr. 20-50% | 2 | |
| *Polyommatus damocles** | 3 | 4b | | | 1-5% | unknown | 1 | |
| *Libythea celtis* | 2 | | | | 1-5% | stable | 20 | |
| *Argynnis paphia** | 2 | | | | >15 | stable | 40 | 1 |
| *Argynnis pandora** | 2 | | | | 5-15% | stable | 24 | |
| *Argynnis aglaja** | 2 | | | | >15 | stable | 40 | |
| *Argynnis adippe** | 2 | | | | >15 | stable | 37 | |
| *Argynnis niobe** | 2 | | | | >15 | stable | 36 | |
| *Argynnis elisa* | 4 | 4a | | | <1 | stable | 2 | |
| *Argynnis laodice** | 2 | | | | >15 | stable | 12 | |
| *Issoria lathonia** | 2 | | | | >15 | stable | 37 | |
| *Issoria eugenia** | 1 | | | | <1 | unknown | 1 | |
| *Brenthis ino** | 2 | | | | >15 | stable | 34 | 1 |
| *Brenthis daphne* | 2 | | | | 5-15% | stable | 26 | |
| *Brenthis hecate** | 2 | | | | 5-15% | stable | 21 | |
| *Brenthis mofidii** | 2 | | | | <1 | unknown | 1 | |
| *Boloria eunomia** | 2 | | | | 5-15% | stable | 21 | 1 |
| *Boloria euphrosyne** | 2 | | | | >15 | stable | 38 | 1 |
| *Boloria titania** | 2 | 3 | | VU | 1-5% | decr. 20-50% | 19 | 2 |
| *Boloria selene** | 2 | | | | >15 | stable | 32 | |
| *Boloria selenis** | 2 | | | | 5-15% | stable | 2 | |
| *Boloria angarensis** | 1 | | | | <1 | unknown | 1 | |
| *Boloria oscarus** | 1 | | | | <1 | unknown | 1 | |
| *Boloria chariclea** | 2 | | | LR(nt) | <1 | stable | 4 | |
| *Boloria freija* | 2 | | | | 5-15% | stable | 7 | 1 |
| *Boloria dia** | 2 | | | | >15 | stable | 32 | |
| *Boloria polaris** | 2 | | | | 1-5% | stable | 4 | |
| *Boloria thore** | 2 | 3 | | VU | 5-15% | decr. 20-50% | 12 | 1 |
| *Boloria frigga* | 2 | 3 | | VU | 5-15% | decr. 20-50% | 8 | |
| *Boloria improba** | 2 | | | LR(nt) | 1-5% | decr. 15-20% | 4 | |
| *Boloria pales* | 2 | | | | 1-5% | stable | 17 | |
| *Boloria caucasica** | 4 | 4a | | | <1 | unknown | 1 | |
| *Boloria napaea* | 2 | | | | 1-5% | stable | 11 | |
| *Boloria aquilonaris* | 2 | | | | 5-15% | stable | 20 | |
| *Boloria graeca** | 4 | 4a | | | 1-5% | stable | 10 | |
| *Boloria alaskensis** | 1 | | | | 1-5% | unknown | 1 | |
| *Vanessa atalanta* | 2 | | | | | | | |
| *Vanessa indica* | 1 | | | | <1 | stable | 2 | |
| *Vanessa cardui* | 2 | | | | | | | |
| *Vanessa virginiensis* | 1 | | | | <1 | decr. 80-100% | 2 | |
| *Inachis io** | 2 | | | | >15 | stable | 40 | |
| *Aglais urticae** | 2 | | | | >15 | stable | 40 | |
| *Polygonia c-album** | 2 | | | | >15 | stable | 39 | |
| *Polygonia egea* | 2 | | | | 5-15% | stable | 13 | |
| *Araschnia levana** | 2 | | | | >15 | stable | 31 | 1 |

Table 13: Summary of status of all European butterflies. For detailed information on the separate countries see appendix 4, 5 and 6. For more information and explanation see the section 2 of part I on Methods.
*: data-quality poor or trend unknown in more than 50% of the range.

| Species | Range affinity | SPEC | Global threat status | European threat status | Present distribution class (%) | European trend class | Number of countries | Number countries extinct |
|---|---|---|---|---|---|---|---|---|
| *Nymphalis antiopa** | 2 | | | | >15 | stable | 37 | 1 |
| *Nymphalis polychloros** | 2 | | | | >15 | stable | 39 | |
| *Nymphalis xanthomelas** | 2 | 3 | | VU | 1-5% | decr. 20-50% | 21 | 3 |
| *Nymphalis vaualbum** | 2 | 3 | | EN | 1-5% | decr. 50-80% | 14 | 3 |
| *Euphydryas iduna* | 2 | | | | 1-5% | stable | 5 | |
| *Euphydryas cynthia* | 4 | 4a | | | <1 | stable | 8 | 1 |
| *Euphydryas intermedia** | 2 | 3 | | EN | <1 | decr. 20-50% | 7 | |
| *Euphydryas maturna* | 2 | 3 | | VU | 1-5% | decr. 20-50% | 24 | 2 |
| *Euphydryas desfontainii* | 3 | 4b | | | 1-5% | stable | 3 | |
| *Euphydryas aurinia** | 2 | 3 | | VU | 5-15% | decr. 20-50% | 38 | 1 |
| *Euphydryas orientalis* | 2 | 3 | | CR | <1 | decr. 80-100% | 1 | |
| *Melitaea cinxia** | 2 | | | | >15 | stable | 38 | |
| *Melitaea phoebe* | 2 | | | | >15 | stable | 33 | 2 |
| *Melitaea punica* | 2 | | | | 1-5% | stable | 1 | |
| *Melitaea collina** | 2 | | | | <1 | unknown | 1 | |
| *Melitaea aetherie** | 2 | 3 | | EN | <1 | decr. 20-50% | 3 | |
| *Melitaea arduinna** | 2 | | | | 5-15% | stable | 7 | |
| *Melitaea trivia* | 2 | | | | 5-15% | stable | 20 | 1 |
| *Melitaea didyma** | 2 | | | | >15 | stable | 30 | 1 |
| *Melitaea persea** | 2 | | | | <1 | unknown | 1 | |
| *Melitaea interrupta** | 2 | | | | <1 | unknown | 1 | |
| *Melitaea diamina** | 2 | | | | >15 | stable | 34 | 2 |
| *Melitaea deione** | 3 | 4b | | | 1-5% | stable | 6 | |
| *Melitaea varia* | 4 | 4a | | | <1 | stable | 4 | |
| *Melitaea parthenoides* | 4 | 4a | | | 1-5% | stable | 7 | |
| *Melitaea aurelia** | 2 | 3 | | VU | 5-15% | decr. 20-50% | 25 | |
| *Melitaea britomartis** | 2 | 3 | | VU | 5-15% | decr. 20-50% | 16 | |
| *Melitaea asteria* | 4 | 4a | | | <1 | incr. 125-200% | 3 | |
| *Melitaea athalia** | 2 | | | | >15 | stable | 39 | |
| *Melitaea caucasogenita** | 4 | 4a | | | <1 | unknown | 1 | |
| *Limenitis populi** | 2 | | | | >15 | stable | 29 | |
| *Limenitis camilla* | 2 | | | | 5-15% | stable | 35 | 1 |
| *Limenitis reducta* | 2 | | | | 5-15% | stable | 25 | 2 |
| *Hypolimnas misippus* | 1 | | | | 0 | unknown | 2 | |
| *Neptis sappho** | 2 | | | LR(nt) | 5-15% | decr. 15-20% | 18 | 2 |
| *Neptis rivularis** | 2 | | | | 5-15% | incr. 125-200% | 19 | |
| *Charaxes jasius* | 2 | | | | 1-5% | stable | 11 | |
| *Euapartura mirza** | 2 | | | | <1 | unknown | 1 | |
| *Apatura metis** | 2 | | | LR(nt) | <1 | stable | 13 | 1 |
| *Apatura ilia** | 2 | | | | >15 | stable | 31 | |
| *Apatura iris** | 2 | | | | >15 | stable | 33 | |
| *Thaleropis ionia** | 3 | 4b | | | <1 | unknown | 1 | |
| *Kirinia roxelana* | 2 | | | | 1-5% | stable | 11 | |
| *Esperarge climene* | 2 | | | | 1-5% | stable | 8 | |
| *Pararge aegeria** | 2 | | | | >15 | stable | 43 | |
| *Pararge xiphioides* | 4 | 4a | | | <1 | stable | 1 | |
| *Pararge xiphia* | 4 | 4a | LR(nt) | | <1 | decr. 15-20% | 1 | |
| *Lasiommata megera** | 2 | | | | >15 | stable | 39 | |
| *Lasiommata paramegaera** | 2 | | | | <1 | unknown | 2 | |
| *Lasiommata petropolitana** | 2 | | | | 5-15% | stable | 27 | |
| *Lasiommata maera** | 2 | | | | >15 | stable | 35 | |
| *Lasiommata menava** | 2 | | | | <1 | unknown | 1 | |
| *Lasiommata deidamia* | 1 | | | | 0 | unknown | 1 | |
| *Lopinga achine** | 2 | 3 | | VU | >15 | decr. 20-50% | 26 | 3 |
| *Ypthima asterope* | 1 | | | | <1 | decr. 20-50% | 3 | |
| *Coenonympha tullia** | 2 | 3 | | VU | 5-15% | decr. 20-50% | 28 | 2 |
| *Coenonympha oedippus** | 2 | 3 | | CR | 1-5% | decr. 80-100% | 14 | 3 |
| *Coenonympha amaryllis** | 1 | | | | 1-5% | unknown | 1 | |
| *Coenonympha rhodopensis** | 4 | 4a | | | <1 | stable | 7 | |
| *Coenonympha arcania* | 2 | | | | >15 | stable | 36 | 1 |
| *Coenonympha glycerion** | 2 | | | | >15 | stable | 29 | |
| *Coenonympha gardetta* | 4 | 4a | | | <1 | stable | 10 | |
| *Coenonympha darwiniana** | 4 | 4a | | | <1 | unknown | 3 | |
| *Coenonympha corinna** | 4 | 4a | | | <1 | unknown | 2 | |
| *Coenonympha elbana** | 4 | 4a | | | <1 | unknown | 1 | |
| *Coenonympha dorus* | 3 | 4b | | | 1-5% | stable | 5 | |
| *Coenonympha hero** | 2 | 3 | | VU | >15 | decr. 20-50% | 19 | 4 |
| *Coenonympha leander** | 2 | | | | 1-5% | stable | 8 | |
| *Coenonympha saadi** | 2 | | | | <1 | unknown | 1 | |
| *Coenonympha symphyta** | 4 | 4a | | | <1 | unknown | 1 | |
| *Coenonympha pamphilus** | 2 | | | | >15 | stable | 40 | |
| *Coenonympha thyrsis* | 4 | 4a | | | <1 | stable | 1 | |

Table 13: Summary of status of all European butterflies. For detailed information on the separate countries see appendix 4, 5 and 6. For more information and explanation see the section 2 of part I on Methods.
*: data-quality poor or trend unknown in more than 50% of the range.

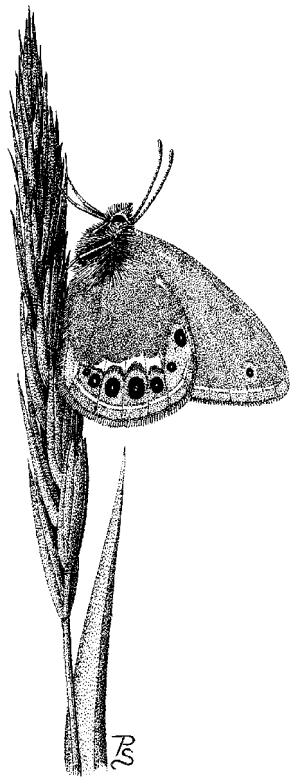
| Species | Range affinity | SPEC | Global threat status | European threat status | Present distributio n class (%) | European trend class | Number of countries | Number countries extinct |
|---|---|---|---|---|---|---|---|---|
| *Triphysa phryne** | 2 | 3 | | CR | <1 | decr. 80-100% | 3 | 1 |
| *Pyronia tithonus* | 2 | | | | 5-15% | stable | 27 | 2 |
| *Pyronia cecilia* | 2 | | | | 1-5% | stable | 9 | 1 |
| *Pyronia bathseba* | 2 | | | | 1-5% | stable | 3 | |
| *Aphantopus hyperantus** | 2 | | | | >15 | stable | 36 | |
| *Maniola telmessia* | 2 | | | | 1-5% | stable | 2 | |
| *Maniola cypricola** | 4 | 4a | | | <1 | unknown | 1 | |
| *Maniola halicarnassus** | 4 | 4a | | | <1 | unknown | 2 | |
| *Maniola nurag** | 4 | 4a | | | <1 | unknown | 1 | |
| *Maniola chia* | 4 | 4a | | | <1 | stable | 1 | |
| *Maniola jurtina** | 2 | | | | >15 | stable | 41 | |
| *Maniola megala** | 4 | 4a | | | <1 | unknown | 2 | |
| *Hyponephele wagneri** | 2 | | | | <1 | unknown | 1 | |
| *Hyponephele urartua** | 4 | 4a | | | <1 | unknown | 1 | |
| *Hyponephele naricina** | 2 | | | | <1 | unknown | 1 | |
| *Hyponephele cadusia** | 2 | | | | <1 | unknown | 1 | |
| *Hyponephele kocaki** | 4 | 4a | | | <1 | unknown | 1 | |
| *Hyponephele lycaon** | 2 | | | | >15 | stable | 30 | 1 |
| *Hyponephele lupinus* | 2 | | | | 5-15% | stable | 20 | |
| *Proterebia afra** | 2 | | | | 1-5% | stable | 5 | |
| *Erebia ligea** | 2 | | | | >15 | stable | 28 | |
| *Erebia euryale** | 2 | | | | 1-5% | stable | 22 | |
| *Erebia eriphyle* | 4 | 4a | | | <1 | stable | 5 | |
| *Erebia manto* | 4 | 4a | | | <1 | stable | 14 | |
| *Erebia claudina* | 4 | 4a | | | <1 | stable | 1 | |
| *Erebia flavofasciata** | 4 | 4a | | | <1 | stable | 3 | |
| *Erebia epiphron* | 4 | 4a | | | 1-5% | stable | 21 | 2 |
| *Erebia orientalis* | 4 | 4a | | | <1 | stable | 2 | |
| *Erebia christi** | 4 | 1 | VU | | <1 | decr. 20-50% | 2 | |
| *Erebia pharte* | 4 | 4a | | | <1 | stable | 10 | |
| *Erebia melampus* | 4 | 4a | | | <1 | stable | 7 | 1 |
| *Erebia sudetica* | 4 | 1 | VU | | <1 | decr. 20-50% | 5 | 1 |
| *Erebia aethiops** | 2 | | | LR(nt) | 5-15% | decr. 15-20% | 28 | 2 |
| *Erebia triaria* | 4 | 4a | | | 1-5% | stable | 10 | 1 |
| *Erebia rossii** | 2 | | | | <1 | unknown | 1 | |
| *Erebia embla* | 2 | 3 | | VU | 5-15% | decr. 20-50% | 6 | |
| *Erebia disa** | 2 | | | | 5-15% | stable | 4 | |
| *Erebia cyclopius** | 1 | | | | <1 | unknown | 1 | |
| *Erebia fasciata** | 1 | | | | <1 | unknown | 1 | |
| *Erebia medusa** | 2 | 3 | | VU | 5-15% | decr. 20-50% | 26 | 2 |
| *Erebia hewitsonii** | 4 | 4a | | | <1 | unknown | 1 | |
| *Erebia polaris** | 2 | | | LR(nt) | <1 | stable | 3 | |
| *Erebia edda** | 1 | | | | <1 | unknown | 1 | |
| *Erebia alberganus** | 4 | 4a | | | <1 | stable | 7 | 1 |
| *Erebia pluto* | 4 | 4a | | | <1 | stable | 7 | |
| *Erebia gorge* | 4 | 4a | | | <1 | stable | 18 | 1 |
| *Erebia rhodopensis** | 4 | 4a | | | <1 | stable | 4 | |
| *Erebia aethiopella* | 4 | 4a | | | <1 | stable | 2 | |
| *Erebia mnestra* | 4 | 4a | | | <1 | stable | 4 | |
| *Erebia gorgone** | 4 | 4a | | | <1 | unknown | 3 | |
| *Erebia epistygne** | 4 | 1 | VU | | <1 | decr. 20-50% | 2 | |
| *Erebia ottomana** | 2 | | | LR(nt) | <1 | stable | 10 | |
| *Erebia graucasica** | 4 | 4a | | | 1-5% | unknown | 2 | |
| *Erebia iranica** | 2 | | | | <1 | unknown | 2 | |
| *Erebia melancholica** | 4 | 4a | | | 1-5% | unknown | 2 | |
| *Erebia tyndarus* | 4 | 4a | | | <1 | stable | 6 | 1 |
| *Erebia nivalis* | 4 | 4a | | | <1 | stable | 3 | |
| *Erebia calcaria* | 4 | 4a | | | <1 | stable | 3 | |
| *Erebia cassioides* | 4 | 4a | | | 1-5% | stable | 13 | |
| *Erebia hispania* | 4 | 4a | | | <1 | stable | 3 | |
| *Erebia pronoe** | 4 | 4a | | | <1 | stable | 18 | 1 |
| *Erebia lefebvrei* | 4 | 4a | | | <1 | stable | 3 | |
| *Erebia scipio** | 4 | 4a | | | <1 | unknown | 2 | |
| *Erebia stirius** | 4 | 4a | | | <1 | stable | 5 | 1 |
| *Erebia styx** | 4 | 4a | | | <1 | stable | 5 | |
| *Erebia montana** | 4 | 4a | | | <1 | stable | 6 | |
| *Erebia zapateri* | 4 | 4a | | | <1 | stable | 1 | |
| *Erebia neoridas* | 4 | 4a | | | <1 | stable | 4 | |
| *Erebia melas* | 4 | 4a | LR(nt) | | <1 | decr. 15-20% | 10 | 1 |
| *Erebia oeme* | 4 | 4a | | | <1 | stable | 16 | |
| *Erebia meolans* | 4 | 4a | | | 1-5% | stable | 9 | 1 |
| *Erebia palarica* | 4 | 4a | | | <1 | stable | 1 | |

Table 13: Summary of status of all European butterflies. For detailed information on the separate countries see appendix 4, 5 and 6. For more information and explanation see the section 2 of part I on Methods.
*: data-quality poor or trend unknown in more than 50% of the range.

| Species | Range affinity | SPEC | Global threat status | European threat status | Present distributio n class (%) | European trend class | Number of countries | Number countries extinct |
|---|---|---|---|---|---|---|---|---|
| *Erebia discoidalis** | 2 | | | | <1 | unknown | 1 | |
| *Erebia pandrose* | 2 | | | | 5-15% | stable | 22 | 1 |
| *Erebia sthennyo** | 4 | 4a | | | <1 | stable | 2 | |
| *Melanargia russiae** | 2 | | | | 5-15% | stable | 12 | 1 |
| *Melanargia galathea* | 3 | 4b | | | >15 | stable | 29 | |
| *Melanargia lachesis* | 4 | 4a | | | 1-5% | stable | 6 | |
| *Melanargia syriaca* | 4 | 4a | | | <1 | stable | 1 | |
| *Melanargia hylata* | 2 | | | LR(nt) | <1 | stable | 1 | |
| *Melanargia grumi** | 4 | 4a | | | <1 | unknown | 1 | |
| *Melanargia titea* | 2 | 3 | | EN | <1 | decr. 20-50% | 1 | |
| *Melanargia larissa* | 4 | 4a | | | 1-5% | stable | 8 | |
| *Melanargia arge** | 4 | 4a | | | <1 | unknown | 1 | |
| *Melanargia occitanica* | 2 | | | | 1-5% | stable | 4 | |
| *Melanargia pherusia** | 4 | 4a | | | <1 | unknown | 1 | |
| *Melanargia ines* | 2 | | | | 1-5% | stable | 2 | |
| *Satyrus favonius** | 2 | | | | <1 | unknown | 1 | |
| *Satyrus parthicus** | 2 | | | | <1 | unknown | 1 | |
| *Satyrus ferula** | 2 | | | | 5-15% | stable | 15 | |
| *Satyrus amasinus** | 2 | | | | <1 | unknown | 1 | |
| *Satyrus actaea* | 4 | 4a | | | 1-5% | stable | 6 | |
| *Minois dryas* | 2 | | | | 1-5% | stable | 27 | 1 |
| *Hipparchia fagi* | 4 | 4a | | | 5-15% | stable | 23 | 1 |
| *Hipparchia alcyone* | 2 | | | | 1-5% | stable | 20 | 1 |
| *Hipparchia syriaca* | 2 | | | | 1-5% | stable | 10 | |
| *Hipparchia autonoe** | 2 | | | | 1-5% | unknown | 1 | |
| *Hipparchia neomiris* | 4 | 4a | | | <1 | stable | 2 | |
| *Hipparchia aristaeus* | 4 | 4a | | | <1 | stable | 5 | |
| *Hipparchia cretica* | 4 | 4a | | | <1 | stable | 1 | |
| *Hipparchia semele* | 4 | 4a | | | >15 | stable | 34 | |
| *Hipparchia mersina* | 4 | 4a | LR(nt) | | <1 | decr. 15-20% | 2 | |
| *Hipparchia volgensis** | 4 | 4a | | | 1-5% | stable | 6 | |
| *Hipparchia christenseni* | 4 | 4a | | | <1 | stable | 1 | |
| *Hipparchia pellucida* | 2 | | | LR(nt) | <1 | stable | 5 | |
| *Hipparchia statilinus* | 3 | 4b | | | 5-15% | stable | 28 | 1 |
| *Hipparchia fatua** | 2 | | | | 1-5% | stable | 7 | |
| *Hipparchia parisatis** | 2 | | | | <1 | unknown | 1 | |
| *Hipparchia fidia* | 3 | 4b | | | 1-5% | stable | 4 | |
| *Hipparchia maderensis* | 4 | 1 | VU | | <1 | decr. 20-50% | 1 | |
| *Hipparchia azorina* | 4 | 1 | VU | | <1 | decr. 20-50% | 1 | |
| *Hipparchia occidentalis* | 4 | 1 | EN | | <1 | decr. 20-50% | 1 | |
| *Hipparchia miguelensis* | 4 | 1 | VU | | <1 | decr. 20-50% | 1 | |
| *Hipparchia wyssii* | 4 | 4a | | | <1 | stable | 1 | |
| *Hipparchia bacchus* | 4 | 4a | | | <1 | stable | 1 | |
| *Hipparchia gomera* | 4 | 4a | | | <1 | stable | 1 | |
| *Hipparchia tilosi* | 4 | 4a | | | <1 | stable | 1 | |
| *Hipparchia senthes** | 2 | | | | <1 | unknown | 1 | |
| *Arethusana arethusa* | 2 | | | | 5-15% | stable | 22 | 1 |
| *Brintesia circe* | 3 | 4b | | | 5-15% | stable | 26 | 1 |
| *Chazara briseis** | 2 | | | | >15 | stable | 26 | 2 |
| *Chazara persephone** | 2 | | | | 1-5% | unknown | 2 | |
| *Chazara egina** | 4 | 4a | | | <1 | unknown | 1 | |
| *Chazara bischoffii** | 2 | | | | 1-5% | unknown | 1 | |
| *Chazara prieuri** | 3 | 4b | | | <1 | unknown | 1 | |
| *Pseudochazara geyeri** | 2 | | | LR(nt) | <1 | stable | 5 | |
| *Pseudochazara beroe** | 2 | | | | <1 | unknown | 1 | |
| *Pseudochazara graeca* | 4 | 4a | | | <1 | stable | 2 | |
| *Pseudochazara amymone** | 4 | 4a | | | <1 | unknown | 1 | |
| *Pseudochazara orestes** | 4 | 4a | | | <1 | unknown | 2 | |
| *Pseudochazara euxina** | 4 | 1 | VU | | <1 | decr. 20-50% | 2 | |
| *Pseudochazara hippolyte** | 2 | | | | 1-5% | unknown | 2 | |
| *Pseudochazara quirensis** | 1 | | | | 1-5% | unknown | 1 | |
| *Pseudochazara lydia** | 4 | 4a | | | <1 | unknown | 1 | |
| *Pseudochazara mamurra** | 3 | 4b | | | <1 | unknown | 1 | |
| *Pseudochazara schakuhensis** | 2 | | | | <1 | unknown | 1 | |
| *Pseudochazara pelopea** | 2 | | | | 1-5% | unknown | 1 | |
| *Pseudochazara alpina** | 1 | | | | <1 | unknown | 1 | |
| *Pseudochazara mniszechii* | 4 | 4a | | | 1-5% | stable | 2 | |
| *Pseudochazara cingovskii** | 4 | 4a | | | <1 | stable | 2 | |
| *Pseudochazara anthelea* | 4 | 4a | | | 1-5% | stable | 7 | |
| *Pseudochazara thelephassa* | 2 | | | | <1 | unknown | 1 | |
| *Oeneis norna* | 2 | | | | 5-15% | stable | 4 | |
| *Oeneis bore** | 2 | | | LR(nt) | <1 | stable | 4 | |

Table 13: Summary of status of all European butterflies. For detailed information on the separate countries see appendix 4, 5 and 6. For more information and explanation see the section 2 of part I on Methods.
*: data-quality poor or trend unknown in more than 50% of the range.

| Species | Range affinity | SPEC | Global threat status | European threat status | Present distribution class (%) | European trend class | Number of countries | Number countries extinct |
|---|---|---|---|---|---|---|---|---|
| *Oeneis glacialis** | 4 | 4a | | | <1 | stable | 6 | |
| *Oeneis jutta* | 2 | | | LR(nt) | 5-15% | decr. 15-20% | 9 | |
| *Oeneis melissa** | 1 | | | | 1-5% | unknown | 1 | |
| *Oeneis patrushevae** | 1 | | | | 1-5% | unknown | 1 | |
| *Oeneis polixenes** | 1 | | | | 1-5% | unknown | 1 | |
| *Oeneis tarpeia** | 2 | | | | 1-5% | unknown | 1 | |
| *Danaus plexippus* | 1 | | | | <1 | decr. 20-50% | 4 | |
| *Danaus chrysippus* | 1 | | | | <1 | incr. 125-200% | 7 | |



*Coenonympha hero* is a characteristic butterfly of wet, open forests. In Western and Central Europe this species has decreased sharply and is now even extinct in four countries.
For this reason it is listed on Appendix II of the Bern Convention.
Main threats are changes in woodland management and land drainage. At present strong populations are only found in Russia and the Baltic states.

*Drawing by Paul Schoenmakers, The Netherlands*

# 6. BUTTERFLY CONSERVATION IN EUROPE

## 6.1 General conclusions

The decline of Europe's butterflies has been recognised for many years (e.g. Heath, 1981; Pavlicek-van Beek *et al.*, 1992; Pullin, 1995) but this review documents for the first time the true scale and extent of the problem. The results confirm what has long been suspected, namely that a large number of butterflies are declining through substantial parts of their range and many are now seriously threatened. Moreover it is likely that the situation may be even worse than has been shown as data are sparse for many countries and species declines may consequently have been underestimated or not reported due to lack of good evidence.

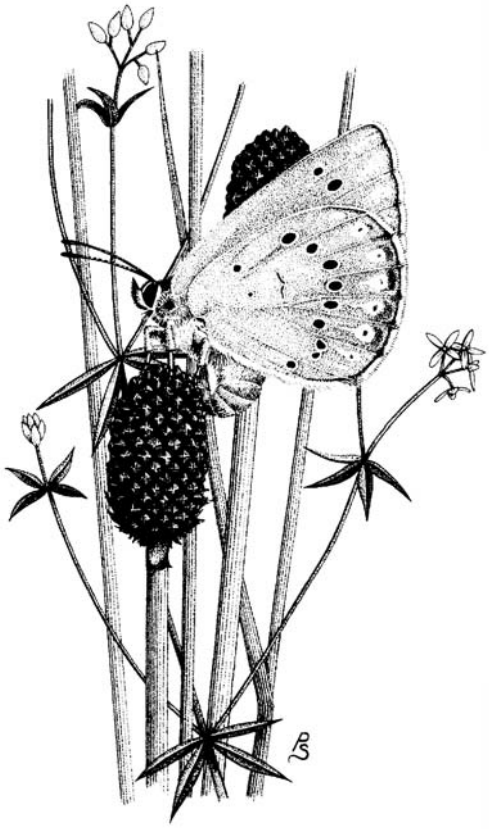
The decline of butterflies is of course just one facet of the loss of wildlife in general and most European countries have taken measures to conserve their biodiversity and wild habitats, for example by the declaration of National Parks and nature reserves. Many countries have also taken specific measures to conserve certain butterfly species, for example by listing them in protective legislation or creating particular reserves (for a review of legislation see Collins, 1987). Butterflies have also been protected under various pan-European measures, notably the Bern Convention, CITES, and the EC Habitats and Species Directive.

**Despite these considerable efforts, many European butterflies are continuing to decline at an alarming rate and we can only conclude that existing measures are inadequate. A major new initiative for conserving Europe's butterflies must therefore be developed urgently if we are to stem their declines and ensure they are conserved far more effectively in the future. We hope this review will provide the impetus for this to happen without any further delay.**

The review highlights that Europe is a very significant area for butterflies and that of the 543 main species (excluding 33 on the extreme edge of their range), 189 are European endemic - over one-third of the total. These species are a particular European responsibility as they cannot be conserved anywhere else in the world. It is essential that all such endemics which have been classified as globally threatened (SPEC 1 = 19 species) are put at the top of any lists for action. Such species typically have highly restricted distributions and require specific and localised action. Other endemics, or species with a large part of their world range in Europe but which are not currently threatened (SPEC 4a and 4b = 203 species), should be monitored regularly to ensure their habitats are conserved and that they remain secure.

There are also many endemic sub-species within Europe that are worthy of conservation in their own right. However, the definition and identification of sub-species is a complex subject and there are widely different opinions amongst entomologists. We have therefore not considered sub-species within this pan-European report and suggest that they should be given special attention at a country level.

Species that are more widespread both within and outside Europe, but which are now known to be declining seriously (SPEC 2 = 5 species and SPEC 3 = 47 species), indicate far larger and potentially more serious problems. Because they often occur over wide areas, the factors causing their decline are also likely to be more ubiquitous and possibly more intractable to remedy. Moreover, they almost certainly indicate land use changes that are having a large adverse effect on biodiversity in general, and which are probably causing declines among many other less well known groups of invertebrates. The fact that so many species appear on the SPEC 3 list, and that many others are almost in that category (LR, near threatened), is extremely worrying. Indeed our findings for butterflies mirror those recently published for birds (Tucker & Heath, 1994), with widespread declines shown in both groups. Our results for butterflies should set alarm bells ringing even louder about the state of Europe's biodiversity.



*Maculinea teleius* is one of many formerly widespread European butterflies that is in steep decline due to loss of habitat and the cessation of traditional agricultural management. It breeds in damp hay meadows that are maintained by periodic cutting. It is also one of five threatened European *Maculinea* species each of which have complex life-cycles and live for much of the year as parasites within ants nests.

*Drawing by Paul Schoenmakers, The Netherlands*

## 6.2 Important habitats for butterflies in Europe

The data gathered in this report show that butterflies use a wide range of habitats in Europe, but that a very large proportion of species breed in grassland habitats. Amongst the most threatened butterflies (SPEC 1-3), the top five habitats used are all grasslands: the most important being dry, calcareous grassland (and steppes) followed closely by mesophile grasslands (including pastures and hay meadows) and alpine and sub-alpine grasslands (Table 14 & Figure 10). Many of these grasslands are not climax communities and are maintained by traditional systems of low intensity livestock grazing (e.g. Baldock, Beaufoy & Clark, 1994).

Woodland and scrub are important for several species, but within these habitats many species rely on open areas and clearings (e.g. *Melitaea aetherie, Lopinga achine*) or woodland margins and wood/grass mosaics (e.g. *Leptidea morsei, Euphydryas maturna*). These species require some positive management of woodlands for their continued survival, either regular forest management or grazing/cutting of neighbouring grassland. Comparatively few threatened species breed in the woodland canopy, although this is an important habitat for species such as *Nymphalis vau-album*. Other important habitats for smaller numbers of threatened butterflies are heathland, raised bogs, and fens (e.g. *Boloria frigga, Coenonympha tullia*).

Agricultural and artificial landscapes were only reported to be important for a few threatened butterflies, notably the three endemic *Hipparchia species* in the Azores. These can occur in fallow land that is periodically grazed under a system of nomadic pastoralism (Meyer, 1993).

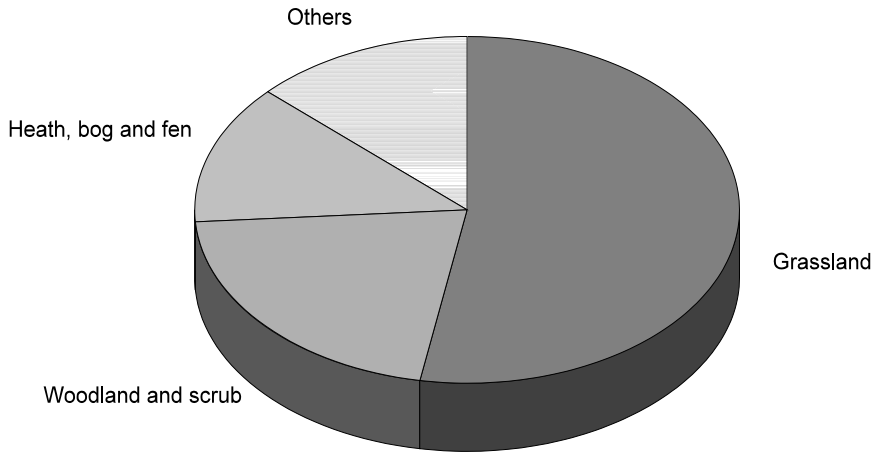



**Figure 10:** Broad habitat types used by threatened European butterflies (average percentage occurrence of SPEC 1-3 species).

**Table 14:** Main habitats of threatened butterflies in Europe.

| Corine habitat type | Average percentage occurrence of SPEC 1-3 species |
|---|---|
| dry calcareous grasslands and steppes | 15,5 |
| mesophile grasslands | 11,0 |
| alpine and subalpine grasslands | 9,6 |
| dry siliceous grasslands | 8,4 |
| humid grasslands and tall herb communities | 7,3 |
| broad-leaved deciduous forests | 5,5 |
| heath and scrub | 5,5 |
| mixed woodland | 5,2 |
| raised bogs | 3,9 |
| coniferous woodland | 3,6 |
| broad-leaved evergreen woodland | 3,1 |
| sclerophyllous scrub | 3,0 |
| inland cliffs and exposed rocks | 2,3 |
| fens, transition mires and springs | 2,1 |
| blanket bogs | 1,9 |
| phrygana | 1,8 |
| agricultural land and artificial landscapes | 1,7 |
| fallow land, waste places | 1,7 |
| water-fringe vegetation | 1,4 |
| alluvial and very wet forests and brush | 1,1 |
| screes | 1,1 |
| tree lines, hedges, small woods, bocage, parkland dehesa | 0,8 |
| inland sand-dunes | 0,6 |
| urban parks and large gardens | 0,4 |
| volcanic features | 0,4 |
| coastal sand-dunes and sand beaches | 0,3 |
| orchards, groves and tree plantations | 0,3 |
| towns, villages, industrial sites | 0,3 |
| cliffs and rocky shores | 0,1 |
| islets and rock stacks | 0,1 |

## 6.3 Threats

Data on threats has been gathered for the threatened species in Europe as part of the datasheet questionnaire (Part II) and results are shown in Table 15. The biggest threat is from agricultural improvements which are affecting almost 90% of species. This broad threat comprises a wide range of activities from conversion of unimproved grasslands to arable crops, to fertilisation of pastureland. The increasing use of herbicides and pesticides on farmland is also a serious problem for butterflies (affecting 80% of species), especially in some eastern countries where economic pressures are more severe and regulations are less strict. Built developments such as roads, quarries and housing are also important (affecting 80% of threatened species). As a result of this massive direct loss of breeding areas, a growing threat is from the subsequent isolation and fragmentation of habitats which now affects 87% of threatened species.

Perhaps the biggest other threat comes from the abandonment of agricultural land and changing habitat management. This is thought to be affecting 65% of species and is symptomatic of the widespread cessation of traditional farming systems which is known to be affecting a variety of other wildlife groups (Poole *et al.*, 1998; Tucker & Heath, 1994). Examples of changing management include the cessation of cutting of damp hay meadows (affecting species like *Maculinea nausithous, M. teleius,* and *Lycaena helle*) and abandonment of pasture land (affecting species such as *Euphydryas aurinia* and *Maculinea alcon*). Drainage of wetlands is also a serious problem for many of these species as it is for species restricted to bogs and heathland (e.g. *Pyrgus centaurea, Boloria frigga* and *Coenonympha tullia*).

**Table 15:** Important threats to the 69 most threatened butterflies in Europe (SPEC 1-3). For details see Datasheets in part II.
*Average grade of threat: 1 = low, 2 = medium, 3 = high*

| Threat | Number of species | Average grade of threat |
|---|---|---|
| Agricultural improvements | 63 | 2,1 |
| Isolation and fragmentation of habitat | 62 | 2,1 |
| Built development (inc. roads, housing and mining) | 58 | 1,8 |
| Chemical pollution (inc. herbicides and pesticides) | 55 | 1,8 |
| Afforestation on non-woodland habitats | 53 | 1,9 |
| Recreational pressure and disturbance | 48 | 1,8 |
| Agricultural abandonment and changing management | 46 | 2,1 |
| Collecting (killing or taking) | 46 | 1,4 |
| Felling/destruction of woodland | 45 | 2,1 |
| Abandonment and change of woodland management | 45 | 1,9 |
| Climatic change | 45 | 1,7 |
| Land claims / coastal development | 41 | 2,1 |
| Natural ecological change (e.g. myxomatosis effect on rabbits) | 37 | 1,8 |
| Land drainage | 33 | 2,2 |

Similar problems of abandonment and changing management were also reported in woodland habitats, affecting 63% of threatened species. This has been recognised as a major problem in western countries for many years (eg. Warren & Key, 1993) but is obviously becoming a widespread European problem. Afforestation of non-woodland habitats is also a major threat to many species, especially those occuring in small breeding areas such as *Parnassius apollo*.

Contrary to many peoples views of threats to butterflies, collecting was reported to be only a very minor or local importance. However, there were some important exceptions of species which are possibly quite seriously threatened by collecting, notably *Parnassius apollo, Polyommatus humedasae, Polyommatus poseidon, Polyommatus damone, Euphydryas maturna* and *Coenonympha oedippus*. Nevertheless, all these species are suffering far more seriously from problems such as habitat loss or changing habitat management.

Climatic change is also mentioned as a potential threat to several species, notably highly restricted montane endemics which are closely evolved to specific vulnerable habitats and which have very limited possibility of adapting to change (see Dennis, 1993).

When considering threats to butterflies it is worth stressing that the Europe covered by this report is a very large and diverse region, and it is clear that the types of threat vary considerably from country to country. This partly reflects the fact that the types of habitat used by each species varies naturally in different climatic areas, but also reflects the wide variation of economic and political situations. For example, the compiler from Romania (Sergiu Mihut) reports major problems to butterflies resulting from recent political changes which has led to the subdivision of land, break up of previous nature reserves and increasing use of persistent chemicals on farmland. The increased demand for livestock production is also leading to overgrazing of pastureland while many habitats are suffering from development pressure. Thus while there are obviously common threats that operate throughout Europe, each country has its own individual set of problems that need to be addressed in any conservation strategy.

*Lopinga achine* breeds in grassy woodland clearings and in the margins of surrounding meadows. It has declined severely in many countries as a result of changing woodland management and especially the loss of clearings. Habitat management and the maintenance of clearings and grass/wood mosaics is essential to its future survival.

*Drawing by Paul Schoenmakers, The Netherlands*

It seems likely that nearly all major threats identified for butterflies will continue to operate in the foreseeable future, and may become even worse in some countries. For example, eastern European countries may experience increasing agricultural intensification now that their markets are becoming more open. The speed of change in some may also change rapidly if, as seems likely, they join the European Community and have access to extra subsidies for increased production. This is a particularly serious potential threat as these countries hold a disproportionate number of threatened butterflies (section 5.1).

On the plus side, there is a growing move to reform EC agricultural and forestry policies to encourage more environmentally sustainable systems, for example within mechanisms such as the Agri-environment Regulation (EC Reg. 2078/92) . Although schemes currently being funded under such regulations comprise a very small proportion of the agricultural budget, they have the potential to help slow down some of the trends reported. However, much wider reforms of agricultural policies are also urgently needed (e.g. see Tucker & Heath, 1994; Beaufoy *et al.*, 1994; Poole *et al.*, 1998). Policies such as the EC Habitats and Species Directive may also help to slow change but many countries have been slow to implement this Directive and its likely impact on butterflies remains uncertain.

## 6.4 Towards a conservation strategy for European butterflies

The findings of this report clearly demonstrate that a new conservation strategy needs to be developed urgently for butterflies and that a whole range of conservation measures need to be considered. Specifically, we believe the following topics need to be addressed:

**1. Legislation**
Legislation can play a crucial role in the conservation of Europe's butterflies, provided that it is directed primarily towards the protection and proper management of important butterfly habitats. It must be stressed that a simple ban on collecting is not an effective way of conserving butterflies, especially as our results show that is a comparatively minor threat. Moreover, simple bans on collecting can even be counter-productive since it hinders butterfly research by amateurs.

The findings of this review show clearly that the butterfly species listed under existing pan-European legislation is in urgent need of revision. We therefore urge that the new information is used to revise the various lists and annexes at the earliest opportunity. Specifically, we recommend that threatened species endemic to Europe (SPEC 1) and all *Extinct, Critically endangered* and *Endangered* species found within and outside Europe (SPEC 2 and 3) should be listed on the Bern Convention and the relevant species listed in any revision of Annexe II of the EC Habitats and Species Directive (see section 5.2). We further recommend that individual European countries incorporate European threatened species when amending their domestic legislation, so that they address international priorities as well as national and regional ones.

**2. Habitat protection**
It is clear that important wildlife habitats are still being destroyed across Europe and that a vastly improved system of habitat protection is needed both within individual countries and at a pan-European level. The EC Habitats and Species Directive is undoubtedly improving the situation within the EC, but progress in implementing the Directive has been very slow in some Member States, and inadequate in others. It is also unclear to what extent key butterfly habitats are being protected under the new measures: this would be a very useful topic for future study.

The improved protection of habitats needs to occur both at the local, site level but also at a larger landscape level. Experience within the UK and the Netherlands has shown that species continue to disappear from nature reserves often because they are too small and isolated (Thomas, 1984; Thomas, 1995; Wynhoff & van Swaay, 1995). Far more emphasis needs to be placed on the protection of whole landscapes as well as individual sites (Warren, 1992). To help identify priorities for action, we recommend that a review is conducted to identify the Prime Butterfly Areas of Europe, similar to the Important Bird Areas identified by Grimmett & Jones (1989). Such an analysis should take account of butterfly hot-spots within Europe which contain particularly rich assemblages of species (Dennis & Williams, 1995; Dennis *et al.*, 1998).

**3. Habitat management**
Butterflies have very specific habitat requirements and occupy very specific and narrow ecological niches. Many are restricted not only to just one or two food-plants and to particular types of vegetation, but also to particular successional stages. For example, a large number of species rely on grassland biotopes that would normally succeed to woodland unless they were regularly managed. For

centuries, such grasslands have been maintained by traditional systems of livestock grazing or hay-cutting and many studies have shown that butterfly losses are directly caused not by habitat destruction but by the breakdown of some traditional farming or forestry system (e.g. Erhardt, 1995). The future of many butterflies in Europe will thus depend on the continuation of such traditional regimes, or some near equivalent that will produce a similar range of habitat conditions. This presents a major challenge to conservationists in the face of increasing pressure to intensify and modernise agricultural and timber production. It is important to recognise that this issue is vital to a wide range of other wildlife groups and has been recognised by many other conservationists, for example WWF International and the European Forum on Nature Conservation and Pastoralism (Baldock *et al.*, 1994; Poole *et al.*, 1998; Tucker & Heath, 1994).

We recommend that far more attention is paid to maintaining appropriate management systems within protected areas and that measures are taken to maintain such systems on semi-natural habitats throughout Europe. This will require changes at a strategic policy level as well as producing management plans for individual sites or areas. For example the EC Common Agricultural Policy, which has been a major engine of agricultural intensification and habitat loss, but also has a huge potential to enhance semi-natural habitats through its Agri-environment Regulation (EC Reg. 2078/92). As a first step we would like to see the rapid expansion of this programme and the better integration of environmental objectives into all aspects of European agricultural forestry policy.

Through much of its European range *Euphydryas aurinia* relies on the maintenance of traditional low intensity grazing regimes. The species has highly dynamic populations and is declining due to the fragmentation of its grassland habitats as well as from changing management. The continuation of traditional agricultural practices is an important issue for many other wildlife groups and will require action both at a policy and local level.

*Drawing by Paul Schoenmakers, The Netherlands*

**4. Research and monitoring**

In conducting this review we have inevitably been limited by the quality of the data that is available on European butterflies. While a few countries have extremely good recording and monitoring schemes, others have very poor data and species assessment has had to be far more subjective. We have made allowances for this in our analysis and have incorporated a data quality element, but it must be a priority to establish adequate recording and monitoring in every country as soon as possible. This is important not only to allow a more accurate assessment in the future, but also to allow continuous updates on species status and assessment of future environmental change or conservation measures. A project is currently underway to produce distribution maps for all European butterflies (Kudrna, 1996) and we hope these will help to further refine our knowledge of threatened species and target conservation action.

There is currently a responsibility for all signatories to the 1992 Convention on Biological diversity (which includes most European countries and the European Community itself) to adequately monitor the impact of land-use activities on the environment, including its biodiversity. We hope that all European countries take this obligation seriously and use butterflies as a key indicator of the biological impact of their policies. The data gathered in this review has highlighted the major gaps in our knowledge of butterfly populations and where future improvements need to be targeted. There is also scope for developing European wide co-operation in the development of a European-wide butterfly monitoring strategy.

Because each butterfly has specific requirements, conservation action is only likely to be successful if it is based on thorough knowledge of both the species and its habitats (e.g. Thomas, 1984; Warren, 1992). Ecological research is thus vital to underpin any conservation strategy and must take a priority in any new programme. While much is known about the ecology of butterflies in general, the requirements of many threatened species remain poorly known.

**5. Fragmentation of habitats and the wider countryside**

The dramatic loss of habitats in recent decades has left many brought about additional problems to butterflies due to the fragmentation and isolation of remaining patches. Recent studies in western Europe have shown that many species now exist as metapopulations which rely on networks of small habitat patches. Within these patches, there is periodic extinction and re-colonisation and the regional survival of the species probably depends on the maintenance of a whole network of nearby habitats, not all of which may be occupied at any moment in time (Hanski & Gilpin, 1991; Thomas, 1995).

Little is known about the functioning of these metapopulations in practice and much of the conclusions are based on the imprecise procedure of modelling. Nevertheless, there is growing evidence for a metapopulation structure in several threatened species (e.g. Hanski *et al.*, 1995; Thomas, 1993; Thomas *et al.*, 1995; Warren, 1994) and it's essential to incorporate this into any conservation strategy. The main implication is that we need to consider the conservation of whole landscapes, as well as the individual components of that landscape. This will require the integration of all land-use policies, including the Common Agricultural Policy and the planning system to ensure sustainable development and the maintenance of biodiversity. The potential of new positive measures under the EC Agri-environmental Regulation has been mentioned earlier and could play an important role in wider landscape conservation. This has been recognised in the UK and schemes such as Environmentally Sensitive Areas are now being refined to include specific biodiversity objectives, including the needs of several threatened butterflies (e.g. Warren & Bourn, 1997).

Butterflies may also be adversely affected by other widescale environmental changes, including pollution and global climate change. Data on the likely impact of

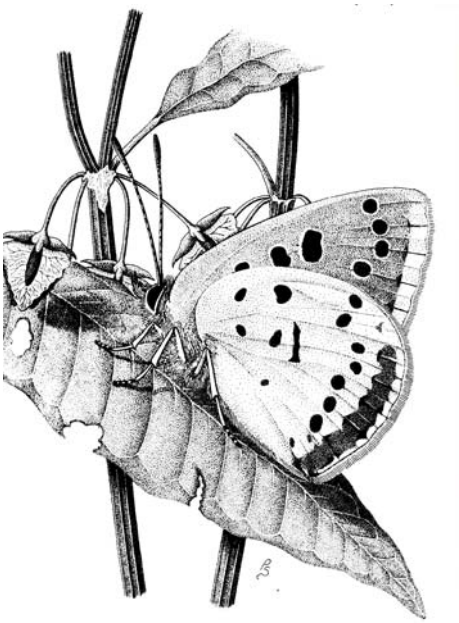
the latter is patchy at present but has been considered by several authors (e.g. Dennis, 1993; Elmes & Free, 1994). Climate change remains a particular threat to highly restricted montane endemics in Europe because their habitats are vulnerable and because they are finely adapted to specific conditions. Clearly further research is needed on the impact of such factors on all wildlife, but studies on butterflies should be included because they are so sensitive to environmental change.

Throughout this report we have concentrated on identifying the most threatened species within Europe and measures needed to protect them. However, we have identified a further 43 species that are classified as “near threatened” and it is clear that many other species are declining steadily and may become threatened unless remedial action is taken at a larger scale.

**6. The co-ordination of an overall action plan for European butterflies**

The implementation of so many measures will require concerted action across a wide range of countries and organisations. This would best be done under the aegis of an overall co-ordinated plan. Within such a plan, a balance needs to be struck between the species and habitat approach. We certainly do not favour one above the other and believe that a combination may be most efficient. Species confined to just one type of habitat, or possibly one region could sensibly be considered together. However, we believe that all species identified as threatened in Europe (SPEC 1-3) should receive specific attention within one or other type of plan.

Within the UK and The Netherlands, there now exists rapidly growing national Societies dedicated to the conservation of butterflies (the British Butterfly Conservation Society and Dutch Butterfly Conservation/De Vlinderstichting) and both are now drawing up strategic Species Action Plans for threatened butterflies (Barnett & Warren, 1996; van Swaay, 1997b). We believe these can act as models for developing European wide plans, but would require a hitherto unprecedented level of pan-European co-operation and commitment. There is now considerable interest in the conservation of butterflies throughout Europe and many countries have active research groups. We believe the time is right for a major European initiative and our results have underlined the likely dire consequences of any delay.



*Lycaena dispar* is a species widely distributed over Europe. A number of subspecies have been described, of which *L. dispar dispar* is extinct in the United Kingdom and *L. dispar batava* critically endangered and only occurring in The Netherlands. In 1998 a Species Protection Plan was written by Dutch Butterfly Conservation for the Ministery of Agriculture, Nature Conservation and Fisheries for the conservation of this subspecies in its last strongholds.

*Drawing by Paul Schoenmakers, The Netherlands.*

# 7. SUMMARY OF RECOMMENDATIONS

- Revise all relevant pan-European wildlife legislation in the light of this review, specifically to add 35 of the most threatened European species to the Bern Convention (5 species are already listed) and relevant species to the EC Habitats and Species Directive. (NB New legislation should be directed towards the protection and proper management of important butterfly habitats, rather than the banning of collecting which may be counterproductive).

- Draw up Species Action (Recovery) Plans to cover all threatened European species (SPEC 1-3).

- Include European threatened species (SPEC 1-3) when revising relevant national and regional legislation.

- Improve the protection of butterfly habitats throughout Europe to include key individual sites and whole landscapes.

- Identify Prime Butterfly Areas in Europe to help focus action. In the European Union these should be integrated into the Natura 2000 network.

- Ensure that all semi-natural habitats are managed appropriately for threatened butterflies and ensure continuation of traditional management systems on which so many species depend.

- Establish a co-ordinated system of butterfly recording and monitoring in every European country to improve future priority assessments and assess the impact of conservation measures and future environmental change.

- Revise the list of threatened European butterflies regularly and when data become available.

- Conduct further ecological research on threatened European species and the adequate management of their habitats to underpin conservation programmes.

- Develop measures to conserve entire landscapes in Europe and reduce impact of habitat fragmentation and isolation.

- Develop an overall action plan for the conservation of European butterflies and their habitats in order to direct, co-ordinate and monitor the above recommendations.

# 8. LITERATURE

## 8.1 National and regional distribution data


Abadjiev, S. (1992) *Butterflies of Bulgaria. Part 1: Papilionidae and Pieridae*. Veren Publishers, Sophia, Bulgaria.

Abadjiev, S. (1993) *Butterflies of Bulgaria. Part 2: Nymphalidae: Lybitheinae & Satyrinea*. Veren Publishers, Sophia, Bulgaria.

Abadjiev, S. (1993) *Butterflies of Bulgaria. Part 3: Nymphalidae: Apaturinae and Nymphalinae*. Veren Publishers, Sophia, Bulgaria.

Aistleitner, E. & Aistleitner, U. (1996) *Die Tagfalter des Fürstenturms Liechtenstein (Lepidoptera: Papilionoidea und Hesperioidea). Naturkundliche Forschung im Fürstentum Liechtenstein, Band 16.* Regierung des Fürstenturms Liechtenstein, Vaduz, Liechtenstein.

Anonymus (1994) *Red Book of Ukraine. Animals.* M.P. Barzan Ukrainian Encyclopaedias. Ukraine.

Bink, F.A. (1992) *Ecologische Atlas van de Dagvlinders van Noordwest-Europa.* Schuyt & Co., The Netherlands.

Buszko, J. (1997) *Atlas rozmieszczenia motyli dziennych w Polsce 1986 - 1995. A distribution atlas of butterflies in Poland 1986 - 1995.* Oficyna Wydawnicza Turpress, Torun, Poland.

Carnelutti, J. (1992) The Red List of endangered Macrolepidoptera in Slovenia. *Varstvo Narave* **17**, 61-104.

Carnelutti, J. (1992) Errata to the Red List of endangered Macrolepidoptera in Slovenia. *Varstvo Narave* **18**, 189-190.

Ñelik, T. & Rebeušer, F. (1996) *Atlas of threatened Butterflies of Slovenia*. Slovensko Entomološko Društvo, Stefana Michielija v Ljubljani, Ljubljana, Slovenia.

Ebert, G. & Rennwald, E. (1991) *Die Schmetterlinge Baden-Württembergs. Band 1: Tagfalter 1*. Eugen Ulmer GMBH & Co, Hohenheim, Germany.

Ebert, G. & Rennwald, E. (1991) *Die Schmetterlinge Baden-Württembergs. Band 2: Tagfalter 2*. Eugen Ulmer GMBH & Co, Hohenheim, Germany.

Essayan, R. (1980) Contribution lépidoptérique française à la Cartographie des Invertébrés Européens (C.I.E.) XIV. Cartographie provisoire des Satyrines de France. *Alexanor* **XIII(3)**, 126-132.

Fernández-Rubio, F. (1991) *Guía de Mariposas Diurnas de la Península Ibérica, Baleareas, Canarias, Azores y Madeira (Libhyteidae, Nymphalidae, Riodinidae y Lycaenidae).* Ediciones Pirámide, S.A., Madrid, Spain.

Fernández-Rubio, F. (1991) *Guía de Mariposas Diurnas de la Península Ibérica, Baleareas, Canarias, Azores y Madeira (Papilionidae, Pieridae, Danaidae, Satyridae y Hesperiidae).* Ediciones Pirámide, S.A., Madrid, Spain.

Geiger, W., Pleisch, E., Sonderegger, P., Jutzler, D. & Stierli, E. (1987) *Tagfalter und ihre Lebensräume: Arten, Gefährdung, Schutz. Band 1.* Schweizerischer Bund für Naturschutz, Switzerland.

Gomez-Bustillo, M.R. & Fernandez-Rubio, F. (1974) *Mariposas de la Península Ibérica*. ICONA, Madrid, Spain.

Gonseth, Y. (1987) *Verbreitungsatlas der Tagfalter der Schweiz. (Lepidoptera Rhopalocera) (mit roter Liste)*. Centre Suisse de cartographie de la fauna & Schweizerischer Bund für Naturschutz, Switzerland.

Gorbunov, P.Yu. *et al*. (1992) The butterflies of the south Urals. [in Russian]

Heath, J., Pollard, E. & Thomas, J.A. (1984) *Atlas of Butterflies in Brittain and Ireland*. Viking Penguin Books Ltd, Harmondsworth Middlesex, Great Brittain.

Henriksen, H.J. & Kreutzer, I.B. (1982) *The Butterflies of Scandinavia in nature*. Skandinavisk Bogforlag. Odense, Denmark.

Hesselbarth, G., Van Oorschot, H., Wagener, S. & Fiedler, K. (1995) *Die Tagfalter der Türkei, unter Berücksichtigung der angrenzenden Länder. 1. Allgemeiner Teil & Spezieller Teil: Hesperiidae, Papilionidae, Pieridae, Lycaenidae*. Selbstverlag Sigbert Wagener, Bocholt, Germany.

Hesselbarth, G., Van Oorschot, H. & Wagener, S. (1995) *Die Tagfalter der Türkei, unter Berücksichtigung der angrenzenden Länder. 2. Spezieller Teil: Nymphalidae; Fundortverzeichnis, Sammlerverzeichnis, Literaturverzeichnis, Indices.* Selbstverlag Sigbert Wagener, Bocholt, Germany.

Hesselbarth, G., Van Oorschot, H. & Wagener, S. (1995) *Die Tagfalter der Türkei, unter Berücksichtigung der angrenzenden Länder. 3. Tafeln und Verbreitungskarten*. Selbstverlag Sigbert Wagener, Bocholt, Germany.

Hrubí, K. (1964) *Prodromus Lepidopterorum Slovaciae*. Vydavatelštvo SAV, Bratislava, Slovakia.

Jaksic, P. (1988) *Privremene Karte Rasprostranjenosti Dnevnih Leptira Jugoslavije (Lepidoptera, Rhopalocera). Provisional distribution maps of the butterflies of Yugoslavia*. Jugoslavensko Entomolosko Drustvo, Zagreb, Yugoslavia.

Keskila, T. (1992) Distribution maps of Estonian butterflies (Lepidoptera: Hesperioidae, Papilionoidae). Acta *Musei Zoological Universitati Tartieum* **6**, 1-60.

Kovacs, L. (1953) A magyarorszagi nagylepkek es elterjiedesuk (Die Gross-Schmetterlinge Ungarns und ihre Verbreitung) *Rovartani Kozlemenyek (Folia Entomologica Hungarica, series nova) Budapest* **VI(2)**: 76-166.

Kudrna, O. (1993) Verbreitungsatlas der Tagfalter (Rhopalocera) der Rhön. *Oedippus* **6**, 2-137.

Kudrna, O. (1994) Kommentierter Verbreitungsatlas der Tagfalter Tschechiens. *Oedippus* **8**, 2-135.

Kulfan, M. (1982) Lepidoptera of the northern part of Small Carpatians and Myjava hills. *Biologické Práce* **28(4)**, 1-112. [in Slovak]

Kulfan, J. & Kulfan, M. (1991) Die Tagfalterfauna der Slowakei und ihr Schutz unter besonderer Berücksichtigung der Gebirgsökosysteme. *Oedippus* **3**, 75-102.

Kulfan, J. & Kulfan, M. (1992) Changes of distribution of thermophilous buterflies in Slovakia. *Journal of Research on the Lepidoptera* **29(4)**, 354-266.

Kumakov, A.D. & Korshunov, Yu.P. (1979) The Lepidoptera of the Saratov region. [in Russian]

Lamhna, E.N. (1980) *Distribution atlas of butterflies in Ireland. European Invertebrate Survey.* Third edition. An Foras Forbartha, Dublin, Ireland.

Leclerq, J., Gasper, C., Marchal, J.L., Verstraeten, C. & Wonville, C. (1980) *Analyse des 1600 premières cartes de l'atlas provisoire des insectes de Belgique et première liste rouge d'insectes menancés dans la fauna belge.* Notes faunastique de Gembloux 4. Gembloux, Belgique.

Löser, S. & Rehnelt, K. (1979) Die geographische Verbreitung der Grossschmetterlinge (Insecta, Lepidoptera) im Nordrhein-Westfalen, Westhessen und im nördlichen Teil von Rheinland-Pfalz. Fundortlisten und Verbreitungskarten. H. Baumann:Hesperiidae; S.Löser:Papilionidae. *Mitteilungen der Arbeitsgemeinschaft rheinisch-westfälischer Lepidopterologen* **1**, 91-201.

Löser, S. & Rehnelt, K. (1980) Die geographische Verbreitung der Grossschmetterlinge (Insecta, Lepidoptera) im Nordrhein-Westfalen, Westhessen und im nördlichen Teil von Rheinland-Pfalz, Fundortlisten und Verbreitungskarten 1. Fortsetzung. J, Schiffer: Nymphalidae. *Mitteilungen der Arbeitsgemeinschaft rheinisch-westfälischer Lepidopterologen* **2**, 37-101.

Löser, S. & Rehnelt, K. (1981) Die geographische Verbreitung der Grossschmetterlinge (Insecta, Lepidoptera) im Nordrhein-Westfalen, Westhessen und im nördlichen Teil von Rheinland-Pfalz, Fundortlisten und Verbreitungskarten 2. Fortsetzung. J.Schiffer: Nymphalidae. *Mitteilungen der Arbeitsgemeinschaft rheinisch-westfälischer Lepidopterologen* **3**, 1-66

Luig, J. & Keskula, T. (1995) *Catalogus Lepidopterum Estoniae*. Tartu University, Tartu, Estonia.

Maes, D. & Daniëls, L. (1993) *Voorlopige atlas van de Vlaamse Dagvlinders*. *Euglena* **12(3)**, 3-51.

Maes, D. & Van Dyck, H. (1999) *Dagvlinders in Vlaanderen: Ecologie, verspreiding en behoud*. Stichting Leefmilieu vzw/KBC, i.s.m. Instituut voor Natuurbehoud en de Vlaamse Vlinderwerkgroep vzw..

Maitland Emmett, A. (1990) *The Moths and Butterflies of Great Brittain and Ireland. Volume 1: Hesperiidae to Nymphalidae*. Harley Books, Colchester, Great Brittain.

Manil, L. (1990) Les Rhopalocères de Chypre (Lepidoptera: Papilionoidea et Hesperiodidea). *Linneana Belgica* **XII(8)**, 313-391.

Martila, *et al.* (1991) *Suomes paivajzerkost.* 2nd edition. Kirjayktymus, Helsinki.

Meyer, M. (1993) Die Lepidoptera der makronesischen Region II. Die Tagfalter des nördlichen Makronesiens (Madeira, Azoren) aus biogeographischer Sicht (Papilionoidae). *Atalanta* **24(1)**, 121-140.

Meyer, M. (1993) Die Lepidoptera der makronesischen Region III. Die Tagfalter des nördlichen Makronesiens (Madeira, Azoren) aus biogeographischer Sicht (Papilionoidae). *Atalanta* **24(2)**, 141-162.

Meyer, M. & Pelles, A. (1981) *Atlas provisoire des insectes du Grand-Duché Luxembourg. Lepidoptera. Première partie: 1-147 (108 cartes, 30 fig.)*. Travaux scientifiques de Musée d'Histoire Naturelle de Luxembourg.

Misja, K. (1998) *Butterflies of Albania, Group Macrolepidoptera: Rhopalocera, Bombyces and Sphinges*. (prepared for publication).

Nekrutenko, Y.P. (1985) *The butterflies of the Crimea. Guide*. Naukova Dumka. Kiev. 152 pp. [in Russian]

Ortali, A. & Bertaccini, E. (1987) *Le Farfalle Diurna d'Italia. The Butterflies of Italy*. Ravenna, M.O.S.N., Italy.

Pamperis, L.N. (1997) *The butterflies of Greece*. Bastas-Plessas Publications, Athens, Greece.

Popov, S. & Plush I. (1998) *The Catalogue of Butterflies (Lepidoptera: Hesperioidea, Papilionoidea) in SW Ukraine*. Uzhgorod - Kiev, Ukraine. (in press).

Pro Natura & Lepidopterologen-Arbeitsgruppe (1997) *Schmetterlinge und ihre Lebensräume: Arten, Gefährdung, Schutz. Schweiz und angrenzende Gebiete. Band 2*. Fotorotar AG, Druck.Kommunikation.Verlag, Switzerland.

Rassi, *et al*. (1985) *Uhanalaisten elainten ja kasvien susjelutoimikunnan mietinto. II susmen ukanalaiset elaimet*. Komiteanmietinto 43. Ymparistoministerio. Valtion painatuskeskus.

Reichl, E.R. (1992) *Verbreitungsatlas der Tierwelt österreichs. Band 1 : Lepidoptera, Diurna Tagfalter.* Forschungsinstutut für Umweltinformatik, Linz, Österreich.

Reinhardt, R. & Kames, P. (1982) Beiträge zur Insektenfauna der DDR. Lepidoptera-Rhopalocera et Hesperiidae. 1: Papilionidae - Pieridae - Satyridae*. Entomologische Nachrichten und Berichte (Beiheft 1)*. Kulturbund der DDR-Gesellschaft für Natur und Umwelt, Berlin.

Reinhardt, R. & Kames, P. (1982) Beiträge zur Insektenfauna der DDR. Lepidoptera-Rhopalocera et Hesperiidae. 2: Nenmeobiidae - Nymphalidae, sowie Lycaenidae und Hesperiidae*. Entomologische Nachrichten und Berichte (Beiheft 2)*. Kulturbund der DDR-Gesellschaft für Natur und Umwelt, Berlin.

Reiprich, A. & Okáli, I. (1989) *Supplement to Prodromus Lepidopterorum Slovaciae, Volume 3* (in Slovak). Biblogicke Práce Veda, Vydavatelštvo SAV, Bratislava, Slovakia.

Roche, P. (1982) A preliminary list of the Rhopalocera of Andorra. First Part. *Butlletí de la Societat Catalana de Lepidopterologia* **36**, 21-25.

Roche, P. (1982) A preliminary list of the Rhpoalocera of Andorra (Second Part). *Buttletíde la Societat Catalana de Lepidopterologia* **37**, 23-28.

Schaider, P. & Jaksic, P. (1988) Die Tagfalter von jugoslawisch Mazedonien Diurna (Rhopalocera und Hesperiidae). Selbstverlag Paul Schaider, München, BRD.

Sijariâ, R. (1980) Fauna Lepidoptera Bosne i Hercegovine. Akademija nauka i umjetnosti Bosne i Hercegovine. *Posebna izdanja* **XLVII (8)**, 83-98.

Škapec, L. (1992) *Czechoslovak Red Data Book of threatened and rare species of plants and animals. 3 Invertebrates.* Príroda, Bratislava, Slovakia. [in Slovak]

Stoltze, M. (1996) *Danske Dagsommerfugle*. Nordisk Forlag A.S., Gyldendal, Denmark.

Šules, A. & Viidalepp, J. (1974) Verbreitung der Grossschmetterlinge im Balticum. I Tagfalter (Diurna). *Deutsche Entomologische Zeitschrift* **21 (IV-V)**, 353-403.

Tax, M.H. (1989) *Atlas van de Nederlandse dagvlinders.* Vereniging tot behoud van Natuurmonumenten & De Vlinderstichting, The Netherlands.

Thomson, G. (1980) *The butterflies of Scotland*. Croon Helm, London, Great Brittain.

Thousou, W.E. (1967) *Die Grossschmetterlinge Estlands*. Stollhaum, Oldenburg.

Tuzov, V.K., Bogdanov, P.V., Devyatkin, A.L., Kaabak, L.V., Korolev, V.A., Murzin, V.S., Samodurov, G.D. & Tarasov, E.A. (1997) *Guide to the Butterflies of Russia and Adjacent territories (Lepidoptera, Rhopalocera). Volume 1*. Pensoft, Moscow, Russia.

Viidalepp, J. & Remm, H. (1996) *Eestikiblikate määraja*. ''Valgas'', Talina.

Wiemers, M. (1995) The butterflies of the Canary Islands. A survey on their distribution, biology and ecology (Lepidoptera: Papilionidea and Hesperioidea). First part**.** *Linneana Belgica* **15(2)**, 63-86.

Wiemers, M. (1995) The butterflies of the Canary Islands. A survey on their distribution, biology and ecology (Lepidoptera: Papilionidea and Hesperioidea). Second part**.** *Linneana Belgica* **15(3)**, 87-118.

## 8.2 References in main text


Baldock, D., Beaufoy G. & Clark, J. (1994) *The nature of farming - low intensity farming systems in nine European countries*. Institute for European Environmental Policy London, 158 Buckingham Palace Rd, London SW1W 9TR, UK.

Barnett, L.K. & Warren, M.S. (1995) *Species action plans for: Maculinea arion, Argynnis adippe, Mellicta athalia, Boloria euphrosyne, Boloria selene*. Butterfly Conservation, Wareham, UK.

Collins, N.M. (1987) Legislation to conserve insects in Europe. *Amateur Entomologist's Society Pamphlet* **13**: 1-79.

Dennis, R.L.H. (1993) *Butterflies and climate change*. Manchester University Press, Manchester, UK.

Dennis, R.L.H. & Williams, W.R. (1995) Implications of biogeographic structures for the conservation of European butterflies. In: *Ecology and conservation of butterflies.* ed. Pullin, A.S. pp. 213-229. Chapman & Hall, London.

Dennis, R.L.H., Williams, W.R. & Shreeve, T.G. (1998) Faunal structures among European butterflies: evolutionary implications of bias for geography, endemism and taxonomic affiliation. *Ecography* **21**, 181-203.

Elmes, G.W. & Free, A. (1994) *Climate change and rare species*. HMSO, London.

Erhardt, A. (1995) Ecology and conservation of Alpine Lepidoptera. In: *Ecology and conservation of butterflies.* ed. Pullin, A.S., pp. 258-276. Chapman & Hall, London.

Grimmett, R.F.A. & Jones, T.A. (1989) *Important bird areas in Europe*. Cambridge, UK: International Council for Bird Preservation (Techn. Publ. 9).

Hanski, I. & Gilpin, M. (1991) Metapopulation dynamics: brief listing and conceptual domain. *Biological Journal of the Linnean Society* **4-2**, 3-16

Hanski, I., Pakkala, T., Kuussaari, M. & Lei, G. (1995) Metapopulation persistence of an endangered butterfly in a fragmented landscape. *Oikos* **72(1**), 21-28

Heath, J. (1981) *Threatened Rhopalocera (Butterflies) in Europe*. Nature and Environment Series 23, Council of Europe, Strasbourg.

Hesselbarth, G., Van Oorschot, H, & Wagener, S. (1995) *Die Tagfalter der Türkei*. Selbstverlag Sigbert Wagener, Bocholt, Germany.

IUCN (1994) *IUCN Red List Categories*. IUCN, Gland, Switzerland.

Karslholt, O. & Razowski, J. (1996) *The Lepidoptera of Europe*. A Distributional Checklist. Apollo Books, Stenstrup, Denmark.

Kudrna, O. (1986) *Butterflies in Europe. Volume 8: Aspects of the Conservation of Butterflies in Europe*. Aula-Verlag, Wiesbaden.

Kudrna, O. (1996) Mapping European butterflies: handbook for recorders. *Oedippus* **12**, 1-60.

Lukhtanov, V. & Lukhtanov, A. (1994) *Die Tagfalter Nordwestasiens*. Dr. Ulf Eitschberger, Marktleuthen, Germany.

Made, J.G. van der & Wynhoff, I. (1996) Lepidoptera - Butterflies and Moths. In: *Background information on invertebrates of the Habitats Directive and the Bern Convention; Part I: Crustacea, Coleoptera and Lepidoptera.* eds. Helsdingen, P.J. van, Willemse, L. & Speight, M.C.D., pp. 75-217. Council of Europe Publishing, Nature and Environment, No. 79.

Maes, D. & Van Swaay, C.A.M. (1997) A new methodology for compiling national Red Lists applied to butterflies (Lepidoptera, Rhopalocera) in Flanders (N-Belgium) and the Netherlands. *Journal of Insect Conservation* **1**, 113-124.

Meyer, M. (1993) Die Lepidoptera der makronesischen Region II & III. Die Tagfalter des nördlichen Makronesiens (Madeira, Azoren) aus biogeographischer Sicht (Papilionoidae). *Atalanta* **24(1&2)**, 121-162.

Ommering, G. van (1994) *Notitie Kategorieën, Kriteria en Normen voor Rode Lijsten, opgesteld conform besluiten van de klankbordgroep Rode Lijsten, ingesteld door NBLF-FF.*

Pavlicek-van Beek, T., Ovaa, A.H. & Made, J.G. van der (1992) *Future of butterflies in Europe*. Department of Nature Conservation. Agricultural University Wageningen.

Poole, A., Pienkowaki, M. McCracken, D.I., Petretti, F., Brédy, C. & Deffeyes, C. (1998) *Mountain livestock farming and EU Policy Development*. Proceedings of the fifth European Forum on Nature Conservation and Pasturalism, 1996, Valle d'Aosta, Italy. EFNCP, Kindrochaid, Gruinart, Bridgend, Isle of Islay, Argyll PA44 7PT, Scotland

Pullin, A.S. (1995) *Ecology and Conservation of Butterflies*. Chapman & Hall, London.

Swaay, C.A.M. van (1997a) *Threatened butterflies in Europe: manual to the questionnaire*. De Vlinderstichting (Dutch Butterfly Conservation), Wageningen, reportnr. VS97.15

Swaay, C.A.M. van (1997b) *Soortbeschermingsplan Grote vuurvlinder*. De Vlinderstichting, Wageningen, rapportnr. VS97.21.

Swaay, C.A.M. van, Warren, M.S. & Grill, A. (1997) *Threatened butterflies in Europe - provisional report.* De Vlinderstichting (Dutch Butterfly Conservation), Wageningen, The Netherlands, reportnr. VS 97.25 & British Butterfly Conservation, Wareham, UK.

Thomas, J.A. (1984) The conservation of butterflies in temperate countries: past efforts and lessons for the future. In: *The biology of butterflies.* eds. Vane-Wright, R.I. & Ackery, P.R. pp. 327-332. Academic Press, London.

Thomas, C.D. (1995) Ecology and conservation of butterfly metapopulations in the fragmented British landscape. In: *Ecology and conservation of butterflies.* ed. Pullin, A.S., pp. 46-64. Chapman & Hall, London.

Thomas, C.D. & Abery, J.C.G. (1995) Estimating rates of butterfly decline from distribution maps: the effect of scale. *Biological Conservation* **73(1)**, 59-65.

Tolman, T. & Lewington, R. (1997) *Butterflies of Britain and Europe*. Collins Field Guide. HarperCollins, London.

Thomas, C.D., Thomas, J.A., & Warren, M.S. (1992) Distributions of occupied and vacant butterfly habitats in fragmented landscapes. *Oecologia* **92**, 563-7.

Tucker, G.M. & Heath, M.F. (1994) *Birds in Europe: Their Conservation Status*. Cambridge, UK: Birdlife International (Birdlife Conservation Series, No. 3.)

Warren, M.S. (1992) The conservation of British butterflies. In: *The ecology of butterflies in Britain*, ed. Dennis, R.L.H., pp. 73-92. Oxford University Press, Oxford.

Warren, M.S. (1994) The UK status and suspected metapopulation structure of a threatened European butterfly, the marsh fritillary Eurodryas aurinia. *Biological Conservation* **67**, 239-249.

Warren, M.S., Barnett, L.K., Gibbons, D.W., & Avery, M. (1997) Assessing national conservation priorities: an improved red list of British butterflies. *Biological Conservation* **82**, 317-328

Warren, M. S. & Bourn, N.A.D. (1997) The impact of grassland management on threatened butterflies in ESA's. In: *Grassland management in the Environmentally Sensitive Areas,* ed. Sheldrick, R.D., pp. 138-143. British Grassland Society Occasional Symposium No.32, Arrowhead Books, Reading, UK.

Wynhoff, I. & van Swaay, C.A.M. (1995) *Threatened and vulnerable butterflies in the Netherlands*. Rapportnr.: VS 95.11, De Vlinderstichting, Wageningen.

# Part II

# Datasheets for threatened butterflies

# 1. INTRODUCTION

Part II of this report comprises datasheets for all European butterflies assessed as threatened, based on the new IUCN criteria as explained in Part I. The emphasis of these datasheets is rather different from previous ones (e.g. Van der Made & Wynhoff, 1996) because they concentrate on the distribution and status, habitat and conservation measures required. Taxonomy and biology are covered only briefly and identification is not included because it is well covered in illustrated guides such as Tolman & Lewington (1997), while Hesselbarth *et al.* (1995) gives excellent descriptions and pictures of almost all species excluded by Tolman & Lewington (1997).

Another important difference to former datasheets is that ours have been produced using a 'bottom-up' approach based on data provided by national compilers, rather than a 'top-down' one (i.e. a specialist writing a datasheet and describing the overall situation for the species). However, we have consulted specialists in several major families to comment on and check the datasheets.

# 2. METHODS

## Questionnaire

In 1998 a questionnaire for all threatened butterflies (SPEC 1-3 species) was distributed to each national compiler (see part 1, section 2.1) containing questions on:

- Habitat and species requirements (including foodplants if known) as an extension to the habitat-qualification in CORINE-classes in the first questionnaire covering status and distribution (see Part I).
- Threats. The level of threat (low, medium, high) within each country was requested for 14 pre-defined threat-categories (following categories used by Tucker & Heath, 1994, modified for butterflies by Warren et al., 1997). Additional threat categories could also be specified.
- Conservation measures taken. Compilers were asked to indicate which of six pre-defined conservation have been taken within in their country, and describe any other conservation measures taken.
- New conservation measures needed (as proposed by compilers).
- Other relevant comments.
- References to key publications on the species.

An example of a filled-in questionnaire is given on pages 74 and 75.

No questionnaires were returned for Iceland, the Caucasian Republics, Bulgaria, the Canary Islands, Cyprus, Greece, Norway, Poland, Portugal and Switzerland.

## All datasheets are presented the same way:

**Taxonomy**
Phylum, class, order and family according to Karsholt & Razowski (1996). Any remarks on the taxonomy quote the source.

**Status**
- Present distribution class in Europe: as calculated from data per country according to the method described in appendix 1.
- Overall trend in Europe: as calculated from data per country according to the method described in appendix 1.
- Threat status: following the IUCN-criteria as described in section 2.2 (Part I); using box B for species restricted to Europe, or the criteria in box C for species that can also be found outside Europe.
- Conservation status as SPEC-category (Species of European Conservation Concern) according to the description in section 2.1 (Part I).

**Distribution and status per country**
For every country, data are given on distribution class, trend class and old IUCN status.

**Habitat**
The CORINE classifications indicated by the compilers are presented to give a broad description of the habitat. For each habitat, the number of mentions by national compilers is given. A short text is given describing the habitat requirements and foodplants in more detail, based on information provided by the national compilers.

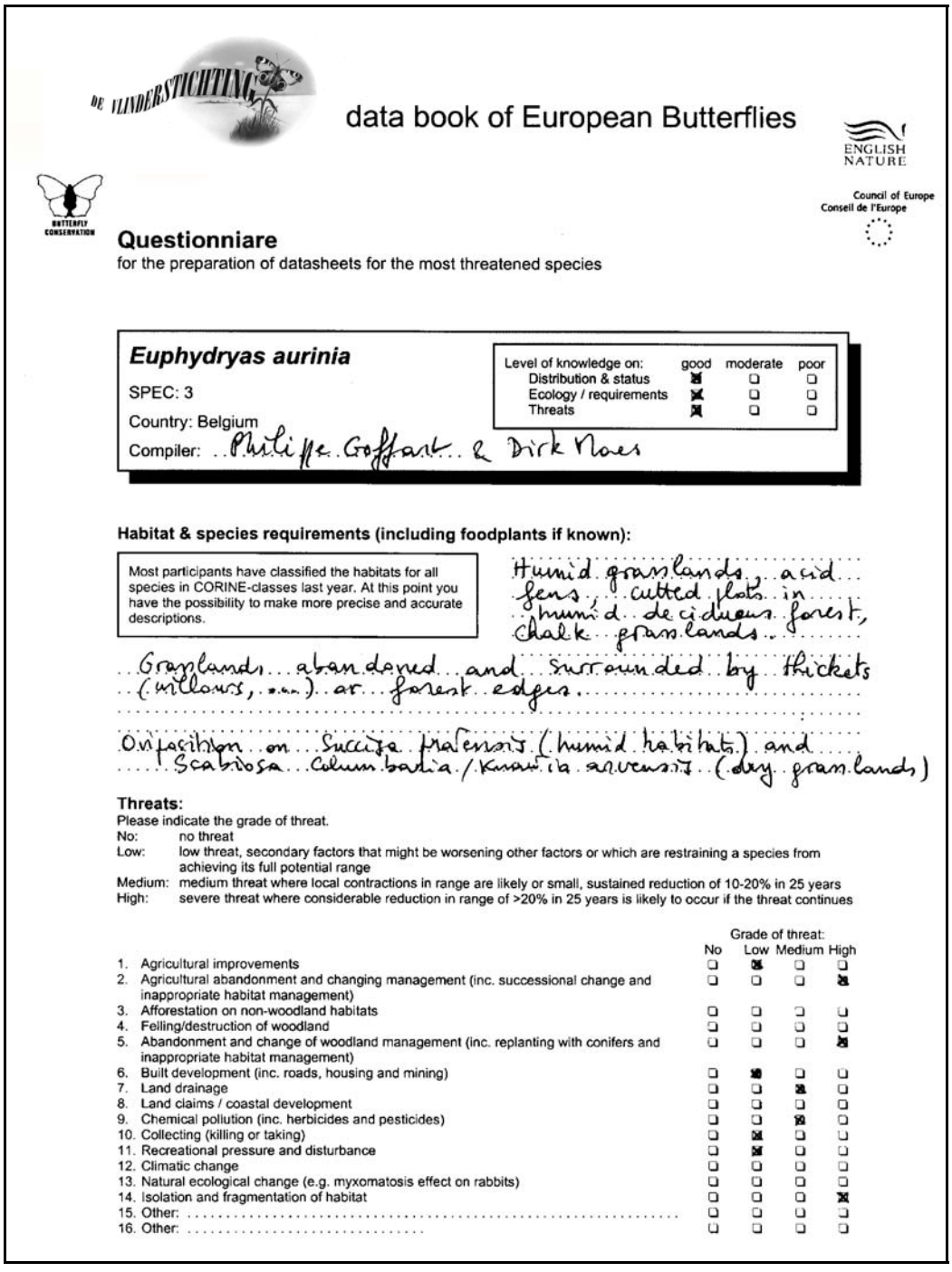
**Threats**
For each threat in the questionnaire the number of mentions by national compilers is counted. Also the average grade of threat per country is calculated (low threat = 1; medium threat = 2; high threat = 3).
The combination of the number of mentions and the average grade of threat gives a quick overview of the threats of the species in Europe.
Extra threats mentioned by some compilers are also listed.

**Conservation measures taken and proposed by compilers**
The conservation measures taken within each country are listed. The new conservation measures proposed by the compilers are (as much as possible) grouped into classes:
- Legal protection of species
- Legal protection of habitats
- Improved habitat management
- Ecological research on species requirements
- Begin or improve monitoring

Other measures proposed are listed.

**References**
The quality and type of the references listed varied between the national compilers. To avoid repitition we have restricted the list of references to those dealing with either European distribution, ecology or European conservation of the species involved. Literature concerning expeditions, new records or national or regional Red lists are not presented.
Since a lot of information on a country level is available in national atlasses, we have compiled a separate list (as complete as possible) in section 8 (literature). For countries with many regional atlasses and a national atlas (like Britain), only the national atlas is presented, but for countries without a national atlas the regional atlasses are given (for example Germany). Of course such lists are never complete and the authors would welcome any additions!

**Example of a completed questionnaire for the datasheets**



DE VLINDERSTICHTING

data book of European Butterflies

ENGLISH NATURE

Council of Europe
Conseil de l'Europe

BUTTERFLY CONSERVATION

## Questionniare

for the preparation of datasheets for the most threatened species

***Euphydryas aurinia***

SPEC: 3

Country: Belgium

Compiler: Philippe Goffart & Dirk Maes

| Level of knowledge on: | good | moderate | poor |
|---|---|---|---|
| Distribution & status | ☒ | ☐ | ☐ |
| Ecology / requirements | ☒ | ☐ | ☐ |
| Threats | ☒ | ☐ | ☐ |

**Habitat & species requirements (including foodplants if known):**

Most participants have classified the habitats for all species in CORINE-classes last year. At this point you have the possibility to make more precise and accurate descriptions.

Humid grasslands, acid fens, cutted plots in humid deciduous forest, chalk grasslands.

Grazlands abandoned and surrounded by thickets (willows, ...) or forest edges.

On Succisa pratensis (humid habitats) and Scabiosa Columbaria / Knautia arvensis (dry grasslands)

**Threats:**

Please indicate the grade of threat.

No: no threat
Low: low threat, secondary factors that might be worsening other factors or which are restraining a species from achieving its full potential range
Medium: medium threat where local contractions in range are likely or small, sustained reduction of 10-20% in 25 years
High: severe threat where considerable reduction in range of >20% in 25 years is likely to occur if the threat continues

| | Grade of threat: No | Low | Medium | High |
|---|---|---|---|---|
| 1. Agricultural improvements | ☐ | ☒ | ☐ | ☐ |
| 2. Agricultural abandonment and changing management (inc. successional change and inappropriate habitat management) | ☐ | ☐ | ☐ | ☒ |
| 3. Afforestation on non-woodland habitats | ☐ | ☐ | ☐ | ☐ |
| 4. Felling/destruction of woodland | ☐ | ☐ | ☐ | ☐ |
| 5. Abandonment and change of woodland management (inc. replanting with conifers and inappropriate habitat management) | ☐ | ☐ | ☐ | ☒ |
| 6. Built development (inc. roads, housing and mining) | ☐ | ☒ | ☐ | ☐ |
| 7. Land drainage | ☐ | ☐ | ☒ | ☐ |
| 8. Land claims / coastal development | ☐ | ☐ | ☐ | ☐ |
| 9. Chemical pollution (inc. herbicides and pesticides) | ☐ | ☐ | ☒ | ☐ |
| 10. Collecting (killing or taking) | ☐ | ☒ | ☐ | ☐ |
| 11. Recreational pressure and disturbance | ☐ | ☒ | ☐ | ☐ |
| 12. Climatic change | ☐ | ☐ | ☐ | ☐ |
| 13. Natural ecological change (e.g. myxomatosis effect on rabbits) | ☐ | ☐ | ☐ | ☐ |
| 14. Isolation and fragmentation of habitat | ☐ | ☐ | ☐ | ☒ |
| 15. Other: ..... | ☐ | ☐ | ☐ | ☐ |
| 16. Other: ..... | ☐ | ☐ | ☐ | ☐ |

**Conservation measures taken:**

Please indicate the conservation measures taken for this species in your country: If necessary specify them or add other measures.

- [x] Legal protection of species (no capture, trade, etc.) → Berne + Habitats
- [x] Legal protection of important butterfly habitats
- [x] Habitat management: there is special attention for the species
- [x] Ecological research on the requirements of the species has been conducted
- [x] All populations are monitored on a regular basis (e.g. every 1-5 years)
- [ ] At least part of the populations are monitored (e.g. every 1-5 years)
- [x] Other: two experimental cases of reestablishment

**New conservation measures needed (in order of importance):**

1. Protection of some important populations/sites
2. Management of some populations / habitats
3. Management of new habitats around important populations

etc

**Other relevant comments (e.g. the names and addresses of specialists on this species):**

**References:**

Please use Harvard style, for example:

**Journal article**

Thomas, C.D. & Abery, J.C.G. (1995) Estimating rates of butterfly decline from distribution maps: the effect of scale. *Biological Conservation* **73(1)**, 59-65. (note: journals not abbreviated)

**Whole book**

Karsholt, O. & Razowski, J. (1996) *The Lepidoptera of Europe. A Distributional Checklist.* Apollo Books, Stenstrup, Denmark.

**Chapter in book**

Thomas, J.A. (1984) The conservation of butterflies in temperate countries: past efforts and lessons for the future. In *The biology of butterflies.* eds. Vane-Wright, R.I. & Ackery, P.R., pp. 327-332. Academic Press, London.

GOFFART Ph., NÈVE G., MOUSSON L., WEISERBS A., M. BAGUETTE & Ph. LEBRUN, 199. Situation actuelle, exigences écologiques et premiers résultats de deux tentatives de réintroduction du Damier de la Succise (Euphydryas aurinia), un papillon en danger d'extinction en Wallonie. Cahiers des Réserves Naturelles — R.N.O.B., n° 9 : 41 - 54

*Please continue on additional pages if necessary and add copies of unpublished reports if possible*

**Thank you very much for participating**

# 3. DATASHEETS

The datasheets are presented in systematical order as follows:

**HESPERIIDAE**
*Spialia osthelderi*
*Muschampia proteides*
*Pyrgus centaureae*
*Pyrgus cirsii*
*Thymelicus acteon*

**PAPILIONIDAE**
*Zerynthia caucasica*
*Archon apollinus*
*Archon apollinaris*
*Parnassius phoebus*
*Parnassius apollo*

**PIERIDAE**
*Leptidea morsei*
*Anthocharis damone*
*Euchloe simplonia*
*Pieris wollastoni*
*Pieris cheiranthi*
*Colias nastes*
*Colias hecla*
*Colias myrmidone*
*Colias chrysotheme*
*Gonepteryx maderensis*

**LYCAENIDAE**
*Lycaena helle*
*Lycaena ottomanus*
*Tomares ballus*
*Tomares nogelii*
*Tomares callimachus*
*Neolycaena rhymnus*
*Pseudophilotes vicrama*
*Pseudophilotes bavius*
*Scolitantides orion*
*Glaucopsyche alexis*
*Maculinea arion*
*Maculinea teleius*
*Maculinea nausithous*
*Maculinea alcon*
*Maculinea rebeli*
*Plebeius trappi*
*Plebeius hesperica*
*Polyommatus eroides*
*Polyommatus humedasae*
*Polyommatus poseidon*
*Polyommatus dama*
*Polyommatus caeruleus*
*Polyommatus damone*

**NYMPHALIDAE**
*Boloria titania*
*Boloria thore*
*Boloria frigga*
*Nymphalis xanthomelas*
*Nymphalis vaualbum*
*Euphydryas intermedia*
*Euphydryas maturna*
*Euphydryas aurinia*
*Euphydryas orientalis*
*Melitaea aetherie*
*Melitaea aurelia*
*Melitaea britomartis*
*Lopinga achine*
*Coenonympha tullia*
*Coenonympha oedippus**
*Coenonympha hero*
*Triphysa phryne*
*Erebia christi*
*Erebia sudetica*
*Erebia embla*
*Erebia medusa*
*Erebia epistygne*
*Melanargia titea*
*Hipparchia maderensis*
*Hipparchia azorina*
*Hipparchia occidentalis*
*Hipparchia miguelensis*
*Pseudochazara euxina*

# *Spialia osthelderi* (Pfeiffer, 1932)

## Taxonomy
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Hesperiidae

## Status
Present distribution class in Europe: <1%
Overall trend in Europe: decrease 50-80%
Threat status: *Critically endangered* - SPEC 3 - species with headquarters within and outside Europe - global distribution not concentrated in Europe, but considered threatened in Europe

## Distribution and status per country

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| TRA | Turkey (Asian part) | 1-5% | decr 50-75% | V |

Main distribution outside Europe, from SE-Turkey and Libanon in southeastern direction until S-Iran and Iraq, east as far as Afghanistan. In Europe only found in SE-Turkey.

## Habitat
Hot, dry, herbaceous steppes. Foodplant probably some Convolvulaceae (comm. De Jong). No Corine classification given.

## Threats
Species is especially threatened by agricultural activities.

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Agricultural improvements | 1 | 3,0 |
| Chemical pollution (inc. herbicides and pesticides) | 1 | 3,0 |
| Others: | | |
| Build-up of Euphrat and Tigris for irrigation | 1 | 3,0 |
| Land claims for agriculture | 1 | 3,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken
No specific measures have been taken.

## Conservation measures proposed by compilers
Begin or improve monitoring (1 country): TR
Legal protection of habitats (1 country): TR
Ecological research on species requirements (1 country): TR

## References

Jong, R. de (1974) Systematics and evolution of the palearctic *Spialia* species. *Tijdschrift voor Entomologie* **117**, 225-272.

Jong, R. de (1978) Monograph of the genus *Spialia* Swinhoe (Lepidoptera, Hesperiidae). *Tijdschrift voor Entomologie* **121**, 23-146.

# *Muschampia proteides* (Wagner, 1929)

## Taxonomy
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Hesperiidae

## Status
Present distribution class in Europe: <1%
Overall trend in Europe: decrease 20-50%
Threat status: *Endangered* - SPEC 3 - species with headquarters within and outside Europe, but considered threatened in Europe

## Distribution and status per country

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| TRA | Turkey (Asian part) | 5-15% | decr 25-50% | K |

Main distribution outside Europe, from Turkey east to Iran and Iraq and south to Israel.

## Habitat
Rich herbaceous vegetations fringing mountain streams, stony waste land and clearings in pine forest. Foodplant a species of *Phlomis* (Lamiaceae).
No Corine classification given.

## Threats
Species is threatened by land claims for agriculture and overgrazing. Because of this populations are becoming fragmented and isolated.

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Isolation and fragmentation of habitat | 1 | 3,0 |
| Agricultural improvements | 1 | 2,0 |
| Chemical pollution (inc. herbicides and pesticides) | 1 | 2,0 |
| Built development (inc. roads, housing and mining) | 1 | 1,0 |
| Others: | | |
| Land claims for agriculture | 1 | 3,0 |
| Overgrazing | 1 | 3,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken
No specific measures have been taken.

## Conservation measures proposed by compilers
No measures proposed by the compiler, but better protection of key areas and reduction of grazing pressure appear to be vital.

# *Pyrgus centaureae* (Rambur, 1839)

## Taxonomy
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Hesperiidae

## Status
Present distribution class in Europe: 5-15%
Overall trend in Europe: decrease 20-50%
Threat status: *Vulnerable* - SPEC 3 - species with headquarters within and outside Europe, but considered threatened in Europe

## Distribution and status per country
Species is declining on southern edge of its range in Finland and to a lesser extent in Sweden. In Northern Scandinavia not threatened.

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| FIN | Finland | >15% | decr 25-50% | V |
| S | Sweden | >15% | stable | - |
| RUS | Russia (European part) | 1-5% | unknown | - |
| N | Norway | >15% | unknown | - |

## Habitat
Open bogs and mires, moors, tundra heaths and wet mountain slopes, generally above the treeline or in sparse coniferous woodland. Does not occur in forest covered bogs. Foodplant *Rubus chamaemorus*, possibly also *Fragaria* and *Potentilla* species (Rosaceae) (RUS).

| Corine classification of habitat (number of mentions by national compilers) | |
|---|---|
| raised bogs | 4 (57%) |
| alpine and subalpine grasslands | 1 (14%) |
| blanket bogs | 1 (14%) |
| coniferous woodland | 1 (14%) |

## Threats
Species is threatened by habitat destruction in southern part of its range. Peatbogs are drained, used for fuel purposes or planted with trees.

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Land drainage | 3 | 1,7 |
| Built development (inc. roads, housing and mining) | 2 | 1,0 |
| Afforestation on non-woodland habitats | 1 | 3,0 |
| Isolation and fragmentation of habitat | 1 | 2,0 |
| Agricultural improvements | 1 | 1,0 |
| Chemical pollution (inc. herbicides and pesticides) | 1 | 1,0 |
| Others: | | |
| Destruction of peat bogs for fuel purposes | 1 | 1,0 |
| Overgrazing by reindeer | 1 | 1,5 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken

In FIN there is a special program for the conservation of important bog areas. In RUS the species occurs in a Lapland reserve.

Legal protection of important butterfly habitats ( 2 countries): FIN, RUS

## Conservation measures proposed by compilers

Legal protection of habitats (2 countries): FIN, S
Restrict drainage of bogs and exploitation of peat (2 countries): FIN, S

# *Pyrgus cirsii* (Rambur, 1839)

## Taxonomy
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Hesperiidae

## Status
Present distribution class in Europe: 1-5%
Overall trend in Europe: decrease 20-50%
Threat status: *Vulnerable* - SPEC 1 - species of global conservation concern because restricted to Europe and considered globally threatened

## Distribution and status per country
Species is declining in northern part of its range. Major stronghold is Spain, but trend here unknown.

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| SLO | Slovenia | 0 | extinct | E |
| D | Germany | <1% | decr 75-100% | E |
| CH | Switzerland | <1% | decr 15-25% | R |
| TRA | Turkey (Asian part) | 1-5% | stable | K |
| I | Italy | <1% | unknown | |
| P | Portugal | <1% | unknown | - |
| E | Spain | >15% | unknown | - |
| A | Austria | unknown | unknown | - |
| AND | Andorra | unknown | unknown | - |
| F | France | unknown | unknown | I |

## Habitat
Dry to humid grasslands, pastures and scrubland, often within evergreen oak forest. Between 2200 and 2800 m in TRA but lower elsewhere. Foodplants species of *Potentilla* (Rosaceae).

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| alpine and subalpine grasslands | 2 | (20%) |
| dry calcareous grasslands and steppes | 2 | (20%) |
| dry siliceous grasslands | 2 | (20%) |
| mesophile grasslands | 2 | (20%) |
| fallow land, waste places | 1 | (10%) |
| inland sand-dunes | 1 | (10%) |

## Threats

Being a species of semi-natural, unimproved grasslands, *P. cirsii* is threatened by intensification as well as marginalization of agricultural landscapes.

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Agricultural improvements | 3 | 2,3 |
| Agricultural abandonment and changing management (inc. successional change and inappropriate habitat management) | 2 | 2,0 |
| Afforestation on non-woodland habitats | 1 | 2,0 |
| Built development (inc. roads, housing and mining) | 1 | 1,0 |
| Chemical pollution (inc. herbicides and pesticides) | 1 | 1,0 |
| Climatic change | 1 | 1,0 |
| Isolation and fragmentation of habitat | 1 | 1,0 |
| Land claims / coastal development | 1 | 1,0 |
| Recreational pressure and disturbance | 1 | 1,0 |
| Others: | | |
| Overgrazing | 1 | 3,0 |
| Cutting of hay meadows | 1 | 3,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken

*P. cirsii* is a species of semi-natural, agricultural landscapes hardly occurring in nature reserves. For this reason habitats are largely unprotected at present.

Legal protection of species (no capture, trade, etc.) ( 1 country): D
Ecological research on the requirements of the species has been conducted ( 1 country): SLO
All populations are monitored on a regular basis (e.g. every 1-5 years) ( 1 country): SLO

## Conservation measures proposed by compilers

Ecological research on species requirements (3 countries): AND, E, TR
Further surveys needed (2 countries): AND, E
Begin or improve monitoring (1 country): TR
Ban grazing and haying in habitat (1 country): TR
Rotational mowing in September or October (1 country): F
Prevent fires (1 country): F

## References

Guillaumin, M. (1973) Le contact entre *Pyrgus carlinae* et *P. cirsii* (Lepidoptera, Hesperiidae) dans la vallee de la Durance. *Arch-Zool-Exp-Gen.* **114 (1)**, 5-57.

Nel, J. (1985) Note sur la répartition, les plantes-hôtes et le cycle de développement des Pyrginae en Provence (Lepidoptera: Hesperiidae). *Alexanor* **14(2)**, 51-63.

# *Thymelicus acteon* (Rottemburg, 1775)

## Taxonomy
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Hesperiidae

## Status
Present distribution class in Europe: 5-15%
Overall trend in Europe: decrease 20-50%
Threat status: *Vulnerable* - SPEC 2 - global distribution concentrated in Europe, but considered threatened in Europe

## Distribution and status per country
Species is declining in C-Europe, but still widespread in S-Europe.

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| NL | Netherlands | <1% | extinct | E |
| B | Belgium | 1-5% | decr 50-75% | E |
| PL | Poland | 1-5% | decr 50-75% | R |
| RO | Romania | 1-5% | decr 50-75% | R |
| A | Austria | 5-15% | decr 50-75% | V |
| L | Luxemburg | 1-5% | decr 25-50% | V |
| SK | Slovakia | 1-5% | decr 25-50% | V |
| CZ | Czech Republic | 5-15% | decr 25-50% | E |
| D | Germany | 5-15% | decr 25-50% | V |
| CH | Switzerland | 1-5% | decr 15-25% | V |
| SLO | Slovenia | 1-5% | decr 15-25% | R |
| TRA | Turkey (Asian part) | 5-15% | decr 15-25% | K |
| AL | Albania | 5-15% | stable | - |
| BG | Bulgaria | 5-15% | stable | - |
| CAN | Canary Islands | 5-15% | stable | |
| GB | United Kingdom | <1% | stable | R |
| GR | Greece | >15% | stable | - |
| H | Hungary | 5-15% | incr 125-200% | - |
| BIH | Bosnia | 5-15% | fluctuating | - |
| YU | Yugoslavia | 5-15% | fluctuating | - |
| FYROM | FYR of Macedonia | >15% | fluctuating | - |
| HR | Croatia | 1-5% | unknown | - |
| TRE | Turkey (European part) | 1-5% | unknown | R |
| AND | Andorra | 5-15% | unknown | R |
| RUS | Russia (European part) | <1% | unknown | I |
| UA | Ukraine | <1% | unknown | V |
| CY | Cyprus | >15% | unknown | - |
| E | Spain | >15% | unknown | - |
| F | France | >15% | unknown | |
| I | Italy | >15% | unknown | |
| P | Portugal | unknown | unknown | - |

## Habitat
Rough, tall, sunny, often scrubby grassland, steppe, fallow land, forest clearings and borders of cereal fields. Foodplants a wide variety of grasses (Poaceae), *Brachypodium pinnatum* being most frequent, especially in Northern Europe.

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| dry calcareous grasslands and steppes | 14 | (32%) |
| mesophile grasslands | 7 | (16%) |
| broad-leaved deciduous forests | 5 | (11%) |
| dry siliceous grasslands | 5 | (11%) |
| sclerophyllous scrub | 3 | (7%) |
| fallow land, waste places | 2 | (5%) |
| heath and scrub | 2 | (5%) |
| tree lines, hedges, small woods, bocage, parkland dehesa | 2 | (5%) |
| alpine and subalpine grasslands | 1 | (2%) |
| improved grasslands | 1 | (2%) |
| phrygana | 1 | (2%) |
| scrub and grassland | 1 | (2%) |

## Threats

Species is especially threatened by changes in agricultural activities. If the management of chalk grasslands (mostly light grazing) is stopped, *T. acteon* can become very abundant for a few years on the tall grasses. After the invasion of trees and shrubs the species disappears.

Heavy grazing is harmful as larvae live in a spun leaf shelter for a part of the year.

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Agricultural improvements | 13 | 1,9 |
| Chemical pollution (inc. herbicides and pesticides) | 11 | 2,1 |
| Agricultural abandonment and changing management (inc. successional change and inappropriate habitat management) | 10 | 2,3 |
| Afforestation on non-woodland habitats | 10 | 1,7 |
| Isolation and fragmentation of habitat | 8 | 1,9 |
| Abandonment and change of woodland management (inc. replanting with conifers and inappropriate habitat management) | 8 | 1,6 |
| Built development (inc. roads, housing and mining) | 7 | 1,9 |
| Felling/destruction of woodland | 6 | 2,2 |
| Recreational pressure and disturbance | 6 | 1,5 |
| Natural ecological change (e.g. myxomatosis effect on rabbits) | 5 | 1,0 |
| Land claims / coastal development | 4 | 2,3 |
| Climatic change | 4 | 1,0 |
| Collecting (killing or taking) | 3 | 1,3 |
| Land drainage | 2 | 1,0 |
| Others: | | |
| Overgrazing | 2 | 2,5 |
| Burning of grassland in spring or autumn | 2 | 2,0 |
| Natural forest and shrubs succession | 2 | 1,5 |
| Land claims for agriculture | 1 | 3,0 |
| Ploughing of grasslands and pastures | 1 | 2,0 |
| Agricultural conversion | 1 | 2,0 |
| Waste disposal sites | 1 | 1,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken

Especially in C-Europe chalk grasslands are often nature reserves (habitat protection).

Legal protection of species (no capture, trade, etc.) ( 2 countries): L, NL
Legal protection of important butterfly habitats (10 countries): AL, B, CZ, D, H, GB, L, NL, SK, YU
Habitat management: there is special attention for the species ( 2 countries): AL, GB
Ecological research on the requirements of the species has been conducted ( 4 countries): CZ, GB, NL, SLO
All populations are monitored on a regular basis (e.g. every 1-5 years) ( 1 country): SLO
At least part of the populations are monitored (e.g. every 1-5 years) ( 3 countries): B, GB, SK
Other measures taken:
Two complete national surveys have been conducted and an action plan has been written (1 country): GB

## Conservation measures proposed by compilers

Monitoring of population changes is considered to be important by most compilers.

Begin or improve monitoring (8 countries): BIH, FYROM, GB, L, SK, TR, UA, YU
Ecological research on species requirements (6 countries): BIH, FYROM, L, SK, TR, YU
Improved habitat management (4 countries): GB, L, SK, UA
Further surveys needed (4 countries): AND, E, HR, UA
Extend area of suitable habitat (2 countries): NL, CZ
Restoration of chalk grasslands (2 countries): NL, B
Legal protection of habitats (2 countries): BIH, SK
Restrict agricultural intensification, like destruction and fragmentation of habitats and use of herbicides (1 country): AND

## References


Bourn, N.A.D.& Warren, M.S. (1997) *Species Action Plan: Lullworth Skipper* Thymelicus alceon. Butterfly Conservation, Wareham, United Kingdom.

Pearman, G.S., Goodger, B., Bourn, N.A.D. & Warren, M.S. (1998) *The changing status of the Lullworth Skipper* Thymelicus acteon *and the Adonis Blue* Lysandra bellargus *in south-east Dorset over two decades*. Butterfly Conservation, Wareham, United Kingdom.

Thomas, J.A. (1983) The ecology and status of *Thymelicus acteon* (Lepidoptera: Hesperiidae) in Britain. *Ecol-Entomol.* **8(4)**, 427-435.

Thomas, C.D., Thomas, J.A. & Warren, M.S. (1992) Distributions of occupied and vacant butterfly habitats in fragmented landscapes. *Oecologia* **92**, 563-567.

# *Zerynthia caucasica* (Lederer, 1864)

## Taxonomy
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Papilionidae

## Status
Present distribution class in Europe: <1%
Overall trend in Europe: decrease 20-50%
Threat status: *Vulnerable* - SPEC 1 - species of global conservation concern because restricted to Europe and considered globally threatened

## Distribution and status per country
Restricted to Caucasus and northern part of Turkey. Declining in Turkey, but status in Caucasian Republics is unknown.

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| TRA | Turkey (Asian part) | 1-5% | decr 15-25% | V |

## Habitat
Moist, herbaceous clearings, roadsides and other open places in mixed and deciduous woodland. Foodplants several species of *Aristolochia* (Aristolochiaceae).
No Corine classification given.

## Threats

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Agricultural improvements | 1 | 3,0 |
| Chemical pollution (inc. herbicides and pesticides) | 1 | 3,0 |
| Isolation and fragmentation of habitat | 1 | 3,0 |
| Recreational pressure and disturbance | 1 | 2,0 |
| Others: | | |
| Land claims for agriculture | 1 | 3,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken
No specific measures have been taken.

## Conservation measures proposed by compilers
Improved habitat management (1 country): TR
Begin or improve monitoring (1 country): TR
Legal protection of habitats (1 country): TR
Ecological research on species requirements (1 country): TR

## References

Häuser, C.L. & Vane-Wright, R.I. (in prep.) European Swallowtail Butterflies: their distribution, decline and conservation.

Hensle, J. (1994) Beobachtungen bei westanatolischen Osterluzeifaltern. *Nachr. ent. Ver. Apollo Frankfurt a.M., N.F.* **14(3)**, 289-299.

Kuhna, P. (1977) Über Allancastria in Kleinasien. *Atalanta (Würzburg)* **8(2)**, 99-107.

# *Archon apollinus* (Herbst, 1798)

## Taxonomy
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Papilionidae

## Status
Present distribution class in Europe: <1%
Overall trend in Europe: decrease 20-50%
Threat status: *Endangered* - SPEC 3 - species with headquarters within and outside Europe, but considered threatened in Europe

## Distribution and status per country

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| TRE | Turkey (European part) | 1-5% | decr 50-75% | E |
| TRA | Turkey (Asian part) | 5-15% | decr 25-50% | V |
| GR | Greece | 1-5% | stable | - |

## Habitat
Prefers warm, sheltered places on stony, dry grasslands and in deciduous, mixed and coniferous forests. Foodplants *Aristolochia* species (Aristolochiaceae).

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| heath and scrub | 1 | (50%) |
| sclerophyllous scrub | 1 | (50%) |

## Threats
Species is threatened by agricultural activities and land claims. The intensification of agriculture caused the disappearance of the foodplants over large areas.

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Agricultural improvements | 1 | 3,0 |
| Chemical pollution (inc. herbicides and pesticides) | 1 | 3,0 |
| Land claims / coastal development | 1 | 3,0 |
| Built development (inc. roads, housing and mining) | 1 | 2,0 |
| Isolation and fragmentation of habitat | 1 | 2,0 |
| Recreational pressure and disturbance | 1 | 1,0 |
| Others: | | |
| Land claims for agriculture | 1 | 3,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken
No specific measures have been taken.

## Conservation measures proposed by compilers
Begin or improve monitoring (1 country): TR
Conservation of *Aristolochia*-species in the few remaining habitats (1 country): TR

## References


Carbonell, F. (1991) Contribution à la connaissance du genre Archon Hübner 1822. Découverte de zones de sympatrie pour *Archon apollinus* (Herbst) et *A.apollinaris* Staudinger (Lepidoptera: Papilionidae). *Linneana Belgica* **13**, 3-12.

Freina, J.J. de (1985) Revision der Gattung Archon (Hübner, 1822) mit Angaben zur Biologie, Vebreitung, Morphologie und Systematik von *Archon apollinus* (Herbst 1798) und *Archon apollinaris* (Staudinger 1892) (stat. nov.). *Nota lepidopterologica* **8(2)**, 97-128.

Fuchs, J. (1995) Beobachtungen bei der Zucht von *Archon apollinus thracicus* (Buresch, 1915) aus Nordostgriechenland. *Atalanta* **26(1/2)**, 145-154.

Häuser, C.L. & Vane-Wright, R.I. (in prep.) European Swallowtail Butterflies: their distribution, decline and conservation.

Pierron, M. (1978) Quelques notes sur la biologie d'*Archon apollinus. Alexanor* **10(7)**, 325-330.

# *Archon apollinaris* (Staudinger, [1892])

## Taxonomy
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Papilionidae

## Status
Present distribution class in Europe: <1%
Overall trend in Europe: decrease 20-50%
Threat status: *Endangered* - SPEC 3 - species with headquarters within and outside Europe, but considered threatened in Europe

## Distribution and status per country
Global distribution: SE-Turkey, NE-Iraq and W-Iran. In Europe only in SE-Turkey.

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| TRA | Turkey (Asian part) | 1-5% | decr 15-25% | V |

## Habitat
Cereal fields, vinyards and open stony places in the dry wooded steppes of Eastern Anatolia. Foodplants various *Aristolochia* species (Aristolochiaceae).
No Corine classification given.

## Threats

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Agricultural improvements | 1 | 3,0 |
| Chemical pollution (inc. herbicides and pesticides) | 1 | 3,0 |
| Isolation and fragmentation of habitat | 1 | 2,0 |
| Others: | | |
| Land claims for agriculture | 1 | 3,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken
No specific measures have been taken.

## Conservation measures proposed by compilers
Begin or improve monitoring (1 country): TR
Legal protection of habitats (1 country): TR
Ecological research on species requirements (1 country): TR

## References

Carbonell, F. (1991) Contribution à la connaissance du genre Archon Hübner 1822. Découverte de zones de sympatrie pour *Archon apollinus* (Herbst) et *A.apollinaris* Staudinger (Lepidoptera: Papilionidae). *Linneana Belgica* **13**, 3-12.

Freina, J.J. de (1985) Revision der Gattung Archon (Hübner, 1822) mit Angaben zur Biologie, Vebreitung, Morphologie und Systematik von *Archon apollinus* (Herbst 1798) und *Archon apollinaris* (Staudinger 1892) (stat. nov.). *Nota lepidopterologica* **8(2)**, 97-128.

Häuser, C.L. & Vane-Wright, R.I. (in prep.) European Swallowtail Butterflies: their distribution, decline and conservation.

# *Parnassius phoebus* (Fabricius, 1793)

## Taxonomy
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Papilionidae

## Status
Present distribution class in Europe: <1%
Overall trend in Europe: decrease 15-20%
Threat status: *Vulnerable* - SPEC 3 - species with headquarters within and outside Europe, but considered threatened in Europe

## Distribution and status per country
Main populations in Alps stable. Vulnerable in Europe because of very strong decrease in Germany.

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| D | Germany | <1% | decr 75-100% | E |
| A | Austria | 1-5% | stable | - |
| CH | Switzerland | 1-5% | stable | - |
| F | France | 5-15% | stable | V |
| FL | Liechtenstein | <1% | unknown | - |
| I | Italy | 1-5% | unknown | |
| RUS | Russia (European part) | unknown | unknown | K |

## Habitat
Calcareous mountain tundra and meadows with streams, springs and seepages. Foodplant especially *Saxifraga aizoides* (Saxifragaceae), but also species of *Sedum* and *Sempervivum* (Crassulaceae).

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| alpine and subalpine grasslands | 4 | (44%) |
| fens, transition mires and springs | 1 | (11%) |
| humid grasslands and tall herb communities | 1 | (11%) |
| inland cliffs and exposed rocks | 1 | (11%) |
| mesophile grasslands | 1 | (11%) |
| water-fringe vegetation | 1 | (11%) |

## Threats

No severe threats mentioned.

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Recreational pressure and disturbance | 3 | 1,3 |
| Built development (inc. roads, housing and mining) | 3 | 1,0 |
| Abandonment and change of woodland management (inc. replanting with conifers and inappropriate habitat management) | 2 | 1,5 |
| Agricultural abandonment and changing management (inc. successional change and inappropriate habitat management) | 2 | 1,5 |
| Climatic change | 2 | 1,5 |
| Collecting (killing or taking) | 2 | 1,5 |
| Isolation and fragmentation of habitat | 2 | 1,5 |
| Agricultural improvements | 2 | 1,0 |
| Felling/destruction of woodland | 1 | 2,0 |
| Afforestation on non-woodland habitats | 1 | 1,0 |
| Chemical pollution (inc. herbicides and pesticides) | 1 | 1,0 |
| Land drainage | 1 | 1,0 |
| Natural ecological change (e.g. myxomatosis effect on rabbits) | 1 | 1,0 |
| Others: | | |
| Brook-regulation | 1 | 1,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken

Legal protection of species (no capture, trade, etc.) ( 3 countries): A, D, F

## Conservation measures proposed by compilers

Begin or improve monitoring (2 countries): F, RUS
Restrict recreational pressure (1 country): F
Further surveys needed (1 country): RUS

## References


Braconnot, S., Descimon, H. & Vesco, J.P. (1993) La conservation des Parnasius en France : état des populations de 1990 à 1992 (Lep. Papilionidae). *Alexanor* **18(2)**, 99-111.

Freina, J.J. de (1991) Ergänzende Bemerkungen über das angebliche Vorkommen von *Parnassius phoebus* (Fabricius, 1783) in den Bayerischen Alpen (Lepidoptera, Papilionidae). *Nachrichtenblatt der Bayerischen Entomologen*, **40(4)**, 126-127.

Häuser, C.L. & Vane-Wright, R.I. (in prep.) European Swallowtail Butterflies: their distribution, decline and conservation.

Nikusch, I. (1991) Parnassiinae. In: *Die Schmetterlinge Baden-Württembergs. Band 1: Tagfalter I.* Eds. Ebert, G. & Rennwald, E., pp. 195-212. Eugen Ulmer Verlag, Stuttgart.

# *Parnassius apollo* (Linnaeus, 1758)

## Taxonomy
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Papilionidae

## Status
Present distribution class in Europe: 5-15%
Overall trend in Europe: decrease 20-50%
Threat status: *Vulnerable* - SPEC 3 - species with headquarters within and outside Europe, but considered threatened in Europe
Species at present in Appendix II of Bern Convention.

## Distribution and status per country
Species is declining in all areas of low altitude. Still large and strong populations in high parts of the Alps and other high mountain ranges.

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| BY | Belarus | <1% | extinct | E |
| CZ | Czech Republic | <1% | extinct | E |
| LV | Latvia | <1% | extinct | E |
| D | Germany | <1% | decr 75-100% | E |
| PL | Poland | <1% | decr 75-100% | E |
| UA | Ukraine | <1% | decr 75-100% | E |
| RO | Romania | <1% | decr 50-75% | E |
| A | Austria | 5-15% | decr 50-75% | V |
| SK | Slovakia | 1-5% | decr 25-50% | E |
| SLO | Slovenia | 5-15% | decr 25-50% | R |
| N | Norway | >15% | decr 25-50% | V |
| FIN | Finland | 1-5% | decr 15-25% | V |
| S | Sweden | 5-15% | decr 15-25% | I |
| TRA | Turkey (Asian part) | 5-15% | decr 15-25% | K |
| E | Spain | >15% | decr 15-25% | R |
| AL | Albania | 1-5% | stable | - |
| BG | Bulgaria | 5-15% | stable | - |
| CH | Switzerland | 5-15% | stable | - |
| GR | Greece | 5-15% | stable | - |
| F | France | >15% | stable | I |
| FL | Liechtenstein | 1-5% | unknown | - |
| HR | Croatia | 1-5% | unknown | E |
| RUS | Russia (European part) | 1-5% | unknown | V |
| BIH | Bosnia | 5-15% | unknown | - |
| FYROM | FYR of Macedonia | 5-15% | unknown | V |
| YU | Yugoslavia | 5-15% | unknown | V |
| AND | Andorra | >15% | unknown | - |
| I | Italy | >15% | unknown | |

## Habitat
Sunny, stony slopes, screes, cliffs, valleys and meadows with ample flowers, mostly calcareous and sometimes in forested setting. In Scandinavia mainly along rocky coasts. Usual foodplants *Sedum album* and *S. telephium*, but also other *Sedum* and *Sempervivum* species in Central and Southern Europe (Crassulaceae).

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| alpine and subalpine grasslands | 10 | (21%) |
| dry calcareous grasslands and steppes | 8 | (17%) |
| inland cliffs and exposed rocks | 5 | (11%) |
| mesophile grasslands | 4 | (9%) |
| screes | 4 | (9%) |
| broad-leaved deciduous forests | 3 | (6%) |
| coniferous woodland | 3 | (6%) |
| cliffs and rocky shores | 2 | (4%) |
| dry siliceous grasslands | 2 | (4%) |
| heath and scrub | 2 | (4%) |
| islets and rock stacks | 2 | (4%) |
| humid grasslands and tall herb communities | 1 | (2%) |
| mixed woodland | 1 | (2%) |

## Threats

Lowland populations often fragmented and isolated. Species is attractive to collectors, especially the subspecies of small lowland populations.

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Collecting (killing or taking) | 14 | 1,9 |
| Built development (inc. roads, housing and mining) | 12 | 1,6 |
| Isolation and fragmentation of habitat | 11 | 2,3 |
| Recreational pressure and disturbance | 11 | 2,1 |
| Afforestation on non-woodland habitats | 10 | 2,2 |
| Abandonment and change of woodland management (inc. replanting with conifers and inappropriate habitat management) | 9 | 1,7 |
| Climatic change | 9 | 1,4 |
| Agricultural improvements | 8 | 2,4 |
| Felling/destruction of woodland | 8 | 2,1 |
| Chemical pollution (inc. herbicides and pesticides) | 7 | 1,9 |
| Agricultural abandonment and changing management (inc. successional change and inappropriate habitat management) | 7 | 1,6 |
| Land claims / coastal development | 5 | 1,8 |
| Natural ecological change (e.g. myxomatosis effect on rabbits) | 6 | 1,8 |
| Others: | | |
| Overgrazing | 2 | 2,5 |
| Natural forest and shrubs succession | 2 | 2,5 |
| Waste disposal sites | 2 | 2,0 |
| Fires | 1 | 3,0 |
| Mining | 1 | 2,0 |
| Building of vineyards | 1 | 2,0 |
| Traffic / railway | 1 | 2,0 |
| Predation by birds | 1 | 1,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken

Species is legally protected in many countries. In spite of legal protection of important habitats there is only special attention in habitat management in a few countries.

Legal protection of species (no capture, trade, etc.) (19 countries): A, AL, AND, BIH, BY, CZ, D, E, F, FIN, FL, FYROM, HR, RO, RUS, SK, SLO, UA, YU
Legal protection of important butterfly habitats (13 countries): A, AL, BIH, D, E, FYROM, HR, RO, RUS, SK, SLO, TR, YU
Habitat management: there is special attention for the species ( 3 countries): AL, D, SK
Ecological research on the requirements of the species has been conducted ( 5 countries): D, E, RUS, SK, SLO
All populations are monitored on a regular basis (e.g. every 1-5 years) ( 1 country): SLO
At least part of the populations are monitored (e.g. every 1-5 years) ( 5 countries): D, F, FIN, S, SK
Other measures taken ( 2 countries): CZ, LV
Other measures taken:
Reintroduction in several localities (2 countries): CZ, LV

## Conservation measures proposed by compilers

Begin or improve monitoring (7 countries): BIH, FYROM, HR, RUS, TR, UA, YU
Legal protection of habitats (5 countries): LV, RO, SK, SLO, TR
Ecological research on species requirements (6 countries): BIH, E, FYROM, RUS, SK, YU
Reintroduction (2 countries): RUS, SK
Restrict recreational activities (2 countries): F, TR
Further surveys needed (2 countries): BY, UA
Extensive grazing required (1 country): FIN
Avoid overgrazing (1 country): TR
Avoid natural afforestation (1 country): TR
Improved habitat management (1 country): UA
Stop development of mountain areas with sensitive populations (1 country): E
Enforcement of measures proscribed by law (1 country): HR

## References


Braconnot, S., Descimon, H. & Vesco, J.P. (1993) La conservation des Parnasius en France : état des populations de 1990 à 1992 (Lep. Papilionidae). *Alexanor* **18(2)**, 99-111.

Delgado, E. (1997) Papallones de Catalunya. *Parnassius apollo* (Linnaeus 1758). *Buttletí de la Societat Catalana de Lepidopterologia* **79**, 39-51.

Geyer, A. & Dolek, M. (1995) Ökologie und Schutz des Apollofalters (*Parnassius apollo*) in der Frankenalb. *Mitt.dtsch.Ges.allg.angew.Entomol.* **10(1-6)**, 333-336.

Gomariz, G. (1993) Aportacion al conocimiento de la distribucion y abundancia de *Parnassius apollo* (Linnaeus 1758) en Sierra Nevada (España meridional) (Lepidoptera; Papilionidae). *Shilap Revista Lepidopterologia* **21**, 71-79.

Häuser, C.L. & Vane-Wright, R.I. (in prep.) European Swallowtail Butterflies: their distribution, decline and conservation.

Klinker, H., Löser, S. & Rehnelt, K. (1987) 10 Jahre Erforschung des Moselapollofalters (*parnassius apollo vinningensis* (Stichel 1899), Lepidoptera, Papilionidae), im modernen Weinbaugebiet der Mosel - ein Beitrag zu seiner Rettung. *Mitt. Arbeitsgem. rhein.-westf. Lepidopterol*. **5**, 74-96.

Klinker, H. (1990) Neue Untersuchungen zum Apollo- und SegelFalters im Rheinland (Lepidoptera, Papilionidae). *Verh. Westd. Entom. Tag* **1989**, 221-232.

Kudrna, O., Lukášek, J. & Slavík, B. (1994) Zur erfolgreichen Wiederansiedlung von *Parnassius apollo* (Linnaeus 1758) in Tschechien. *Oedippus* **9,** 1-37.

Nikusch, J. (1993) Parnassiinae. In *Die Schmetterlinge Baden-Württembergs, Band 1, Tagfalter 1.* Hrsg. Ebert, G. & Rennwald, E., pp. 195-207. Verlag Eugen Ulmer, Stuttgart, Germany.

Nikusch, I.W. (1996) *Parnassius apollo*. In *Background information on invertebrates of the Habitats Directive and the Bern Convention. Part I - Crustacea, Coleoptera and Lepidoptera.* eds. Helsdingen, P.J. van, Willemse, L.P.M. & Speight, M.C.D., pp. 194-198. Council of Europe, Strasbourg, Nature and environment, No. 79.

Richarz, N., Neumann, D. & Wipking, W. (1989) Untersuchungen zur Ökologie des Apollofalters (*Parnassius apollo vinningensis* (Stichel 1899)) im Weingebiet der unteren Mosel. *Mitt.Arbeitsgem.rhein.-westf.Lepidopterol*. **5**, 108-259.

Schmidt, A. (1997) Zur aktuellen Situation des Mosel-Apollofalters *Parnassius apollo vinningensis* (Stichel 1899) (Lepidoptera, Papilionidae). *Melanargia* **9(2)**, 38-47.

Švestka, M. (1977) Historický výskyt jasenç *Parnassius apollo marcomanus* (Kammel 1990) v Podyjí./Historical occurrence of *Parnassius apollo macromanus* in Dyje-river Valley. *Zprávy Èeskeslovenské SpoleÈnosti entomologické* **13**, 33-42. [in Czech].

# *Leptidea morsei* Fenton, 1881

## Taxonomy
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Pieridae

## Status
Present distribution class in Europe: <1%
Overall trend in Europe: decrease 50-80%
Threat status: *Critically endangered* - SPEC 3 - species with headquarters within and outside Europe, but considered threatened in Europe

## Distribution and status per country
A major part of the range of *L. morsei* lies outside Europe (Asia). In Europe restricted to eastern part, but never common and mostly declining. Status of species in Russia and Belarus unknown.

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| YU | Yugoslavia | <1% | extinct | E |
| CZ | Czech Republic | <1% | decr 75-100% | I |
| A | Austria | 1-5% | decr 75-100% | E |
| H | Hungary | 1-5% | decr 50-75% | V |
| HR | Croatia | 1-5% | decr 50-75% | V |
| RO | Romania | <1% | decr 25-50% | K |
| MD | Moldova | <1% | decr 15-25% | R |
| SLO | Slovenia | <1% | decr 15-25% | R |
| UA | Ukraine | <1% | decr 15-25% | R |
| I | Italy | <1% | unknown | |
| BIH | Bosnia | 1-5% | unknown | R |
| SK | Slovakia | 1-5% | unknown | I |
| BY | Belarus | unknown | unknown | K |
| RUS | Russia (European part) | unknown | unknown | - |

## Habitat
Mixed landscapes of warm, often humid, grasslands and broad-leaved deciduous forest, like sunny forest margins, clearings and forested steppes. Foodplants *Lathyrus niger*, *L. pratensis, Lotus corniculatus* and *Vicia* species (Fabaceae).

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| broad-leaved deciduous forests | 8 | (31%) |
| coniferous woodland | 4 | (15%) |
| mesophile grasslands | 4 | (15%) |
| mixed woodland | 4 | (15%) |
| humid grasslands and tall herb communities | 3 | (12%) |
| dry calcareous grasslands and steppes | 1 | (4%) |
| tree lines, hedges, small woods, bocage, parkland dehesa | 1 | (4%) |
| water-fringe vegetation | 1 | (4%) |

## Threats

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Afforestation on non-woodland habitats | 7 | 2,0 |
| Agricultural improvements | 7 | 1,9 |
| Chemical pollution (inc. herbicides and pesticides) | 7 | 1,7 |
| Abandonment and change of woodland management (inc. replanting with conifers and inappropriate habitat management) | 5 | 2,0 |
| Built development (inc. roads, housing and mining) | 5 | 1,6 |
| Climatic change | 4 | 2,0 |
| Isolation and fragmentation of habitat | 4 | 2,0 |
| Natural ecological change (e.g. myxomatosis effect on rabbits) | 4 | 2,0 |
| Agricultural abandonment and changing management (inc. successional change and inappropriate habitat management) | 4 | 1,8 |
| Felling/destruction of woodland | 3 | 2,3 |
| Recreational pressure and disturbance | 3 | 1,7 |
| Land claims / coastal development | 2 | 2,0 |
| Land drainage | 2 | 1,5 |
| Collecting (killing or taking) | 1 | 3,0 |
| Others: | | |
| Habitat destruction | 1 | 2,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken

Legal protection of species (no capture, trade, etc.) ( 1 country): H
Legal protection of important butterfly habitats ( 4 countries): BIH, H, SK, YU
Ecological research on the requirements of the species has been conducted ( 1 country): SLO
All populations are monitored on a regular basis (e.g. every 1-5 years) ( 1 country): SLO
At least part of the populations are monitored (e.g. every 1-5 years) ( 2 countries): SK, UA

## Conservation measures proposed by compilers

Begin or improve monitoring (4 countries): BIH, HR, SK, UA
Ecological research on species requirements (3 countries): BIH, RO, SK
Improved habitat management (2 countries): UA, YU
Legal protection of habitats (2 countries): RO, SK
Further surveys needed (2 countries): MD, UA
Legal protection of species (1 country): SLO

## References


LorkoviÉ, Z. (1993) Ecological association of *Leptidea morsei major* (Grund 1905) (Lepidoptera, Pieridae) with the oak forest *Lathyreto-quercetum petraeae* HR-T. 1957 in Croatia. *Periodicum biologorum Zagreb* **95(4)**, 455-457.

Moucha, J. (1951) Poznámka k zemçpisnému rozší©ení *Leptidae morsei* Fent. *ssp. major* Lork. / Contribution on the geographical occurrence of *Leptidae morsei* Fent. *ssp. major* Lork. Ñasopis Èeskoslovenské SpoleÈnosti entomolické **48**, 181-186. [in Czech, French summary]

# *Anthocharis damone* Boisduval, 1836

## Taxonomy
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Pieridae

## Status
Present distribution class in Europe: <1%
Overall trend in Europe: decrease 15-20%
Threat status: *Vulnerable* - SPEC 3 - species with headquarters within and outside Europe, but considered threatened in Europe

## Distribution and status per country

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| TRE | Turkey (European part) | <1% | extinct | E |
| TRA | Turkey (Asian part) | 5-15% | decr 15-25% | K |
| GR | Greece | 1-5% | stable | - |
| FYROM | FYR of Macedonia | <1% | unknown | V |
| I | Italy | <1% | unknown | |

## Habitat
Sparse maquis and scrub in Italy and the Balcan. Mainly on century-old lava-flows on Sicily (I). Flowery grassland in mountain valleys, slopes and pine forest clearings in TRA. Foodplant *Isatis* species (Brassicaceae).

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| dry calcareous grasslands and steppes | 1 | (33%) |
| heath and scrub | 1 | (33%) |
| sclerophyllous scrub | 1 | (33%) |

## Threats

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Collecting (killing or taking) | 2 | 1,5 |
| Isolation and fragmentation of habitat | 2 | 1,5 |
| Climatic change | 1 | 3,0 |
| Natural ecological change (e.g. myxomatosis effect on rabbits) | 1 | 3,0 |
| Chemical pollution (inc. herbicides and pesticides) | 1 | 2,0 |
| Land claims / coastal development | 1 | 2,0 |
| Afforestation on non-woodland habitats | 1 | 1,0 |
| Agricultural improvements | 1 | 1,0 |
| Built development (inc. roads, housing and mining) | 1 | 1,0 |
| Recreational pressure and disturbance | 1 | 1,0 |
| Others: | | |
| Land claims for agriculture | 1 | 3,0 |
| Overgrazing | 1 | 2,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken

Legal protection of species (no capture, trade, etc.) ( 1 country): FYROM
Legal protection of important butterfly habitats ( 2 countries): FYROM, I
Ecological research on the requirements of the species has been conducted ( 1 country): I
At least part of the populations are monitored (e.g. every 1-5 years) ( 1 country): I
No specific measures have been taken ( 1 country): TR

## Conservation measures proposed by compilers

Begin or improve monitoring (2 countries): FYROM, TR
Ecological research on species requirements (2 countries): FYROM, TR
Improved habitat management (1 country): FYROM
Legal protection of habitats (1 country): TR

## References

Back, W. (1985) Zur Biologie von *Anthocharis damone* (BOISDUVAL, 1836) und *Anthocharis gruneri* (HERRICH-SCHAFFER, 1851). *Atalanta* **16**, 105-108.

Jutzeler, D., Bollino, M, Russo, L. & Sala, G. (1998) Études sur *Anthocharis damone* (Boisduval, 1836) et *Echloe ausonia* (Hübner, 1804) de l'Italie méridionale (*Lepidoptera: Pieridae*). *Linneana Belgica* **XVI(6)**, 227-235.

# *Euchloe simplonia* (Boisduval, 1828)

## Taxonomy

Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Pieridae

## Status

Present distribution class in Europe: <1%
Overall trend in Europe: decrease 20-50%
Threat status: *Endangered* - SPEC 3 - species with headquarters within and outside Europe, but considered threatened in Europe

## Distribution and status per country

In Europe restricted to a small area in the W-Alps. Outside Europe in Siberia and Mongolia (Lukhtanov & Lukhtanov, 1994).

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| CH | Switzerland | 1-5% | decr 15-25% | - |
| F | France | 1-5% | unknown | I |
| I | Italy | 1-5% | unknown | |

## Habitat

Alpine and subalpine grasslands, meadows and rocky outcrops. Foodplants *Barbarea, Biscutella, Iberis* and *Sisymbrium* species (Brassicaceae).

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| alpine and subalpine grasslands | 1 | (13%) |
| dry calcareous grasslands and steppes | 1 | (13%) |
| dry siliceous grasslands | 1 | (13%) |
| humid grasslands and tall herb communities | 1 | (13%) |
| inland sand-dunes | 1 | (13%) |
| mesophile grasslands | 1 | (13%) |
| phrygana | 1 | (13%) |
| sclerophyllous scrub | 1 | (13%) |

## Threats

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Agricultural abandonment and changing management (inc. successional change and inappropriate habitat management) | 1 | 3,0 |
| Agricultural improvements | 1 | 3,0 |
| Isolation and fragmentation of habitat | 1 | 3,0 |
| Natural ecological change (e.g. myxomatosis effect on rabbits) | 1 | 3,0 |
| Abandonment and change of woodland management (inc. replanting with conifers and inappropriate habitat management) | 1 | 2,0 |
| Afforestation on non-woodland habitats | 1 | 2,0 |
| Climatic change | 1 | 2,0 |
| Built development (inc. roads, housing and mining) | 1 | 1,0 |
| Chemical pollution (inc. herbicides and pesticides) | 1 | 1,0 |
| Felling/destruction of woodland | 1 | 1,0 |
| Recreational pressure and disturbance | 1 | 1,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken

No specific measures have been taken.

## Conservation measures proposed by compilers

Legal protection of habitats (1 country): F

## References

Lukhtanov, V. & Lukhtanov, A. (1994) *Die Tagfalter Nordwestasiens*. Dr. Ulf Eitschberger, Marktleuthen, Germany.

Ziegler, H. (1989) Biologie und Verhalten von *Euchloe simplonia* (Boisduval 1928) in der Schweiz (Lep. : Pieridae). *Atalanta* 19 : 53-69.

# *Pieris wollastoni* Butler, 1886

## Taxonomy
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Pieridae

## Status
Present distribution class in Europe: <1%
Overall trend in Europe: decrease 80-100%
Threat status: *Critically endangered* - SPEC 1 - species of global conservation concern because restricted to Europe and considered globally threatened

## Distribution and status per country
Species is restricted to Madeira. In the 1970's considered rare, but after 1980 more widely distributed. Recently the numbers seem to have decreased sharply.

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| MAD | Madeira | <1% | decr 75-100% | E |

## Habitat
Mostly found in north-exposed valleys in the Laurisilva-forests.

## Threats

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Agricultural improvements | 1 | 3,0 |
| Felling/destruction of woodland | 1 | 3,0 |
| Abandonment and change of woodland management (inc. replanting with conifers and inappropriate habitat management) | 1 | 3,0 |
| Agricultural abandonment and changing management (inc. successional change and inappopriate habitat management) | 1 | 2,0 |
| Afforestation of non-woodland habitats | 1 | 2,0 |
| Built development (inc. roads, housing and mining) | 1 | 1,0 |
| Collecting (killing or taking) | 1 | 1,0 |
| Isolation and fragmentation of habitat | 1 | 1,0 |
| Concurrence of introduced *P. rapae ?* | 1 | ? |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken
No conservation have been taken.

## Conservation measures proposed by compilers
Find and conserve surviving populations.

## References
Meyer, M. (1993) Die Lepidoptera der makronesischen Region III. Die Tagfalter des nördlichen Makronesiens (Madeira, Azoren) aus biogeographischer Sicht. *Atalanta* **24(1/2)**, 121-162.

# *Pieris cheiranthi* (Hübner, 1808)

## Taxonomy
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Pieridae

## Status
Present distribution class in Europe: <1%
Overall trend in Europe: decrease 20-50%
Threat status: *Vulnerable* - SPEC 1 - global distribution restricted to Europe and considered threatened in Europe

## Distribution and status per country
Confined to the north of Tenerife and La Palma. Formerly also in the north and centre of La Gomera, where it seems to have become extinct during the last 20 years (Wiemers, 1995).

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| CAN | Canary Islands | 5-15% | decr 15-25% | - |

## Habitat
Wet, deeply excavated barrancos in the laurel forest area at altitudes of 200-1400 m (Wiemers, 1995).
No Corine classification given.

## Threats
The habitat is endangered because of anthropogenic pressure (Wiemers, 1995)

## Conservation measures taken or proposed
No information on conservation measures available.

## References
Wiemers, M. (1995) The butterflies of the Canary Islands. A survey on their distribution, biology and ecology (Lepidoptera: Papilionidea and Hesperioidea). First part**.** *Linneana Belgica* **15(2)**, 63-86.

# *Colias nastes* Boisduval, 1832

## Taxonomy
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Pieridae

## Status
Present distribution class in Europe: 5-15%
Overall trend in Europe: decrease 20-50%
Threat status: *Vulnerable* - SPEC 3 - species with headquarters within and outside Europe, but considered threatened in Europe

## Distribution and status per country

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| S | Sweden | >15% | decr 25-50% | - |
| RUS | Russia (European part) | 5-15% | decr 15-25% | R |
| FIN | Finland | <1% | stable | R |
| N | Norway | 5-15% | unknown | - |

## Habitat
Calcareous montain slopes, dry to moist alpine meadows (FIN, S) and shrubby tundra (RUS). Foodplants *Astragalus alpinus* and *A. frigidus* (Fabaceae).

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| alpine and subalpine grasslands | 2 | (33%) |
| dry calcareous grasslands and steppes | 1 | (17%) |
| heath and scrub | 1 | (17%) |
| humid grasslands and tall herb communities | 1 | (17%) |
| mesophile grasslands | 1 | (17%) |

## Threats

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Overgrazing by reindeer | 2 | 1,5 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken

Legal protection of important butterfly habitats ( 1 country): FIN
At least part of the populations are monitored (e.g. every 1-5 years) ( 1 country): FIN
No specific measures have been taken ( 2 countries): RUS, S

## Conservation measures proposed by compilers

Investigate the effect of reindeer grazing on the foodplant (1 country): FIN

# *Colias hecla* Lefèbvre, 1836

## Taxonomy
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Pieridae

## Status
Present distribution class in Europe: 1-5%
Overall trend in Europe: decrease 20-50%
Threat status: *Vulnerable* - SPEC 3 - species with headquarters within and outside Europe, but considered threatened in Europe

## Distribution and status per country

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| FIN | Finland | 1-5% | decr 15-25% | R |
| S | Sweden | >15% | decr 15-25% | - |
| N | Norway | 1-5% | unknown | - |
| RUS | Russia (European part) | 1-5% | unknown | V |

## Habitat
Mountainous areas above the birch zone on wide, open stretches, also on rocky slopes and ledges where *Silene acaulis* and *Astragalus* grow (Henriksen & Kreutzer, 1982). Foodplant mainly *Astragalus alpinus*, maybe also *Astragalus*-species (Fabaceae).

| Corine classification of habitat (number of mentions by national compilers) | |
|---|---|
| alpine and subalpine grasslands | 2 (33%) |
| heath and scrub | 1 (17%) |
| coastal sand dunes and sand beaches | 1 (17%) |
| humid grasslands and tall herb communities | 1 (17%) |
| mesophile grasslands | 1 (17%) |

## Threats
Main threat is overgrazing by reindeers, especially in Finland. *Astragalus*-plants are eaten first by these herbivores.

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Overgrazing by reindeer | 1 | 2,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken and proposed
No data available on conservation measures.

## References
Henriksen, H.J. & Kreutzer, I.B. (1982) *The Butterflies of Scandinavia in nature*. Skandinavisk Bogforlag. Odense, Denmark.

# *Colias myrmidone* (Esper, 1780)

## Taxonomy
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Pieridae

## Status
Present distribution class in Europe: 5-15%
Overall trend in Europe: decrease 20-50%
Threat status: *Vulnerable* - SPEC 2 - global distribution concentrated in Europe and considered threatened in Europe

## Distribution and status per country

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| BG | Bulgaria | <1% | extinct | E |
| A | Austria | <1% | decr 75-100% | E |
| D | Germany | <1% | decr 75-100% | E |
| CZ | Czech Republic | 1-5% | decr 50-75% | E |
| H | Hungary | 1-5% | decr 50-75% | V |
| PL | Poland | 1-5% | decr 25-50% | V |
| SK | Slovakia | 1-5% | decr 25-50% | E |
| UA | Ukraine | 5-15% | decr 25-50% | R |
| SLO | Slovenia | <1% | decr 15-25% | V |
| RO | Romania | 5-15% | decr 15-25% | - |
| BY | Belarus | 1-5% | unknown | - |
| HR | Croatia | 1-5% | unknown | - |
| YU | Yugoslavia | 1-5% | unknown | V |
| BIH | Bosnia | 5-15% | unknown | R |
| RUS | Russia (European part) | 5-15% | unknown | - |

## Habitat
Dry, half-open spots like forest margins, roadsides, extensively managed meadows, newly cleared or sparse woodlands, forested and bushy steppes, slopes and grasslands. Foodplants species of the genus *Cytisus* and related genera (Fabaceae).

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| dry calcareous grasslands and steppes | 8 | (29%) |
| dry siliceous grasslands | 7 | (25%) |
| mesophile grasslands | 7 | (25%) |
| coniferous woodland | 2 | (7%) |
| mixed woodland | 2 | (7%) |
| heath and scrub | 1 | (4%) |
| phrygana | 1 | (4%) |

## Threats

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Agricultural improvements | 10 | 2,0 |
| Chemical pollution (inc. herbicides and pesticides) | 9 | 2,0 |
| Afforestation on non-woodland habitats | 9 | 1,9 |
| Agricultural abandonment and changing management (inc. successional change and inappropriate habitat management) | 7 | 1,9 |
| Built development (inc. roads, housing and mining) | 6 | 2,0 |
| Isolation and fragmentation of habitat | 6 | 1,7 |
| Recreational pressure and disturbance | 5 | 1,8 |
| Climatic change | 6 | 1,8 |
| Abandonment and change of woodland management (inc. replanting with conifers and inappropriate habitat management) | 5 | 2,3 |
| Natural ecological change (e.g. myxomatosis effect on rabbits) | 5 | 2,0 |
| Felling/destruction of woodland | 5 | 2,0 |
| Collecting (killing or taking) | 3 | 1,7 |
| Land drainage | 3 | 1,7 |
| Land claims / coastal development | 2 | 3,0 |
| Others: | | |
| Overgrazing by sheep and cattle | 3 | 2,3 |
| Ploughing | 1 | 2,0 |
| Fertilization | 1 | 2,0 |
| Burning of dry grassland in spring or autumn | 1 | 3,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken

Legal protection of species (no capture, trade, etc.) ( 3 countries): D, H, YU
Legal protection of important butterfly habitats ( 6 countries): BIH, D, H, RUS, SK, YU
Habitat management: there is special attention for the species ( 1 country): H
Ecological research on the requirements of the species has been conducted ( 2 countries): D, SLO
All populations are monitored on a regular basis (e.g. every 1-5 years) ( 2 countries): D, SLO
At least part of the populations are monitored (e.g. every 1-5 years) ( 1 country): UA
No specific measures have been taken ( 3 countries): CZ, HR, RO

## Conservation measures proposed by compilers

Begin or improve monitoring (6 countries): BIH, HR, RUS, SK, UA, YU
Ecological research on species requirements (4 countries): BIH, BY, SK, YU
Improved habitat management (2 countries): SK, UA
Legal protection of habitats (2 countries): RO, SK
Legal protection of species (2 countries): SK, SLO
Control grazing more effectively (1 country): RO
Further surveys needed (1 countries): UA

## References

Kudrna, O. & Mayer, L. (1990) Grundlagen zu einem Artenhilfsprogramm für *Colias myrmidone* (Esper 1780) in Bayern. *Oedippus* **1**, 1-46.

# *Colias chrysotheme* (Esper, 1781)

## Taxonomy

Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Pieridae

## Status

Present distribution class in Europe: 5-15%
Overall trend in Europe: decrease 20-50%
Threat status: *Vulnerable* - SPEC 3 - species with headquarters within and outside Europe, but considered threatened in Europe

## Distribution and status per country

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| A | Austria | <1% | decr 75-100% | E |
| CZ | Czech Republic | <1% | decr 75-100% | E |
| SK | Slovakia | 1-5% | decr 50-75% | E |
| MD | Moldova | <1% | decr 25-50% | E |
| UA | Ukraine | 1-5% | decr 25-50% | I |
| H | Hungary | 5-15% | decr 25-50% | R |
| RO | Romania | 5-15% | decr 15-25% | - |
| RUS | Russia (European part) | 5-15% | unknown | - |

## Habitat

Open, often dry and calcareous areas such as steppes, grasslands and rocky slopes. Foodplants principally *Astragalus austriacus*, aswell as *Coronilla varia* (UA) and *Vicia* species (Fabaceae).

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| dry calcareous grasslands and steppes | 8 | (50%) |
| dry siliceous grasslands | 5 | (31%) |
| fallow land, waste places | 1 | (6%) |
| mesophile grasslands | 1 | (6%) |
| phrygana | 1 | (6%) |

## Threats

Chief threats are agricultural changes, afforestation and built development.

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Agricultural abandonment and changing management (inc. successional change and inappropriate habitat management) | 6 | 2,2 |
| Afforestation on non-woodland habitats | 5 | 2,6 |
| Agricultural improvements | 5 | 2,4 |
| Built development (inc. roads, housing and mining) | 5 | 2,4 |
| Chemical pollution (inc. herbicides and pesticides) | 5 | 2,0 |
| Recreational pressure and disturbance | 4 | 2,3 |
| Land claims / coastal development | 3 | 2,7 |
| Abandonment and change of woodland management (inc. replanting with conifers and inappropriate habitat management) | 3 | 1,7 |
| Isolation and fragmentation of habitat | 3 | 1,7 |
| Collecting (killing or taking) | 2 | 2,0 |
| Natural ecological change (e.g. myxomatosis effect on rabbits) | 1 | 3,0 |
| Climatic change | 1 | 2,0 |
| Felling/destruction of woodland | 1 | 2,0 |
| Land drainage | 1 | 2,0 |
| Others: | | |
| Herding of sheep and cows | 2 | 2,0 |
| Burning of dry grassland in spring and autumn | 2 | 2,0 |
| Ploughing of grasslands and pastures | 1 | 2,0 |
| Land claims for agriculture | 1 | 2,0 |
| Waste disposal | 1 | 1,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken

Legal protection of species (no capture, trade, etc.) ( 2 countries): H, MD
Legal protection of important butterfly habitats ( 5 countries): CZ, H, MD, RUS, SK
Habitat management: there is special attention for the species ( 1 country): H
At least part of the populations are monitored (e.g. every 1-5 years) ( 1 country): UA
No specific measures have been taken ( 1 country): RO

## Conservation measures proposed by compilers

Improved habitat management (3 countries): MD, SK, UA
Begin or improve monitoring (3 countries): MD, SK, UA
Legal protection of habitats (2 countries): RO, SK
Further surveys needed (2 countries): MD, UA
Ecological research on species requirements (1 country): SK
Legal protection of species (1 country): SK
Clear grasslands from trees and shrubs and introduce extensive grazing (1 country): SK

## References

Švestka, M., Grulich, V. (1990) Poznámky k faunistice a bionomii *Colias chrysotheme* Esp. a vztah k *Astralagus austriacus* Jacq. / Notes on the faunistics and bionomics of *Colias chrysotheme* Esp. and the relation to *Astralagus austriacus* Jacq. *Přírodovědný Sborník západomoravského Muzea v Třebíči* **17**, 105-126. [in Czech]

# *Gonepteryx maderensis* Felder, 1862

## Taxonomy
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Pieridae

## Status
Present distribution class in Europe: <1%
Overall trend in Europe: unknown
Present distribution less than 5000 ha, known to exist at no more than five locations and continuing decline.
Threat status: *Endangered* - SPEC 1 - species of global conservation concern because restricted to Europe and considered globally threatened

## Distribution and status per country
Species restricted to Madeira, occurring in low densities.

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| MAD | Madeira | <1% | unknown | R |

## Habitat
Occurs only in the primary laurisilva forest area, at middle altitudes. Larval foodplant *Rhamnus glandulosa* (Rhamnaceae).

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| broad-leaved evergreen woodland | 1 | (50%) |
| mesophile grasslands | 1 | (50%) |

## Threats
Species is restricted to primary vegetation, susceptible to human interference.

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Agricultural improvements | 1 | 3,0 |
| Felling/destruction of woodland | 1 | 3,0 |
| Abandonment and change of woodland management (inc. replanting with conifers and inappropriate habitat management) | 1 | 3,0 |
| Agricultural abandonment and changing management (inc. successional change and inappopriate habitat management) | 1 | 2,0 |
| Afforestation of non-woodland habitats | 1 | 2,0 |
| Built development (inc. roads, housing and mining) | 1 | 1,0 |
| Collecting (killing or taking) | 1 | 1,0 |
| Isolation and fragmentation of habitat | 1 | 1,0 |
| Concurrence of introduced *P. rapae ?* | 1 | ? |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken
No conservation measures taken.

## Conservation measures proposed by compilers
It is important to find and protect remaining populations.

## References

Meyer, M. (1993) Die Lepidoptera der makronesischen Region III. Die Tagfalter des nördlichen Makronesiens (Madeira, Azoren) aus biogeographischer Sicht. *Atalanta* **24(1/2)**, 121-162.

# *Lycaena helle* (Denis & Schiffermüller, 1775)

## Taxonomy

Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Lycaenidae

## Status

Present distribution class in Europe: 5-15%
Overall trend in Europe: decrease 20-50%
Threat status: *Vulnerable* - SPEC 3 - species with headquarters within and outside Europe, but considered threatened in Europe

## Distribution and status per country

Though locally stable, the species is declining almost all over its range, even in the large populations of Norway, Sweden and Finland.

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| CZ | Czech Republic | <1% | extinct | E |
| H | Hungary | <1% | extinct | E |
| LV | Latvia | <1% | extinct | E |
| SK | Slovakia | <1% | extinct | E |
| A | Austria | <1% | decr 75-100% | E |
| D | Germany | <1% | decr 75-100% | E |
| UA | Ukraine | <1% | decr 50-75% | V |
| RO | Romania | 1-5% | decr 25-50% | R |
| B | Belgium | 5-15% | decr 25-50% | V |
| FIN | Finland | 5-15% | decr 25-50% | V |
| S | Sweden | >15% | decr 25-50% | I |
| CH | Switzerland | 1-5% | decr 15-25% | V |
| N | Norway | 5-15% | decr 15-25% | V |
| F | France | <1% | stable | V |
| PL | Poland | 1-5% | stable | V |
| L | Luxemburg | 1-5% | incr 125-200% | V |
| BY | Belarus | <1% | unknown | K |
| E | Spain | <1% | unknown | V |
| LT | Lithuania | <1% | unknown | V |
| RUS | Russia (European part) | 5-15% | unknown | - |

## Habitat

Wet, mesophile grassland, marshes, moist clearings in forest and along streams, springs and bogs with abundance of foodplants. Foodplant *Polygonum bistorta* (Polygonaceae), also related species like *P. viviparum* (FIN). In RO *Rumex* species are reported as foodplant, but this information is not confirmed by any other information. Feeding experiments were all negative with West German stock (K. Fischer, unpubl.; comm. K. Fiedler). Grasslands always abandoned or managed by rotational mowing (B). Mowing or grazing in summer is very harmful (B). Adults rest at the top of high trees (B).

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| humid grasslands and tall herb communities | 16 | (36%) |
| alpine and subalpine grasslands | 4 | (9%) |
| water-fringe vegetation | 4 | (9%) |
| fens, transition mires and springs | 3 | (7%) |
| mesophile grasslands | 3 | (7%) |
| blanket bogs | 2 | (5%) |
| broad-leaved deciduous forests | 2 | (5%) |
| raised bogs | 2 | (5%) |
| tree lines, hedges, small woods, bocage, parkland dehesa | 2 | (5%) |
| alluvial and very wet forests and brush | 1 | (2%) |
| coniferous woodland | 1 | (2%) |
| mixed woodland | 1 | (2%) |

## Threats

Land drainage is the most important threat. C-European populations are often small, fragmented and isolated. Because of agricultural abandonment meadows get covered with rough vegetation and finally trees and shrubs. In FIN the foodplant is estimated to have decreased in abundance with 99%.

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Land drainage | 12 | 2,1 |
| Isolation and fragmentation of habitat | 11 | 2,4 |
| Agricultural abandonment and changing management (inc. successional change and inappropriate habitat management) | 9 | 2,8 |
| Afforestation on non-woodland habitats | 9 | 2,0 |
| Built development (inc. roads, housing and mining) | 8 | 1,9 |
| Agricultural improvements | 7 | 2,6 |
| Recreational pressure and disturbance | 7 | 2,0 |
| Collecting (killing or taking) | 6 | 1,5 |
| Felling/destruction of woodland | 5 | 1,6 |
| Land claims / coastal development | 5 | 1,6 |
| Abandonment and change of woodland management (inc. replanting with conifers and inappropriate habitat management) | 4 | 2,3 |
| Chemical pollution (inc. herbicides and pesticides) | 4 | 2,0 |
| Climatic change | 3 | 1,0 |
| Natural ecological change (e.g. myxomatosis effect on rabbits) | 1 | 1,0 |
| Others: | | |
| Habitat destruction | 1 | 3,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken

In spite of legal protection of important butterfly habitats special management of these habitats for *L. helle* is only conducted in two countries.

Legal protection of species (no capture, trade, etc.) ( 6 countries): B, BY, D, F, L, LT
Legal protection of important butterfly habitats ( 8 countries): B, BY, D, E, F, L, RUS, UA
Habitat management: there is special attention for the species ( 2 countries): B, L
Ecological research on the requirements of the species has been conducted ( 4 countries): B, D, FIN, UA
At least part of the populations are monitored (e.g. every 1-5 years) ( 4 countries): B, D, FIN, UA

## Conservation measures proposed by compilers

Especially in E-Europe more research on the present distribution and status is needed.

Further surveys needed (5 countries): BY, E, LV, S, UA
Improved habitat management (4 countries): B, L, LT, UA
Begin or improve monitoring (4 countries): F, L, RUS, UA
Ecological research on species requirements (4 countries): BY, E, L, LT
Legal protection of habitats (2 countries): LT, LV
Legal protection of species (2 countries): E, RO
Introduce cattle grazing in habitat (1 country): FIN

## References


Goffart, Ph. & Waeyenbergh, M. (1994) Exigences écologiques et gestion des populations de deux papillons des prairies humides ardennaises: le Cuivré et le Nacré de la Bistorte (Lycaena helle, Proclossiana eunomia). *Cahiers des Réserves Naturelles RNOB* **7**, 21-29.

Goffart, Ph. & Waeyenbergh, M. (1995) Gestion des fonds de vallée ardennaises et conservation des populations de papillons diurnes: vers une remise en question de la gestion traditionnelle? *Cahiers des Réserves Naturelles - RNOB* **8**, 45-56.

Goffart Ph., Mousson, L. & Waeyenbergh, M. (1995) Pour une gestion favorable aux insectes. In: *Le grand livre de la Nature en Wallonie*. M.R.W., éditions Casterman, pp. 169-175.

Maso, A. & Perez, J.J. (1985) *Lycaena helle* (Lepidoptera Lycaenidae) Rhopalocer nou per a la Península Ibérica. *Buttletí Societat Catalana Lepidopterologia* **47**, 23-26.

Munguira, M.L., Martin, J. & Rey, J.M. (1991) Use of UTM maps to detect endangered Lycaenid species in the Iberian Peninsula. *Nota Leptidopterologica* **Suppl.2**, 45-55.

# *Lycaena ottomanus* (Lefèbvre, 1830)

## Taxonomy

Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Lycaenidae

## Status

Present distribution class in Europe: <1%
Overall trend in Europe: decrease 20-50%
Threat status: *Vulnerable* - SPEC 1 - species of global conservation concern because restricted to Europe and considered globally threatened

## Distribution and status per country

Species restricted to SE-Europe. Main distribution in Turkey, Greece and Albania.

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| H | Hungary | <1% | extinct | Ex |
| TRA | Turkey (Asian part) | 1-5% | decr 25-50% | V |
| BG | Bulgaria | <1% | stable | R |
| AL | Albania | 5-15% | stable | - |
| GR | Greece | 5-15% | stable | - |
| BIH | Bosnia | <1% | unknown | E |
| FYROM | FYR of Macedonia | <1% | unknown | E |
| YU | Yugoslavia | <1% | unknown | E |

## Habitat

Mediterranean evergreen woodlands and maquis, submediterranean broad-leaved woodlands and shrubs, heath and scrubs. Wet, richly structured spots in valleys, wet areas near the coast (TRA). Foodplants some species of *Rumex* (Polygonaceae).

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| dry calcareous grasslands and steppes | 3 | (25%) |
| phrygana | 3 | (25%) |
| sclerophyllous scrub | 3 | (25%) |
| mesophile grasslands | 2 | (17%) |
| mixed woodland | 1 | (8%) |

## Threats

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Built development (inc. roads, housing and mining) | 4 | 2,0 |
| Isolation and fragmentation of habitat | 4 | 2,0 |
| Chemical pollution (inc. herbicides and pesticides) | 4 | 1,5 |
| Climatic change | 3 | 2,0 |
| Natural ecological change (e.g. myxomatosis effect on rabbits) | 3 | 2,0 |
| Abandonment and change of woodland management (inc. replanting with conifers and inappropriate habitat management) | 3 | 1,0 |
| Land claims / coastal development | 2 | 2,5 |
| Agricultural improvements | 2 | 2,0 |
| Felling/destruction of woodland | 2 | 2,0 |
| Recreational pressure and disturbance | 2 | 2,0 |
| Land drainage | 1 | 3,0 |
| Afforestation on non-woodland habitats | 1 | 1,0 |
| Agricultural abandonment and changing management (inc. successional change and inappropriate habitat management) | 1 | 1,0 |
| Others: | | |
| Landclaims for agriculture | 1 | 3,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken

Legal protection of important butterfly habitats ( 3 countries): AL, BIH, FYROM
Ecological research on the requirements of the species has been conducted ( 1 country): YU

## Conservation measures proposed by compilers

Begin or improve monitoring (3 countries): BIH, FYROM, TR
Improved habitat management (2 countries): FYROM, YU
Legal protection of habitats (2 countries): TR, YU
Ecological research on species requirements (2 countries): BIH, FYROM
Stop recreation and building in known sites (1 country): TR
Legal protection of species (1 country): YU

# *Tomares ballus* (Fabricius, 1787)

## Taxonomy

Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Lycaenidae

## Status

Present distribution class in Europe: 1-5%
Overall trend in Europe: decrease 20-50%
Threat status: *Vulnerable* - SPEC 2 - global distribution concentrated in Europe and considered threatened in Europe

## Distribution and status per country

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| E | Spain | >15% | decr 15-25% | - |
| F | France | <1% | decr 15-25% | R |
| P | Portugal | >15% | unknown | - |

## Habitat

Old fallows, mainly on chalky places. Also in old vineyards.
Foodplants *Anthylliis tetraphylla*, *Bonjeana hirsuta, Astragalus lusitanicus, Medicago polymorpha* (Fabaceae).

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| dry calcareous grasslands and steppes | 4 | (67%) |
| broad-leaved deciduous forests | 1 | (17%) |
| phrygana | 1 | (17%) |

## Threats

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Built development (inc. roads, housing and mining) | 1 | 3,0 |
| Afforestation on non-woodland habitats | 1 | 3,0 |
| Agricultural improvements | 1 | 2,0 |
| Agricultural abandonment and changing management (inc. successional change and inappropriate habitat management) | 1 | 2,0 |
| Abandonment and change of woodland management (inc. replanting with conifers and inappropriate habitat management) | 1 | 2,0 |
| Chemical pollution (inc. herbicides and pesticides) | 1 | 2,0 |
| Isolation and fragmentation of habitat | 1 | 2,0 |
| Recreational pressure and disturbance | 1 | 1,0 |
| Climatic change | 1 | 1,0 |
| Natural ecological change (e.g. myxomatosis effect on rabbits) | 1 | 1,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken

Legal protection of important butterfly habitats ( 1 country): F
Habitat management: there is special attention for the species (1 country): F
Ecological research on the requirements of the species has been conducted ( 1 country): F
At least part of the population is monitored (e.g. every 1-5 years) (1 country): F

## Conservation measures proposed by compilers

Conserve old vineyards (1 country): F

## References


Descimon, H. & Nel, J. (1986) *Tomares ballus* F. est-il une espèce vulnérable en France? *Alexanor* **14(5)**, 219-231.

Jordano, D., Fernandez-Haeger, J. & Rodriguez, J. (1989) The life-history of *Tomares ballus* (Fabricius, 1787) (Lepidoptera: Lycaenidae): Phenology and host plant use in southern Spain. *Journal Of Research On The Lepidoptera* **28(1-2)**, 112-122.

Jordano, D., Fernandez-Haeger, J. & Rodriguez, J. (1990) The effect of seed predation by *Tomares ballus* (Lepidoptera: Lycaenidae) on *Astragalus lusitanicus* (Fabaceae): Determinants of differences among patches. *Oikos* **57(2)**, 250-256.

# *Tomares nogelii* (Herrich-Schäffer, 1851)

## Taxonomy
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Lycaenidae

## Status
Present distribution class in Europe: <1%
Overall trend in Europe: decrease 20-50%
Threat status: *Endangered* - SPEC 2 - global distribution concentrated in Europe and considered threatened in Europe

## Distribution and status per country

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| MD | Moldova | <1% | extinct | Ex |
| RO | Romania | <1% | extinct | Ex |
| UA | Ukraine | 1-5% | decr 25-50% | R |
| TRA | Turkey (Asian part) | 1-5% | decr 15-25% | K |

## Habitat
Sparsely wooded country and sunny, herbaceous steppes in woodland and on slopes of ravines. Foodplant *Astragalus ponticus* (RO, UA) and related species (TRA) (Fabaceae).

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| dry calcareous grasslands and steppes | 4 | (67%) |
| broad-leaved deciduous forests | 1 | (17%) |
| phrygana | 1 | (17%) |

## Threats
Species occurs in small isolated colonies in SE-Europe. Tourist activities and agricultural improvement has diminished many populations.

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Recreational pressure and disturbance | 3 | 2,7 |
| Agricultural improvements | 2 | 3,0 |
| Chemical pollution (inc. herbicides and pesticides) | 2 | 2,5 |
| Isolation and fragmentation of habitat | 2 | 2,5 |
| Built development (inc. roads, housing and mining) | 2 | 2,0 |
| Afforestation on non-woodland habitats | 2 | 1,5 |
| Collecting (killing or taking) | 2 | 1,0 |
| Abandonment and change of woodland management (inc. replanting with conifers and inappropriate habitat management) | 1 | 3,0 |
| Felling/destruction of woodland | 1 | 3,0 |
| Climatic change | 1 | 1,0 |
| Land claims / coastal development | 1 | 1,0 |
| Others: | | |
| Overgrazing | 2 | 2,5 |
| Fires | 1 | 3,0 |
| Natural forest and shrubs succession | 1 | 3,0 |
| Land claims for agriculture | 1 | 3,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken

Legal protection of species (no capture, trade, etc.) ( 1 country): UA
Ecological research on the requirements of the species has been conducted ( 1 country): UA

## Conservation measures proposed by compilers

Begin or improve monitoring (2 countries): TR, UA
Legal protection of habitats (2 countries): RO, TR
Improved habitat management (1 country): UA
Ecological research on species requirements (1 country): TR
Clarify taxonomical status (1 country): TR
Further surveys needed (1 country): UA

# *Tomares callimachus* (Eversmann, 1848)

## Taxonomy

Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Lycaenidae

## Status

Present distribution class in Europe: <1%
Overall trend in Europe: decrease 20-50%
Threat status: *Endangered* - SPEC 2 - global distribution concentrated in Europe and considered threatened in Europe

## Distribution and status per country

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| UA | Ukraine | <1% | decr 15-25% | R |
| RUS | Russia (European part) | <1% | unknown | - |
| TRA | Turkey (Asian part) | 1-5% | unknown | K |

**Habitat:** Hot, dry, bare, stony places unsuitable for agriculture (TRA). Steppe habitat on slopes of ravines (UA). Foodplant species of *Astragalus* (Fabaceae).

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| dry calcareous grasslands and steppes | 2 | (29%) |
| dry siliceous grasslands | 2 | (29%) |
| broad-leaved deciduous forests | 1 | (14%) |
| mixed woodland | 1 | (14%) |
| screes | 1 | (14%) |

## Threats

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Agricultural improvements | 2 | 2,5 |
| Chemical pollution (inc. herbicides and pesticides) | 1 | 3,0 |
| Climatic change | 1 | 3,0 |
| Isolation and fragmentation of habitat | 1 | 3,0 |
| Recreational pressure and disturbance | 1 | 3,0 |
| Built development (inc. roads, housing and mining) | 1 | 2,0 |
| Afforestation on non-woodland habitats | 1 | 1,0 |
| Collecting (killing or taking) | 1 | 1,0 |
| Land claims / coastal development | 1 | 1,0 |
| Others: | | |
| Overgrazing | 2 | 2,0 |
| Fires | 1 | 3,0 |
| Natural forest and shrubs succession | 1 | 3,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken

Legal protection of species (no capture, trade, etc.) ( 1 country): UA
Legal protection of important butterfly habitats ( 1 country): UA
At least part of the populations are monitored (e.g. every 1-5 years) ( 1 country): UA

## Conservation measures proposed by compilers

Begin or improve monitoring (2 countries): TR, UA
Legal protection of habitats (1 country): TR
Further surveys needed (1 country): UA
Ban grazing in habitats (1 country): TR

# *Neolycaena rhymnus* (Eversmann, 1832)

## Taxonomy

Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Lycaenidae

## Status

Present distribution class in Europe: <1%
Overall trend in Europe: decrease 20-50%
Threat status: *Endangered* - SPEC 3 - species with headquarters within and outside Europe, but considered threatened in Europe

## Distribution and status per country

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| UA | Ukraine | 1-5% | decr 25-50% | R |
| RUS | Russia (European part) | <1% | unknown | E |

## Habitat

Steppes, sunny slopes and steppe refugia in agricultural landscapes. Foodplant *Caragana frutex* (Fabaceae).

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| dry siliceous grasslands | 3 | (50%) |
| dry calcareous grasslands and steppes | 1 | (17%) |

## Threats

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Chemical pollution (inc. herbicides and pesticides) | 2 | 2,5 |
| Agricultural improvements | 2 | 1,5 |
| Built development (inc. roads, housing and mining) | 2 | 1,5 |
| Afforestation on non-woodland habitats | 1 | 3,0 |
| Isolation and fragmentation of habitat | 1 | 3,0 |
| Collecting (killing or taking) | 1 | 1,0 |
| Others: | | |
| Burning of grassland in spring or autumn | 1 | 3,0 |
| Overgrazing | 1 | 1,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken

Legal protection of species (no capture, trade, etc.) ( 1 country): UA
Legal protection of important butterfly habitats ( 2 countries): RUS, UA
At least part of the populations are monitored (e.g. every 1-5 years) ( 1 country): UA

## Conservation measures proposed by compilers

Begin or improve monitoring (2 countries): RUS, UA
Further surveys needed (1 country): UA

## References

Barsov, V.A. (1988) The population of *Neolycaena rhymnus* (Pall.) (Lepidoptera, Lycaenidae) in Dnepropetrovsk region of Ukraine. *Zoological bulletin* **4**.

# *Pseudophilotes vicrama* (Moore, 1865)

## Taxonomy
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Lycaenidae

## Status
Present distribution class in Europe: 5-15%
Overall trend in Europe: decrease 20-50%
Threat status: *Vulnerable* - SPEC 3 - species with headquarters within and outside Europe, but considered threatened in Europe

## Distribution and status per country
Species is declining in NW part of its range, but more or less stable in SE-Europe.

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| FIN | Finland | <1% | decr 75-100% | E |
| LV | Latvia | <1% | decr 75-100% | E |
| D | Germany | 1-5% | decr 75-100% | E |
| A | Austria | 5-15% | decr 75-100% | E |
| CZ | Czech Republic | 1-5% | decr 50-75% | E |
| HR | Croatia | 5-15% | decr 50-75% | - |
| RO | Romania | <1% | decr 25-50% | V |
| PL | Poland | 1-5% | decr 25-50% | E |
| SK | Slovakia | 1-5% | decr 25-50% | V |
| SLO | Slovenia | 1-5% | decr 15-25% | R |
| TRE | Turkey (European part) | 1-5% | decr 15-25% | - |
| AL | Albania | 1-5% | stable | - |
| BG | Bulgaria | 1-5% | stable | - |
| EST | Estonia | 1-5% | stable | |
| UA | Ukraine | 5-15% | stable | - |
| GR | Greece | >15% | stable | - |
| H | Hungary | >15% | stable | - |
| TRA | Turkey (Asian part) | >15% | stable | - |
| BY | Belarus | <1% | unknown | I |
| CY | Cyprus | <1% | unknown | - |
| LT | Lithuania | <1% | unknown | I |
| I | Italy | 1-5% | unknown | |
| RUS | Russia (European part) | 5-15% | unknown | - |

**Habitat**: Dry, sandy or rocky grasslands, steppes, south-facing slopes, stream-beds, road- and railway-sides, clearings and shrubby habitats. In BY pine forests. Usual foodplants species of *Thymus* (Lamiaceae). Three countries (SK, TRA, UA) mention also some Fabaceae, such as *Coronilla* and *Melilotus*, but this information needs confirmation and is questioned by Fiedler (comm.).

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| dry siliceous grasslands | 12 | (30%) |
| dry calcareous grasslands and steppes | 11 | (28%) |
| coniferous woodland | 3 | (8%) |
| heath and scrub | 3 | (8%) |
| phrygana | 2 | (5%) |
| sclerophyllous scrub | 2 | (5%) |
| alpine and subalpine grasslands | 1 | (3%) |
| broad-leaved deciduous forests | 1 | (3%) |
| dry calcareous grasslands and steppes | 1 | (3%) |
| mesophile grasslands | 1 | (3%) |
| phrygana | 1 | (3%) |
| screes | 1 | (3%) |
| tree lines, hedges, small woods, bocage, parkland dehesa | 1 | (3%) |

## Threats

Most important threats are afforestation and agricultural improvements.

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Agricultural improvements | 11 | 1,9 |
| Afforestation on non-woodland habitats | 9 | 2,6 |
| Built development (inc. roads, housing and mining) | 9 | 1,8 |
| Chemical pollution (inc. herbicides and pesticides) | 9 | 1,7 |
| Isolation and fragmentation of habitat | 8 | 1,8 |
| Recreational pressure and disturbance | 8 | 1,6 |
| Abandonment and change of woodland management (inc. replanting with conifers and inappropriate habitat management) | 6 | 2,3 |
| Agricultural abandonment and changing management (inc. successional change and inappropriate habitat management) | 5 | 2,2 |
| Land claims / coastal development | 4 | 2,0 |
| Felling/destruction of woodland | 4 | 2,3 |
| Collecting (killing or taking) | 3 | 1,0 |
| Natural ecological change (e.g. myxomatosis effect on rabbits) | 2 | 1,5 |
| Climatic change | 2 | 1,0 |
| Land drainage | 1 | 1,0 |
| Others: | | |
| Overgrazing | 3 | 2,3 |
| Fires | 2 | 2,0 |
| Natural forest and shrubs succession | 2 | 2,5 |
| Land claims for agriculture | 1 | 2,0 |
| Ploughing of grasslands and pastures | 1 | 2,0 |
| Agricultural conversion | 1 | 2,0 |
| Waste disposal sites | 1 | 1,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken

Legal protection of species (no capture, trade, etc.) ( 3 countries): AL, D, FIN
Legal protection of important butterfly habitats ( 6 countries): AL, CZ, D, H, LV, SK
Habitat management: there is special attention for the species ( 2 countries): AL, FIN
Ecological research on the requirements of the species has been conducted ( 3 countries): FIN, SLO, UA
All populations are monitored on a regular basis (e.g. every 1-5 years) ( 1 country): SLO
At least part of the populations are monitored (e.g. every 1-5 years) ( 2 countries): FIN, SK

## Conservation measures proposed by compilers

Legal protection of habitats (5 countries): FIN, LT, LV, RO, SK
Begin or improve monitoring (4 countries): EST, RUS, TR, UA
Ecological research on species requirements (4 countries): BY, CZ, SK, TR
Improved habitat management (2 countries): LT, SK
Further surveys needed (2 countries): HR, UA
Create new or restore old habitat (2 countries): FIN, SK
Resolve taxonomical status (1 country): CZ
Legal protection of species (1 country): SK

## References


Kuussaari, M., Nieuinen, M., Väisl nen, R. & Somerma, P. (1995) *Pseudophilotes baton* (Lepidoptera, Lycaenidae) and the exceptional insect fauna of the Sl kyyll nkarja esker in south-west Finland. *Baptria* **20(1)**, 1-20. [in Finnish]

Väisl nen, R., Kuussaar, M., Nieuinen, M. & Somerma, P. (1994) Biology and conservation of *Pseudophilotes baton* in Finland (Lepidoptera, Lycaenidae). *Annales Zool. Fennici* **31**, 145-156.

# *Pseudophilotes bavius* (Eversmann, 1832)

## Taxonomy

Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Lycaenidae

## Status

Present distribution class in Europe: <1%
Overall trend in Europe: decrease 20-50%
Threat status: *Endangered* - SPEC 3 - species with headquarters within and outside Europe, but considered threatened in Europe

## Distribution and status per country

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| RO | Romania | <1% | decr 50-75% | E |
| TRE | Turkey (European part) | <1% | decr 50-75% | I |
| UA | Ukraine | 1-5% | decr 15-25% | R |
| TRA | Turkey (Asian part) | 5-15% | decr 15-25% | - |
| GR | Greece | 1-5% | stable | R |
| FYROM | FYR of Macedonia | <1% | unknown | E |
| YU | Yugoslavia | <1% | unknown | E |

**Habitat**: Herbaceous, sunny meadows, steppes, stony slopes, vineyards and valleys. Foodplants several species of *Salvia* (Lamiaceae).

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| dry calcareous grasslands and steppes | 5 | (45%) |
| dry siliceous grasslands | 2 | (18%) |
| phrygana | 2 | (18%) |
| sclerophyllous scrub | 1 | (9%) |
| screes | 1 | (9%) |

## Threats

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Agricultural improvements | 5 | 2,4 |
| Chemical pollution (inc. herbicides and pesticides) | 5 | 2,0 |
| Built development (inc. roads, housing and mining) | 4 | 2,0 |
| Recreational pressure and disturbance | 4 | 1,5 |
| Isolation and fragmentation of habitat | 4 | 1,3 |
| Felling/destruction of woodland | 3 | 1,7 |
| Collecting (killing or taking) | 3 | 1,3 |
| Climatic change | 2 | 2,0 |
| Land claims / coastal development | 2 | 1,5 |
| Abandonment and change of woodland management (inc. replanting with conifers and inappropriate habitat management) | 2 | 1,0 |
| Agricultural abandonment and changing management (inc. successional change and inappropriate habitat management) | 1 | 3,0 |
| Afforestation on non-woodland habitats | 1 | 2,0 |
| Others: | | |
| Overgrazing | 2 | 2,5 |
| Land claims for agriculture | 1 | 2,0 |
| Fires | 1 | 3,0 |
| Natural forest and shrubs succession | 1 | 3,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken

Legal protection of important butterfly habitats ( 2 countries): FYROM, YU
Ecological research on the requirements of the species has been conducted ( 1 country): RO

## Conservation measures proposed by compilers

Improved habitat management (3 countries): FYROM, UA, YU
Begin or improve monitoring (2 countries): TR, UA
Legal protection of habitats (2 countries): RO, TR
Legal protection of species (2 countries): FYROM, YU
Ecological research on species requirements (1 country): TR
Further surveys needed (1 country): UA
Ban collecting (1 country): RO

# *Scolitantides orion* (Pallas, 1771)

## Taxonomy
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Lycaenidae

## Status
Present distribution class in Europe: >15%
Overall trend in Europe: decrease 20-50%
Threat status: *Vulnerable* - SPEC 3 - species with headquarters within and outside Europe, but considered threatened in Europe

## Distribution and status per country
Species with a large, but discontinuous distribution over Europe. Declining in N- and C-Europe, more or less stable in S-Europe. Decrease in C-Europe might be over-estimated, since the species can survive for a long time on small and isolated patches. A thorough survey can reveal more populations than previously thought (comm. Fiedler).

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| TRE | Turkey (European part) | <1% | extinct | E |
| D | Germany | 1-5% | decr 75-100% | E |
| A | Austria | 5-15% | decr 75-100% | E |
| PL | Poland | <1% | decr 50-75% | E |
| RO | Romania | <1% | decr 50-75% | V |
| S | Sweden | <1% | decr 25-50% | V |
| TRA | Turkey (Asian part) | <1% | decr 25-50% | V |
| SK | Slovakia | 5-15% | decr 25-50% | V |
| CH | Switzerland | 1-5% | decr 15-25% | V |
| FIN | Finland | 1-5% | decr 15-25% | V |
| N | Norway | 1-5% | decr 15-25% | V |
| CZ | Czech Republic | 5-15% | decr 15-25% | V |
| RUS | Russia (European part) | >15% | decr 15-25% | K |
| GR | Greece | 1-5% | stable | R |
| SLO | Slovenia | 1-5% | stable | I |
| AL | Albania | 5-15% | stable | - |
| E | Spain | 5-15% | stable | - |
| F | France | 5-15% | stable | K |
| UA | Ukraine | 5-15% | stable | - |
| BG | Bulgaria | >15% | stable | - |
| H | Hungary | >15% | stable | - |
| BY | Belarus | <1% | unknown | I |
| HR | Croatia | 1-5% | unknown | - |
| I | Italy | 1-5% | unknown | |
| YU | Yugoslavia | 1-5% | unknown | R |
| BIH | Bosnia | 5-15% | unknown | R |
| FYROM | FYR of Macedonia | >15% | unknown | R |
| EST | Estonia | unknown | unknown | |

## Habitat
Rocky screes, limestone walls or cliffs, stony steppes, abandoned stone-pits and other sunny spots suitable for the foodplants, species of *Sedum* (Crassulaceae), often in scrubby terrain. Species has a strong relationship with ants (E). In BY in edges of pine forests.

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| dry calcareous grasslands and steppes | 10 | (24%) |
| dry siliceous grasslands | 7 | (17%) |
| inland cliffs and exposed rocks | 6 | (15%) |
| alpine and subalpine grasslands | 3 | (7%) |
| broad-leaved deciduous forests | 3 | (7%) |
| screes | 3 | (7%) |
| phrygana | 2 | (5%) |
| sclerophyllous scrub | 2 | (5%) |
| coniferous woodland | 1 | (2%) |
| heath and scrub | 1 | (2%) |
| mesophile grasslands | 1 | (2%) |
| mixed woodland | 1 | (2%) |
| volcanic features | 1 | (2%) |

## Threats

No severe threats mentioned, only agricultural improvement.

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Isolation and fragmentation of habitat | 12 | 1,7 |
| Abandonment and change of woodland management (inc. replanting with conifers and inappropriate habitat management) | 10 | 1,7 |
| Afforestation on non-woodland habitats | 9 | 1,8 |
| Built development (inc. roads, housing and mining) | 9 | 1,7 |
| Agricultural improvements | 8 | 2,3 |
| Recreational pressure and disturbance | 8 | 1,9 |
| Chemical pollution (inc. herbicides and pesticides) | 7 | 1,7 |
| Natural ecological change (e.g. myxomatosis effect on rabbits) | 6 | 2,0 |
| Agricultural abandonment and changing management (inc. successional change and inappropriate habitat management) | 6 | 1,8 |
| Felling/destruction of woodland | 5 | 2,0 |
| Climatic change | 5 | 1,8 |
| Land claims / coastal development | 3 | 2,3 |
| Collecting (killing or taking) | 3 | 1,0 |
| Others: | | |
| Overgrazing | 4 | 2,5 |
| Fires | 2 | 2,0 |
| Natural forest and shrubs succession | 2 | 2,5 |
| Ploughing of grasslands and steppes | 1 | 2,0 |
| Agricultural conversion | 1 | 2,0 |
| Waste disposal sites | 1 | 1,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken

In spite of legal protection of important habitats for this species in nine countries, only in three countries there is special attention in habitat management.

Legal protection of species (no capture, trade, etc.) ( 3 countries): D, FIN, H
Legal protection of important butterfly habitats (10 countries): AL, CZ, D, E, FYROM, H, HR, RUS, SK, YU
Habitat management: there is special attention for the species ( 3 countries): AL, D, FIN
Ecological research on the requirements of the species has been conducted ( 5 countries): D, E, FIN, SLO, UA
All populations are monitored on a regular basis (e.g. every 1-5 years) ( 1 country): SLO
At least part of the populations are monitored (e.g. every 1-5 years) ( 5 countries): D, FIN, S, SK, UA

## Conservation measures proposed by compilers

Begin or improve monitoring (7 countries): BIH, FYROM, RUS, SK, TR, UA, YU
Further surveys needed (5 countries): E, EST, S, TR, UA
Ecological research on species requirements (4 countries): BIH, E, FYROM, YU
Improved habitat management (3 countries): S, SK, UA
Open up landscape by felling trees and bushes (2 countries): FIN, SK
Avoid or restrict grazing (2 countries): RO, TR
Legal protection of habitats (2 countries): SK, TR
Legal protection of species (1 country): SK
Restrict collecting (1 country): HR
Prevent fires (1 country): F
Stop natural afforestation (1 country): TR

## References

Munguira, M.L., Garcia-Barros, E> & Martin, J. (1997) Plantas nutricias de los Licenidos y Satirinos españoles (Lepidoptera: Lycaenidae y Nymphalidae). *Boletin Asociacion Española Entomologia* **21**, 29-53.

Saarinem, P. (1995) The ecology of *Scolitantides orion* in a metapopulation in Southern Finlandin 1991-1992. *Baptria* **20(4)**, 195-198. [in Finnish]

# *Glaucopsyche alexis* (Poda, 1761)

## Taxonomy
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Lycaenidae

## Status
Present distribution class in Europe: >15%
Overall trend in Europe: decrease 20-50%
Threat status: *Vulnerable* - SPEC 3 - species with headquarters within and outside Europe, but considered threatened in Europe

## Distribution and status per country
Species is declining in W- and N-Europe and more or less stable in S- and E-Europe.

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| B | Belgium | <1% | decr 75-100% | E |
| LV | Latvia | <1% | decr 75-100% | E |
| PL | Poland | <1% | decr 50-75% | E |
| A | Austria | 5-15% | decr 50-75% | V |
| FIN | Finland | >15% | decr 50-75% | I |
| TRE | Turkey (European part) | 1-5% | decr 25-50% | - |
| SK | Slovakia | 5-15% | decr 25-50% | V |
| D | Germany | >15% | decr 25-50% | V |
| LT | Lithuania | <1% | decr 15-25% | I |
| L | Luxemburg | 1-5% | decr 15-25% | V |
| S | Sweden | 1-5% | decr 15-25% | I |
| BY | Belarus | <1% | stable | R |
| CH | Switzerland | 1-5% | stable | - |
| MD | Moldova | 1-5% | stable | - |
| AL | Albania | 5-15% | stable | - |
| CZ | Czech Republic | 5-15% | stable | - |
| SLO | Slovenia | 5-15% | stable | I |
| UA | Ukraine | 5-15% | stable | - |
| BG | Bulgaria | >15% | stable | - |
| E | Spain | >15% | stable | - |
| GR | Greece | >15% | stable | - |
| H | Hungary | >15% | stable | - |
| TRA | Turkey (Asian part) | >15% | stable | - |
| RO | Romania | >15% | incr 125-200% | - |
| EST | Estonia | <1% | unknown | |
| FL | Liechtenstein | 1-5% | unknown | R |
| HR | Croatia | 1-5% | unknown | - |
| N | Norway | 1-5% | unknown | - |
| P | Portugal | 1-5% | unknown | - |
| AND | Andorra | 5-15% | unknown | - |
| BIH | Bosnia | 5-15% | unknown | R |
| FYROM | FYR of Macedonia | 5-15% | unknown | R |
| YU | Yugoslavia | 5-15% | unknown | R |
| F | France | >15% | unknown | I |
| I | Italy | >15% | unknown | |
| RUS | Russia (European part) | >15% | unknown | - |

## Habitat
Dry, often sandy or rocky places rich in flowers and bushes. These can be steppes, slopes, clearings and edges in forest, rough meadows, subalpine pastures and sometimes parks and orchards. Foodplants belong to many herbaceous or shrubby papilionaceous genera (Fabaceae).

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| dry calcareous grasslands and steppes | 11 | (18%) |
| mesophile grasslands | 11 | (18%) |
| broad-leaved deciduous forests | 8 | (13%) |
| dry siliceous grasslands | 8 | (13%) |
| fallow land, waste places | 3 | (5%) |
| sclerophyllous scrub | 3 | (5%) |
| alpine and subalpine grasslands | 2 | (3%) |
| heath and scrub | 2 | (3%) |
| mixed woodland | 2 | (3%) |
| orchards, groves and tree plantations | 2 | (3%) |
| phrygana | 2 | (3%) |
| coniferous woodland | 1 | (2%) |
| humid grasslands and tall herb communities | 1 | (2%) |
| inland rocks, screes and sands | 1 | (2%) |
| inland sand-dunes | 1 | (2%) |
| tree lines, hedges, small woods, bocage, parkland dehesa | 1 | (2%) |
| urban parks and large gardens | 1 | (2%) |

## Threats

No severe threats mentioned. Afforestation and agricultural improvements seem to be the most important threats.

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Afforestation on non-woodland habitats | 18 | 1,7 |
| Agricultural improvements | 16 | 1,8 |
| Isolation and fragmentation of habitat | 14 | 1,8 |
| Built development (inc. roads, housing and mining) | 13 | 1,6 |
| Chemical pollution (inc. herbicides and pesticides) | 13 | 1,4 |
| Agricultural abandonment and changing management (inc. successional change and inappropriate habitat management) | 12 | 1,8 |
| Abandonment and change of woodland management (inc. replanting with conifers and inappropriate habitat management) | 12 | 1,2 |
| Recreational pressure and disturbance | 11 | 1,4 |
| Felling/destruction of woodland | 7 | 2,0 |
| Climatic change | 7 | 1,4 |
| Natural ecological change (e.g. myxomatosis effect on rabbits) | 5 | 1,6 |
| Land claims / coastal development | 4 | 1,3 |
| Collecting (killing or taking) | 3 | 1,0 |
| Land drainage | 3 | 1,7 |
| Others: | | |
| Land claims for agriculture | 2 | 2,0 |
| Overgrazing | 2 | 2,0 |
| Burning | 1 | 1,0 |
| Waste disposal sites | 1 | 1,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken

Legal protection of species (no capture, trade, etc.) ( 3 countries): D, L, MD
Legal protection of important butterfly habitats (9 countries): AL, B, CZ, D, E, LV, MD, SK, YU
Habitat management: there is special attention for the species ( 2 countries): AL, D
Ecological research on the requirements of the species has been conducted (3 countries): E, SLO, UA
All populations are monitored on a regular basis (e.g. every 1-5 years) ( 1 country): SLO
At least part of the populations are monitored (e.g. every 1-5 years) ( 4 countries): B, MD, SK, UA

## Conservation measures proposed by compilers

Ecological research on species requirements (9 countries): AND, B, BIH, BY, FYROM, L, RUS, TR, YU
Begin or improve monitoring (8 countries): BIH, EST, FYROM, L, MD, TR, UA, YU
Legal protection of habitats (6 countries): B, FIN, FYROM, LT, LV, SK
Improved habitat management (4 countries): B, L, LT, MD
Further surveys needed (4 countries): AND, E, HR, MD
Prevent fires (1 country): F
Conserve and create habitat while constructing roads (1 country): FIN
Clear grasslands from trees and shrubs and introduce extensive grazing or rotational mowing (1 country): SK

## References


Agenjo, R. (1967) Morfologia y distribucion geographia en España de la “Manchas verdes” *Glaucopsyche alexis* (Poda 1761) (Lepidoptera, Lycaenidae). *EOS* **42**, 291-298.

Martin, J. (1981) Similutdes biologicas y diferencias ecologicas entre *Glaucopsyche alexis* (Poda 1761) y *Glaucopsyche melanops* (Boisduval) (Lepidoptera, Lycaenidae). *Boletin Estacion Central Ecologia* **10**, 59-70.

# *Maculinea arion* (Linnaeus, 1758)

## Taxonomy

Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Lycaenidae

## Status

Present distribution class in Europe: 5-15%
Overall trend in Europe: decrease 50-80%
Threat status: *Endangered* - SPEC 3 - species with headquarters within and outside Europe, but considered threatened in Europe
Species at present in Appendix II of Bern Convention.

## Distribution and status per country

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| NL | Netherlands | <1% | extinct | Ex |
| B | Belgium | <1% | decr 75-100% | E |
| FIN | Finland | <1% | decr 75-100% | E |
| GB | United Kingdom | <1% | decr 75-100% | E |
| LV | Latvia | 1-5% | decr 75-100% | E |
| PL | Poland | 5-15% | decr 75-100% | V |
| DK | Denmark | <1% | decr 50-75% | E |
| CZ | Czech Republic | 1-5% | decr 50-75% | E |
| L | Luxemburg | 1-5% | decr 50-75% | E |
| RO | Romania | 1-5% | decr 50-75% | V |
| D | Germany | 5-15% | decr 50-75% | V |
| TRE | Turkey (European part) | <1% | decr 25-50% | R |
| S | Sweden | 1-5% | decr 25-50% | I |
| H | Hungary | 5-15% | decr 25-50% | R |
| SK | Slovakia | 5-15% | decr 25-50% | V |
| UA | Ukraine | 5-15% | decr 25-50% | R |
| MD | Moldova | <1% | decr 15-25% | R |
| A | Austria | 5-15% | decr 15-25% | - |
| E | Spain | 5-15% | decr 15-25% | O |
| LT | Lithuania | 5-15% | decr 15-25% | R |
| SLO | Slovenia | 5-15% | decr 15-25% | R |
| AL | Albania | 5-15% | stable | - |
| BG | Bulgaria | 5-15% | stable | - |
| BY | Belarus | 5-15% | stable | - |
| CH | Switzerland | 5-15% | stable | - |
| EST | Estonia | 5-15% | stable | |
| F | France | 5-15% | stable | V |
| GR | Greece | 5-15% | stable | - |
| FYROM | FYR of Macedonia | 5-15% | fluctuating | V |
| FL | Liechtenstein | 1-5% | unknown | - |
| HR | Croatia | 1-5% | unknown | - |
| TRA | Turkey (Asian part) | 1-5% | unknown | I |
| YU | Yugoslavia | 1-5% | unknown | V |
| BIH | Bosnia | 5-15% | unknown | V |
| I | Italy | 5-15% | unknown | |
| RUS | Russia (European part) | 5-15% | unknown | R |
| AND | Andorra | >15% | unknown | R |

## Habitat

Dry, sunny, often bare grasslands, steppes and garrigues, usually on sandy or calcareous soils, sometimes in forested areas (BY: dry and mesophilous forests). In N-Europe mostly restricted to south-facing slopes. In the south also on alpine, subalpine or montane meadows. Host-ant most often *Myrmica sabuleti*. Foodplants *Thymus* species, most commonly *T. serpyllum* in the North. Also other Lamiaceae like *Prunella species* (TRA) and *Origanum vulgare*.

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| dry calcareous grasslands and steppes | 14 | (19%) |
| dry siliceous grasslands | 11 | (15%) |
| mesophile grasslands | 8 | (11%) |
| humid grasslands and tall herb communities | 6 | (8%) |
| alpine and subalpine grasslands | 5 | (7%) |
| coniferous woodland | 5 | (7%) |
| broad-leaved deciduous forests | 4 | (5%) |
| heath and scrub | 4 | (5%) |
| inland sand-dunes | 3 | (4%) |
| mixed woodland | 2 | (3%) |
| sclerophyllous scrub | 2 | (3%) |
| tree lines, hedges, small woods, bocage, parkland dehesa | 2 | (3%) |
| alluvial and very wet forests and brush | 1 | (1%) |
| blanket bogs | 1 | (1%) |
| fallow land, waste places | 1 | (1%) |
| orchards, groves and tree plantations | 1 | (1%) |
| phrygana | 1 | (1%) |
| raised bogs | 1 | (1%) |
| water-fringe vegetation | 1 | (1%) |

## Threats

Loss of habitat by agricultural abandonment or improvement, or afforestation is the main threat. In NW-Europe *M. arion* is very sensitive to small changes in habitat quality.

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Agricultural abandonment and changing management (inc. successional change and inappropriate habitat management) | 24 | 2,2 |
| Afforestation on non-woodland habitats | 23 | 1,9 |
| Isolation and fragmentation of habitat | 20 | 2,0 |
| Agricultural improvements | 19 | 2,1 |
| Chemical pollution (inc. herbicides and pesticides) | 13 | 1,8 |
| Recreational pressure and disturbance | 13 | 1,7 |
| Built development (inc. roads, housing and mining) | 12 | 1,8 |
| Abandonment and change of woodland management (inc. replanting with conifers and inappropriate habitat management) | 11 | 1,5 |
| Felling/destruction of woodland | 9 | 2,1 |
| Natural ecological change (e.g. myxomatosis effect on rabbits) | 9 | 1,9 |
| Collecting (killing or taking) | 8 | 1,4 |
| Climatic change | 7 | 1,7 |
| Land drainage | 4 | 1,8 |
| Land claims / coastal development | 3 | 2,3 |
| Others: | | |
| Natural forest and shrubs succession | 2 | 2,5 |
| Overgrazing | 2 | 2,5 |
| Burning of grassland in spring or autumn | 1 | 3,0 |
| Ploughing of grasslands and pastures | 1 | 2,0 |
| Land claims for agriculture | 1 | 2,0 |
| Too early cutting of hay meadows | 1 | 2,0 |
| Fires | 1 | 1,0 |
| Waste disposal sites | 1 | 1,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken

Species and its habitat is legally protected in many countries. *M. arion* is one of the best investigated butterfly species in Europe. Ecological demands are relatively well known especially in W-Europe, but special attention for the species in habitat management only in a few countries. *M. arion* has been reintroduced in GB.

Legal protection of species (no capture, trade, etc.) (13 countries): AND, B, CZ, D, DK, E, F, FIN, FL, FYROM, GB, H, L
Legal protection of important butterfly habitats (13 countries): AL, B, CZ, D, DK, E, F, H, I, L, RUS, SK, YU
Habitat management: there is special attention for the species ( 4 countries): AL, DK, FIN, GB
Ecological research on the requirements of the species has been conducted (8 countries): D, DK, E, FIN, GB, I, SLO, UA
All populations are monitored on a regular basis (e.g. every 1-5 years) ( 2 countries): B, SLO
At least part of the populations are monitored (e.g. every 1-5 years) ( 7 countries): D, DK, FIN, H, I, SK, UA
Other measures taken:
Action plan has been written and recovery plan underway (1 country): GB
Reintroduction program (1 country): GB

## Conservation measures proposed by compilers

More research to ecological demands needed in E-Europe. Here monitoring is considered to be important as well.

Begin or improve monitoring (12 countries): BIH, DK, EST, FYROM, GB, HR, L, MD, RUS, TR, UA, YU
Ecological research on the requirements of the species is needed (10 countries): BIH, BY, CZ, DK, E, FYROM, L, SK, TR, YU
Attention for species in habitat management (9 countries): B, CZ, DK, E, GB, L, MD, SK, UA
Legal protection of habitats (must be extended) (7 countries): B, FYROM, LV, RO, S, SK, SLO
Further surveys needed (3 countries): MD, S, UA
Create new habitat during the construction of roads or clearing of woodland (2 countries): FIN, LT
Research possibilities of habitat restoration and reintroduction of the species (2 countries): GB, NL
Legal protection of species (1 country): SK
Avoid intensive grazing, but maintain some degree of trampling to open up habitat (F)
Avoid overgrazing and mowing before 20 August (TR)
Open up landscape through clearing, mowing, burning and/or extensive grazing (1 country): SK
Proper management of neighbouring slopes to enlarge breeding area (DK)
Encourage grant schemes for grazing of unimproved grasslands (1 country): GB
Integrate demands of host-ants in habitat management (1 country): SK

## References


Barnett, L.K. & Warren, M.S. (1995) *Species Action Plan: Large Blue* Maculinea arion. Butterfly Conservation, Wareham, United Kingdom.

Griebeler, E.M., Pauler, R. & Poethke, H.J. (1995) *Maculinea arion* (Lepidoptera: Lycaenidae): Ein Beispiel für die Deduktion von Naturschutzmassnahmen aus einem Modell. *Verhandlungen der Gesellschaft für Ökologie* **24**, 201-206.

Griese, F. (1994) *Evaluation de sites potentiels pour la reintroduction de* Maculinea arion *en Belgique de Louvain*. Mémoire de licence non publié, Université Catholique de Louvain, Unité d'Ecologie et de Biogeographie.

Munguira, M.L., Martin, J. & Rey, J.M. (1991) Use of UTM maps to detect endangered Lycaenid species in the Iberian Peninsula. *Nota Lepidopterologica* **Suppl.**2, 45-55.

Munguira, M.L. & Martin, J. (1993) The conservation of endangered Lycaenid butterflies in Spain. *Biological Conservation* **66**, 17-22.

Munguira, M.L. & Martin, J. (eds.) *Action Plan for the* Maculinea *butterflies in Europe.* Council of Europe, Strassbourg. [in press]

Pauler, R., Kaule, G., Verhaagh, M. & Settele, J. (1995) Untersuchungen zur Autökologie des Schwarzgefleckten Ameisenbläulings *Maculinea arion* in Südwest-Deutschland. *Nachrichten des Entomologischen Vereins Apollo* **16**, 147-186.

Settele, J., Henle, K. & Bender, C. (1996) Metapopulationen und Biotopverbund: Theorie und Praxis am Beispiel von Tagfaltern und Reptilen. *Zeitschrift für Ökologie und Naturschutz* **5**, 187-206.

Settele, J., Pauler, R. & Kockelke, K. (1995) Magerrasennutzung und Anpassungen bei Tagfaltern: Populationsökologische Forschung als Basis für Schutzmassnahmen am Beispiel Glaucopsyche arion (Thymian-Ameisenbläuling) und Glaucopsyche rebeli (Kreuzenzian-Ameisenbläuling). In *Ein Naturschutzkonzept für die Kalkmagerrasen der Schwäbischen Alp (Baden-Württemberg).* eds. Beinlich, B. & Plachter, H. *Beihefte für Naturschutz und Landschaftspflege Baden-Württemberg* **83**, 139-158.

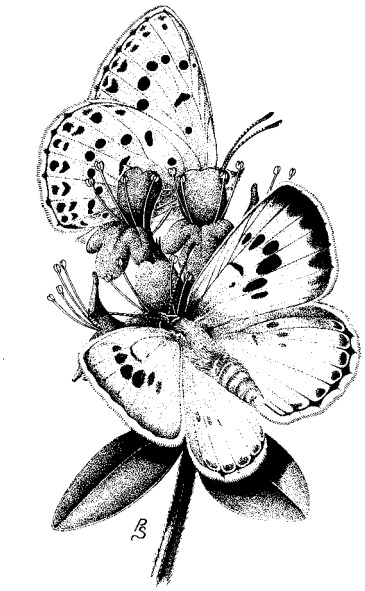
Stefanescu, C. (1994) Distribució i estatus de *Maculinea arion* (linnaeus 1758), *Maculinea rebeli* (Hirschke, 1904) (lepidoptera: Lycaenidae) a Catalunya. *Butlletí de la Societat Catalana de Lepidopterologia* **74**, 12-33.

Thomas, J.A. (1995) The ecology and Conservation of *Maculinea arion* and other European species of Large Blue Butterfly. In: *Ecology and Conservation of butterflies*. ed. Pullin, A.S., Chapman & Hall, London.

Thomas, J.A. (1996) *Maculinea arion*. In *Background information on invertebrates of the Habitats Directive and the Bern Convention. Part I - Crustacea, Coleoptera and Lepidoptera.* eds. Helsdingen, P.J. van, Willemse, L.P.M. & Speight, M.C.D., pp. 157-163. Council of Europe, Strasbourg, Nature and environment, No. 79.

Thomas, J.A., Elmes, G.W., Wardlaw, J.C. & Woycieczowski, M. (1989) Host specifity of *Maculinea* butterflies in *Myrmica* ant nests. *Oecologia* **79**, 452-457.

Wynhoff, I. (1998) The recent distribution of the European *Maculinea* species. *Journal of Insect Conservation* **2(1)**, 15-27.



*Maculinea arion* was reintroduced in the United Kingdom.

*Drawing by Paul Schoenmakers, The Netherlands*

# *Maculinea teleius* (Bergsträsser, 1779)

## Taxonomy
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Lycaenidae

## Status
Present distribution class in Europe: 5-15%
Overall trend in Europe: decrease 20-50%
Threat status: *Vulnerable* - SPEC 3 - species with headquarters within and outside Europe, but considered threatened in Europe
Species at present in Appendix II of Bern Convention.

## Distribution and status per country
Strong decrease all over Europe. Status of populations in Russia unknown.

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| B | Belgium | <1% | extinct | Ex |
| A | Austria | <1% | decr 75-100% | E |
| NL | Netherlands | <1% | decr 75-100% | R |
| HR | Croatia | <1% | decr 50-75% | V |
| RO | Romania | 1-5% | decr 50-75% | V |
| SK | Slovakia | 1-5% | decr 50-75% | E |
| UA | Ukraine | 1-5% | decr 50-75% | E |
| D | Germany | 5-15% | decr 50-75% | V |
| SLO | Slovenia | 1-5% | decr 25-50% | V |
| CZ | Czech Republic | 5-15% | decr 25-50% | E |
| CH | Switzerland | 1-5% | decr 15-25% | V |
| F | France | 1-5% | decr 15-25% | V |
| LT | Lithuania | 1-5% | decr 15-25% | TR |
| H | Hungary | 5-15% | decr 15-25% | - |
| PL | Poland | 5-15% | stable | - |
| FL | Liechtenstein | <1% | unknown | E |
| I | Italy | <1% | unknown | |
| LV | Latvia | <1% | unknown | E |
| RUS | Russia (European part) | 5-15% | unknown | R |
| BY | Belarus | unknown | unknown | K |

## Habitat
Moist, mesophile grasslands with abundance of the foodplant, *Sanguisorba officinalis* (Rosaceae). In BY floodplains along rivers. Host-ant most often *Myrmica scabrinodis*, in Poland *M. rubra*, in France *M. ruginodis* mentioned as well.

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| humid grasslands and tall herb communities | 12 | (35%) |
| mesophile grasslands | 7 | (21%) |
| blanket bogs | 4 | (12%) |
| fens, transition mires and springs | 3 | (9%) |
| water-fringe vegetation | 3 | (9%) |
| alluvial and very wet forests and brush | 1 | (3%) |
| raised bogs | 1 | (3%) |

## Threats
*M. teleius* is mostly threatened by changes in agricultural management, like drainage, improvement or abandonment.

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Land drainage | 18 | 2,6 |
| Agricultural improvements | 17 | 2,4 |
| Agricultural abandonment and changing management (inc. successional change and inappropriate habitat management) | 15 | 2,4 |
| Isolation and fragmentation of habitat | 12 | 2,5 |
| Afforestation on non-woodland habitats | 12 | 2,1 |
| Built development (inc. roads, housing and mining) | 10 | 2,0 |
| Chemical pollution (inc. herbicides and pesticides) | 10 | 1,8 |
| Recreational pressure and disturbance | 8 | 1,8 |
| Collecting (killing or taking) | 8 | 1,1 |
| Land claims / coastal development | 6 | 2,3 |
| Climatic change | 6 | 1,6 |
| Abandonment and change of woodland management (inc. replanting with conifers and inappropriate habitat management) | 4 | 2,0 |
| Felling/destruction of woodland | 4 | 1,8 |
| Natural ecological change (e.g. myxomatosis effect on rabbits) | 3 | 1,3 |
| Others: | | |
| Long-term flooding of areas along rivers | 1 | 1,0 |
| Too early cutting of hay meadows | 1 | 2,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken

Habitats of *M. teleius* are legally protected in many countries, but since most populations are not in nature reserves no special attention is given to the habitat demands. Like other *Maculinea*-species ecological demands relatively well known. Species has been reintroduced successfully in The Netherlands.

Legal protection of species (no capture, trade, etc.) ( 9 countries): A, B, D, F, FL, H, LT, LV, NL
Legal protection of important butterfly habitats (13 countries): A, CZ, D, F, FL, H, I, LT, LV, NL, RUS, SK, SLO
Habitat management: there is special attention for the species ( 4 countries): A, D, H, NL
Ecological research on the requirements of the species has been conducted ( 5 countries): D, I, NL, SLO, UA
All populations are monitored on a regular basis (e.g. every 1-5 years) ( 2 countries): NL, SLO
At least part of the populations are monitored (e.g. every 1-5 years) ( 3 countries): I, SK, UA
Other measures taken:
Reintroduced in 1990 (1 country): NL

## Conservation measures proposed by compilers

Legal protection of habitats (6 countries): BY, CZ, HR, LV, RO, SK
Improved habitat management (5 countries): A, LT, SK, SLO, UA
Stop drainage of wetlands (4 countries): NL, F, SK, SLO
Legal protection of species (3 countries): HR, SK, SLO
Ecological research on species requirements (3 countries): BY, I, SK
Further surveys needed (3 countries): BY, RUS, UA
Begin or improve monitoring (2 countries): RUS, UA
Support extensive agriculture (1 country): SLO
Integrate demands of host-ants in habitat management (1 country): SK
Avoid early mowing (1 country): F
Reintroduction if sufficient habitat available (1 country): B

## References

Binzenhöfer, B. (1996) *Vergleichende autökologische Untersuchungen an* Maculinea nausithous *und* Maculinea teleius *im nördlichen Steigerwald*. Diplomarbeit, University of Saarbrücken, Germany.

Laux, P. (1995) *Populationsbiologische und ethologische Untersuchungen an* Maculinea nausithous *und* Maculinea teleius *(Insecta, Lepidoptera, Lycaenidae) im Naturschutzgebiet ''Feuchtgebiet Dreisel'/Sieg*. Diplomarbeit, University of Bonn, Germany.

Munguira, M.L. & Martin, J. (eds.) *Action Plan for the* Maculinea *butterflies in Europe*. Council of Europe, Strassbourg. [in press]

Šulis, J. (1992) Neue und wenig bekannte Arten der Lepidopteren-Fauna Lettlands. *Mitteilung Entomologica Fennica* **3**, 99-104.

Thomas, J.A. (1984) The Behaviour and Habitat Requirements of *Maculinea nausithous* (Dusky Large Blue) and *M. teleius* (Scarce Large Blue) in France. *Biological Conservation* **28**, 325-347.

Thomas, J.A., Elmes, G.W., Wardlaw, J.C. & Woycieczowski, M. (1989) Host specifity of *Maculinea* butterflies in *Myrmica* ant nests. *Oecologia* **79**, 452-457.

Wynhoff, I. (1996) *Maculinea teleius*. In *Background information on invertebrates of the Habitats Directive and the Bern Convention. Part I - Crustacea, Coleoptera and Lepidoptera.* eds. Helsdingen, P.J. van, Willemse, L.P.M. & Speight, M.C.D., pp. 172-179. Council of Europe, Strasbourg, Nature and environment, No. 79.

Wynhoff, I. (1998) The recent distribution of the European *Maculinea* species. *Journal of Insect Conservation* **2(1)**, 15-27.

Wynhoff, I. (1998) Lessons from the reintroduction of *Maculinea teleius* and *M. nausithous* in the Netherlands. *Journal of Insect Conservation* **2(1)**, 47-58.

# *Maculinea nausithous* (Bergsträsser, 1779)

## Taxonomy

Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Lycaenidae

## Status

Present distribution class in Europe: 5-15%
Overall trend in Europe: decrease 20-50%
Threat status: *Vulnerable* - SPEC 3 - species with headquarters within and outside Europe, but considered threatened in Europe
Species at present in Appendix II of Bern Convention.

## Distribution and status per country

Typical C-European species with highest abundance in Germany, Czech Republic and S-Poland. Declining in most of the countries. Detailed mapping work sometimes reveals the species is more widespread then expected (e.g. Germany: Westerwald, Pfalz).

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| A | Austria | <1% | decr 75-100% | E |
| NL | Netherlands | <1% | decr 75-100% | R |
| HR | Croatia | <1% | decr 50-75% | V |
| SLO | Slovenia | <1% | decr 50-75% | E |
| RO | Romania | 1-5% | decr 50-75% | V |
| SK | Slovakia | 1-5% | decr 50-75% | E |
| UA | Ukraine | 1-5% | decr 50-75% | V |
| D | Germany | >15% | decr 25-50% | V |
| CH | Switzerland | 1-5% | decr 15-25% | V |
| F | France | 1-5% | decr 15-25% | R |
| H | Hungary | 1-5% | decr 15-25% | R |
| CZ | Czech Republic | >15% | decr 15-25% | E |
| BG | Bulgaria | <1% | stable | R |
| E | Spain | <1% | stable | E |
| PL | Poland | 5-15% | stable | - |
| BY | Belarus | <1% | unknown | R |
| FL | Liechtenstein | <1% | unknown | E |
| TRA | Turkey (Asian part) | 1-5% | unknown | I |
| RUS | Russia (European part) | 5-15% | unknown | R |

## Habitat

Moist, mesophile grasslands and ditches with abundance of the foodplant, *Sanguisorba officinalis* (Rosaceae). In BY borders of deciduous forests. Host-ant *Myrmica rubra.* In Spain *M. scabrinodis* mentioned as well.

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| humid grasslands and tall herb communities | 12 | (33%) |
| water-fringe vegetation | 5 | (14%) |
| blanket bogs | 4 | (11%) |
| mesophile grasslands | 4 | (11%) |
| fens, transition mires and springs | 3 | (8%) |
| alluvial and very wet forests and brush | 1 | (3%) |
| alpine and subalpine grasslands | 1 | (3%) |
| broad-leaved deciduous forests | 1 | (3%) |
| fallow land, waste places | 1 | (3%) |
| raised bogs | 1 | (3%) |

## Threats

Agricultural improvements (like drainage) and abandonment are the most important threats.

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Land drainage | 15 | 2,5 |
| Agricultural improvements | 15 | 2,5 |
| Agricultural abandonment and changing management (inc. successional change and inappropriate habitat management) | 13 | 2,6 |
| Built development (inc. roads, housing and mining) | 11 | 2,1 |
| Isolation and fragmentation of habitat | 11 | 2,1 |
| Chemical pollution (inc. herbicides and pesticides) | 9 | 2,1 |
| Afforestation on non-woodland habitats | 8 | 2,1 |
| Recreational pressure and disturbance | 8 | 1,7 |
| Collecting (killing or taking) | 7 | 1,2 |
| Land claims / coastal development | 6 | 2,5 |
| Climatic change | 5 | 2,0 |
| Abandonment and change of woodland management (inc. replanting with conifers and inappropriate habitat management) | 4 | 1,7 |
| Felling/destruction of woodland | 5 | 1,2 |
| Natural ecological change (e.g. myxomatosis effect on rabbits) | 3 | 2,0 |
| Others: | | |
| Too early cutting of hay meadows | 2 | 2,0 |
| Overgrazing | 1 | 3,0 |
| Land claims for agriculture | 1 | 2,0 |
| Long-term flooding of areas along rivers | 1 | 1,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken

Legal protection of species (no capture, trade, etc.) ( 8 countries): A, BY, D, E, F, FL, H, NL
Legal protection of important butterfly habitats (10 countries): A, CZ, D, F, FL, H, NL, RUS, SK, SLO
Habitat management: there is special attention for the species ( 4 countries): A, D, H, NL
Ecological research on the requirements of the species has been conducted ( 5 countries): D, E, NL, SLO, UA
All populations are monitored on a regular basis (e.g. every 1-5 years) ( 1 country): SLO
At least part of the populations are monitored (e.g. every 1-5 years) ( 3 countries): NL, SK, UA
Other measures taken:
Reintroduced in 1990 (1 country): NL

## Conservation measures proposed by compilers

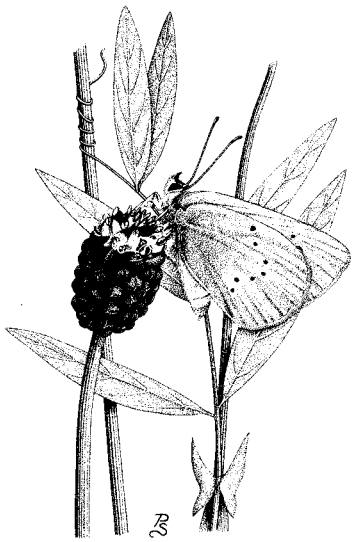
Legal protection of habitats (6 countries): BY, CZ, E, HR, RO, SK
Improved habitat management (4 countries): A, SK, SLO, UA
Begin or improve monitoring (3 countries): RUS, TR, UA
Legal protection of species (3 countries): HR, SK, SLO
Stop drainage of wetlands (3 countries): NL, F, SK
Ecological research on species requirements (3 countries): BY, SK, TR
Avoid early mowing (before 20 August) (2 countries): F, TR
Further surveys needed (2 countries): BY, UA
Support extensive agriculture (1 country): SLO
Integrate demands of host-ants in habitat management (1 country): SK
Management for the species in all extant populations (1 country): E
Stop grazing in habitat (1 country): TR

## References


Binzenhöfer, B. (1996) *Vergleichende autökologische Untersuchungen an* Maculinea nausithous *und* Maculinea teleius *im nördlichen Steigerwald*. Diplomarbeit, University of Saarbrücken, Germany.

Garbe, H. (1991) *Zur Biologie und ökologie von* Maculinea nausithous *Bergstr. (Lepidoptera, Lycaenidae)*. Diplomarbeit, University of Marburg, Germany.

Geissler, S. (1990) *Autökologische Untersuchungen zu* Maculinea nausithous. Diplomarbeit, Institut für Landschaftsplanung der Universität Stuttgart-Hohenheim.
Munguira, M.L. & Martin, J. (1993) The conservation of endangered Lycaenid butterflies in Spain. *Biological Conservation* **66**, 17-22.
Munguira, M.L. & Martin, J. (eds.) *Action Plan for the* Maculinea *butterflies in Europe.* Council of Europe, Strassbourg. [in press]
Settele, J. & Geissler, S. (1988) Schutz des vom Aussterben bedrohten Blauschwarzen Moorbläulings durch Brachenerhalt, Grabenpflege und Biotopverbund im Filderraum. *Natur und Landschaft* **63**, 467-470.
Sonnenburg, F. (1996) *Eine isolierte Population von* Maculinea nausithous *(Bergsträsser 1779) am Niederrhein - Populationsdynamik, Habitatwahl, Schutzkonzept - (Lepidoptera: Lycaenidae).* Diplomarbeit, University of Essen, Germany.
Thomas, J.A. (1984) The Behaviour and Habitat Requirements of *Maculinea nausithous* (Dusky Large Blue) and *M. teleius* (Scarce Large Blue) in France. *Biological Conservation* **28**, 325-347.
Thomas, J.A., Elmes, G.W., Wardlaw, J.C. & Woycieczowski, M. (1989) Host specifity of *Maculinea* butterflies in *Myrmica* ant nests. *Oecologia* **79**, 452-457.
Wynhoff, I. (1996) *Maculinea nausithous*. In *Background information on invertebrates of the Habitats Directive and the Bern Convention. Part I - Crustacea, Coleoptera and Lepidoptera.* eds. Helsdingen, P.J. van, Willemse, L.P.M. & Speight, M.C.D., pp. 164-171. Council of Europe, Strasbourg, Nature and environment, No. 79.
Wynhoff, I. (1998) The recent distribution of the European *Maculinea* species. *Journal of Insect Conservation* **2(1)**, 15-27.
Wynhoff, I. (1998) Lessons from the reintroduction of *Maculinea teleius* and *M. nausithous* in the Netherlands. *Journal of Insect Conservation* **2(1)**, 47-58.



*Maculinea nausithous* and *M. teleius* can be found in the same habitat. Both species are considered threatened in Europe. In 1990 they were successfully reintroduced in a nature reserve in The Netherlands.

*Drawing by Paul Schoenmakers, The Netherlands*

# *Maculinea alcon* (Denis & Schiffermüller, 1775)

## Taxonomy
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Lycaenidae

## Status
Present distribution class in Europe: 5-15%
Overall trend in Europe: decrease 20-50%
Threat status: *Vulnerable* - SPEC 3 - species with headquarters within and outside Europe, but considered threatened in Europe

## Distribution and status per country

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| A | Austria | <1% | decr 75-100% | E |
| UA | Ukraine | 1-5% | decr 75-100% | E |
| NL | Netherlands | 5-15% | decr 75-100% | E |
| B | Belgium | 1-5% | decr 50-75% | E |
| PL | Poland | 1-5% | decr 50-75% | E |
| RO | Romania | 1-5% | decr 50-75% | V |
| D | Germany | 5-15% | decr 50-75% | V |
| H | Hungary | 5-15% | decr 50-75% | - |
| CH | Switzerland | <1% | decr 15-25% | E |
| I | Italy | <1% | decr 15-25% | |
| E | Spain | 1-5% | decr 15-25% | V |
| F | France | 1-5% | decr 15-25% | V |
| S | Sweden | 1-5% | decr 15-25% | V |
| DK | Denmark | 5-15% | decr 15-25% | V |
| RUS | Russia (European part) | 5-15% | decr 15-25% | - |
| BY | Belarus | 1-5% | stable | R |
| AL | Albania | 5-15% | stable | - |
| CZ | Czech Republic | 5-15% | stable | E |
| SLO | Slovenia | 5-15% | stable | I |
| FYROM | FYR of Macedonia | 5-15% | fluctuating | V |
| FL | Liechtenstein | <1% | unknown | E |
| LT | Lithuania | <1% | unknown | E |
| GR | Greece | 1-5% | unknown | R |
| TRA | Turkey (Asian part) | 1-5% | unknown | I |
| YU | Yugoslavia | 1-5% | unknown | V |
| BIH | Bosnia | 5-15% | unknown | V |
| SK | Slovakia | unknown | unknown | I |

## Habitat
Damp, nutrient poor (in S-Europe subalpine) grasslands, wet heathland and bogs, often in or near woodland. In DK also wet dune-valleys. Presence of foodplant and host-ants essential. Foodplant mainly *Gentiana pneumonanthe* and perhaps other gentians (Gentianaceae). Host-ant in northern part of range (DK, S, northern part of NL) mostly *Myrmica ruginodis*, in southern part of NL, B and F *M.scabrinodis* as well and in B, DK and S *M. rubra* as well. In E only *M. scabrinodis* mentioned as host-ant.

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| humid grasslands and tall herb communities | 13 | (28%) |
| mesophile grasslands | 6 | (13%) |
| broad-leaved deciduous forests | 4 | (9%) |
| heath and scrub | 4 | (9%) |
| fens, transition mires and springs | 3 | (7%) |
| blanket bogs | 2 | (4%) |
| mixed woodland | 2 | (4%) |
| water-fringe vegetation | 2 | (4%) |
| alluvial and very wet forests and brush | 1 | (2%) |
| alpine and subalpine grasslands | 1 | (2%) |
| coastal sand-dunes and sand beaches | 1 | (2%) |
| coniferous woodland | 1 | (2%) |
| raised bogs | 1 | (2%) |

## Threats

Changes in agricultural management (improvements like land drainage as well as abandonment) threaten this species in grassland habitats. Fragmentation and isolation is the most important threat on heathlands, although the species can survive for a long time in small habitat patches. In W-Europe (NL, B) also threatened in nature reserves by habitat degredation of wet heathlands, caused by large-scale lowering of groundwater table and nutrient-input.

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Agricultural improvements | 18 | 2,3 |
| Agricultural abandonment and changing management (inc. successional change and inappropriate habitat management) | 18 | 2,2 |
| Isolation and fragmentation of habitat | 18 | 2,2 |
| Land drainage | 17 | 2,4 |
| Afforestation on non-woodland habitats | 15 | 1,9 |
| Chemical pollution (inc. herbicides and pesticides) | 11 | 1,7 |
| Built development (inc. roads, housing and mining) | 10 | 2,2 |
| Recreational pressure and disturbance | 8 | 2,0 |
| Climatic change | 6 | 1,8 |
| Felling/destruction of woodland | 6 | 1,8 |
| Collecting (killing or taking) | 6 | 1,3 |
| Land claims / coastal development | 5 | 2,6 |
| Natural ecological change (e.g. myxomatosis effect on rabbits) | 5 | 2,2 |
| Abandonment and change of woodland management (inc. replanting with conifers and inappropriate habitat management) | 6 | 1,3 |
| Others: | | |
| Acidification of heathland causes grasses to overgrow *Gentiana* | 1 | 2,5 |
| Too early cutting of hay meadows | 1 | 2,0 |
| Overgrazing | 1 | 3,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken

Habitats under legal protection in many countries.

Legal protection of species (no capture, trade, etc.) (8 countries): A, B, BY, CZ, D, F, FL, H
Legal protection of important butterfly habitats (14 countries): A, B, CZ, D, DK, F, FL, FYROM, H, I, NL, RUS, SLO, YU
Habitat management: there is special attention for the species ( 4 countries): A, B, D, NL
Ecological research on the requirements of the species has been conducted ( 5 countries): B, E, I, NL, SLO
All populations are monitored on a regular basis (e.g. every 1-5 years) ( 1 country): SLO
At least part of the populations are monitored (e.g. every 1-5 years) ( 5 countries): B, H, I, NL, UA
Other measures taken:
Preparation of a species action plan (1 country): B

## Conservation measures proposed by compilers

Ecological research on species requirements (9 countries): B, BIH, BY, CZ, DK, FYROM, SK, TR, YU
Begin or improve monitoring (8 countries): BIH, DK, E, FYROM, RUS, TR, UA, YU
Legal protection of habitats (6 countries): BY, CZ, LT, RO, RUS, SK
Improved habitat management (5 countries): A, E, LT, SLO, UA
Further surveys needed (3 countries): S, I, UA
Legal protection of species (2 countries): E, SLO
Prevent fires (1 country): F
Maintain extensive grazing to keep meadows open (1 country): F
Introduce rotational mowing and prevent mowing between July and October (1 country): F
Stop the lowering of the groundwater-table (1 country): NL
Local reintroduction (1 country): B
Conduct more research to get more gentians and on the ecology of the host-ants (1 country): DK
Integrate demands of host-ants in habitat management (1 country): SK

## References


Elmes, G.W., Thomas, J.A., Hammarstedt, O., Munguira, M.L., Martin, J., Made, J.G. van der (1994) Differences in host-ant specificity between Spanish, Dutch and Swedish populations of the endangered butterfly, *Maculinea alcon*. *Memorabilia Zool*. **48**, 55-68.

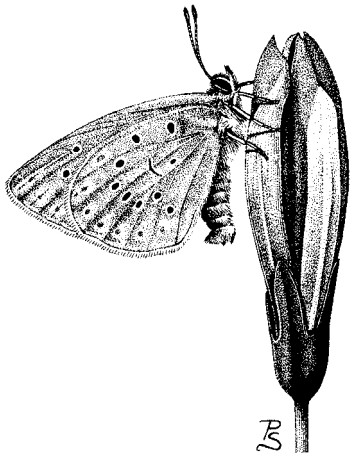
Liebig, W.H. (1989) Bemerkungen zur Biologie von *Maculinea alcon*. *Entomologische Nachrichten und Berichte* **33**, 117-121.

Munguira, M.L., Martin, J. & Rey, J.M. (1991) Use of UTM maps to detect endangered Lycaenid species in the Iberian Peninsula. *Nota Lepidopterologica* **Suppl.2**, 45-55.

Munguira, M.L. & Martin, J. (1993) The conservation of endangered Lycaenid butterflies in Spain. *Biological Conservation* **66**, 17-22.

Munguira, M.L. & Martin, J. (eds.) *Action Plan for the* Maculinea *butterflies in Europe*. Council of Europe, Strassbourg. [in press]

Wynhoff, I. (1998) The recent distribution of the European *Maculinea* species. *Journal of Insect Conservation* **2(1)**, 15-27.

The main foodplant of *Maculinea alcon* is *Gentiana pneumonanthe*.

*Drawing by Paul Schoemakers, The Netherlands*

# *Maculinea rebeli* (Hirschke, 1904)

## Taxonomy
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Lycaenidae

## Status
Present distribution class in Europe: 1-5%
Overall trend in Europe: decrease 20-50%
Threat status: *Vulnerable* - SPEC 1 - species of global conservation concern because restricted to Europe and considered globally threatened

## Distribution and status per country
Trend unclear in many countries because of taxonomical confusion with *M. alcon.*

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| B | Belgium | <1% | extinct | Ex |
| D | Germany | 5-15% | decr 50-75% | V |
| F | France | 1-5% | decr 25-50% | R |
| SK | Slovakia | 1-5% | decr 25-50% | V |
| BG | Bulgaria | 1-5% | stable | - |
| CH | Switzerland | 1-5% | stable | V |
| E | Spain | 1-5% | stable | V |
| H | Hungary | 5-15% | incr 125-200% | - |
| A | Austria | <1% | unknown | - |
| CZ | Czech Republic | <1% | unknown | E |
| PL | Poland | <1% | unknown | E |
| FL | Liechtenstein | 1-5% | unknown | - |
| HR | Croatia | 1-5% | unknown | - |
| I | Italy | 1-5% | unknown | |
| RUS | Russia (European part) | 1-5% | unknown | R |
| AND | Andorra | 5-15% | unknown | R |
| SLO | Slovenia | unknown | unknown | K |

## Habitat
Very dry to fairly moist, mostly calcareous grasslands with presence of foodplants *Gentiana cruciata* or *Gentianella germanica* (Gentianaceae), up to alpine levels. Host-ant *Myrmica schencki.* In CH (D. Jutzeler) larvae also found in nests of *M. sulcinodis* and *M. scabrinodis* (comm. K. Fiedler), in Germany also *M. sabuleti* (comm. Meyer).

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| dry calcareous grasslands and steppes | 9 | (50%) |
| alpine and subalpine grasslands | 6 | (33%) |
| dry siliceous grasslands | 2 | (11%) |
| mesophile grasslands | 1 | (6%) |

## Threats

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Agricultural abandonment and changing management (inc. successional change and inappropriate habitat management) | 10 | 2,1 |
| Afforestation on non-woodland habitats | 8 | 2,3 |
| Agricultural improvements | 7 | 2,1 |
| Built development (inc. roads, housing and mining) | 6 | 1,8 |
| Isolation and fragmentation of habitat | 5 | 2,4 |
| Recreational pressure and disturbance | 5 | 1,8 |
| Abandonment and change of woodland management (inc. replanting with conifers and inappropriate habitat management) | 4 | 2,3 |
| Natural ecological change (e.g. myxomatosis effect on rabbits) | 4 | 2,0 |
| Chemical pollution (inc. herbicides and pesticides) | 4 | 1,8 |
| Collecting (killing or taking) | 4 | 1,3 |
| Felling/destruction of woodland | 2 | 2,5 |
| Land claims / coastal development | 2 | 2,5 |
| Climatic change | 1 | 1,0 |
| Land drainage | 1 | 1,0 |
| Others: | | |
| Overgrazing | 2 | 3,0 |
| Natural forest and shrubs succession | 1 | 3,0 |
| Burning of dry grassland in spring or autumn | 1 | 3,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken

Legal protection of species (no capture, trade, etc.) ( 4 countries): B, D, F, H
Legal protection of important butterfly habitats ( 6 countries): B, D, E, F, H, SK
Habitat management: there is special attention for the species ( 1 country): H
Ecological research on the requirements of the species has been conducted ( 3 countries): D, H, SLO
All populations are monitored on a regular basis (e.g. every 1-5 years) ( 1 country): SLO
At least part of the populations are monitored (e.g. every 1-5 years) ( 2 countries): D, H
No specific measures have been taken ( 5 countries): AND, CZ, FL, HR, RUS

## Conservation measures proposed by compilers

Legal protection of habitats (4 countries): AND, CZ, F, SK
Begin or improve monitoring (3 countries): E, HR, SK
Ecological research on species requirements (2 countries): CZ, SK
Legal protection of species (2 countries): E, SLO
Improved habitat management (1 country): SLO
Further surveys needed (1 country): AND
Integrate demands of host-ants in habitat management (1 country): SK
Support extensive agriculture (1 country): SLO
Protection of key-populations (1 country): E
Habitat restoration near French colonies (1 country): B

## References


Hochberg, M.E., Clarke, R.T., Elmes, G.W. & Thomas, J.A. (1994) Population dynamic consequences of direct and indirect interactions involving a large blue butterfly and its plant and red ant hosts. *Journal of Animal Ecology* **63**, 375-391.

Kockelke, K., Hermann, G., Kaule, G., Verhaagh, M. & Settele, J. (1994) Zur Autökologie und Verbreitung des Kreuzenzian-Ameisenbläulings, *Maculinea rebeli. Carolinea* **52**, 93-109.

Munguira, M.L., Martin, J. & Rey, J.M. (1991) Use of UTM maps to detect endangered Lycaenid species in the Iberian Peninsula. *Nota Lepidopterologica* **Suppl.2**, 45-55.

Munguira, M.L. & Martin, J. (1993) The conservation of endangered Lycaenid butterflies in Spain. *Biological Conservation* **66**, 17-22.

Munguira, M.L. & Martin, J. (eds.) *Action Plan for the* Maculinea *butterflies in Europe.* Council of Europe, Strassbourg. [in press]

Settele, J., Pauler, R. & Kockelke, K. (1995) Magerrasennutzung und Anpassungen bei Tagfaltern: Populationsökologische Forschung als Basis für Schutzmassnahmen am Beispiel Glaucopsyche arion (Thymian-Ameisenbläuling) und Glaucopsyche rebeli (Kreuzenzian-Ameisenbläuling). In *Ein Naturschutzkonzept für die Kalkmagerrasen der Schwäbischen Alp (Baden-Württemberg).* eds. Beinlich, B. & Plachter, H. *Beihefte für Naturschutz und Landschaftspflege Baden-Württemberg* **83**, 139-158.

Stefanescu, C. (1994) Distribució i estatus de *Maculinea arion* (linnaeus 1758), *Maculinea rebeli* (Hirschke, 1904) (lepidoptera: Lycaenidae) a Catalunya. *Butlletí de la Societat Catalana de Lepidopterologia* **74**, 12-33.

Thomas, J.A., Elmes, G.W., Wardlaw, J.C. & Woycieczowski, M. (1989) Host specifity of *Maculinea* butterflies in *Myrmica* ant nests. *Oecologia* **79**, 452-457.

Wynhoff, I. (1998) The recent distribution of the European *Maculinea* species. *Journal of Insect Conservation* **2(1)**, 15-27.

# *Plebeius trappi* (Verity, 1927)

## Taxonomy

Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Lycaenidae
Species status of *P. trappi* is considered doubtful. Many authors consider this a subspecies of *P. pylaon*.

## Status

Present distribution class in Europe: <1%
Overall trend in Europe: unknown.
Present distribution less than 20000 km$^2$, habitat severely fragmented and declining.
Threat status: *Vulnerable* - SPEC 1 - species of global conservation concern because restricted to Europe and considered globally threatened
Datasheet compiler: G. Carron

## Distribution and status per country

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| CH | Switzerland | 1-5% | unknown | V |
| I | Italy | <1% | unknown | - |

## Habitat

Xerothermophilous meadows, steppe-vegetation, xeric pine forests in mountain areas (800-2000 m) (CH). Strictly restricted to the distribution area of its unique foodplants (in Switzerland: *Astragalus exscapus* (Fabiacaea)).

| Corine classification of habitat (number of mentions by national compilers) | |
|---|---|
| dry calcareous grasslands and steppes | 1 (100%) |

## Threats

Most severe threats are caused by agricultural improvements, in the case of *P. trappi* irrigation of xerothermophilous steppes and the intensification of grazing by sheep.

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Agricultural improvements | 1 | 2,0 |
| Built development (inc. roads, housing and mining) | 1 | 1,0 |
| Isolation and fragmentation of habitat | 1 | 1,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken

No specific conservation measures have been taken.

## Conservation measures proposed by compilers

Identify main populations and priority sites to be protected (1 country): CH
Improve habitat management (extensive sheep grazing) (1 country): CH
Prevent new irrigation project in xerothermophilous zones (1 country): CH

## References

Ligue Suise pour la protection de la nature (eds) (1987) *Les papillons de jour et leur biotopes. Vol. 1.* Fotorotar, Egg, Switzerland.

# *Plebeius hesperica* (Rambur, 1839)

## Taxonomy

Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Lycaenidae
Species status of *P. hesperica* is considered doubtful (comm. M. Munguira and K. Fiedler). Many authors consider this a subspecies of *P. pylaon*.

## Status

Present distribution class in Europe: <1%
Overall trend in Europe: decrease 20-50%
Threat status: *Vulnerable* - SPEC 1 - species of global conservation concern because restricted to Europe and considered globally threatened

## Distribution and status per country

Species is restricted to ± 40 populations, mainly in E-Spain.

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| E | Spain | 1-5% | decr 15-25% | R |

## Habitat

Dry calcareous or clay grasslands and scrubs. Altitude: 400-1400 m. Foodplants: *Astragalus alopecurioides* and *A. turolensis* (Fabiacaea).

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| dry calcareous grasslands and steppes | 1 | (50%) |
| fallow land, waste places | 1 | (50%) |

## Threats

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Agricultural abandonment and changing management (inc. successional change and inappropriate habitat-management) | 1 | 3,0 |
| Agricultural improvements | 1 | 2,0 |
| Built development (inc. roads, housing and mining) | 1 | 2,0 |
| Afforestation on non-woodland habitats | 1 | 2,0 |
| Isolation and fragmentation of habitat | 1 | 1,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken

Legal protection of species (no capture, trade, etc.) (1 country): E
Legal protection of important butterfly habitats (1 country): E
Ecological research on the requirements of the species has been conducted (1 country): E

## Conservation measures proposed by compilers

Legal protection of habitats (1 country): E (only one population is protected at this moment)
Begin or improve monitoring (1 country): E
Improve habitat managment to keep seral stages (1 country): E

## References

Agenjo, R. (1967) Morfologia y distribucion geografica en España de la ‘’Niña del Astragalo’‘ *Plebejus (plebejus) pylaon* (F.D.W. 1824). *EOS* **43**, 21-25.

Munguira, M.L., Martin, J. & Rey, J.M. (1991) Use of UTM maps to detect endangered Lycaenid species in the Iberian Peninsula. *Nota Lepidopterologica* **Suppl.2**, 45-55.

Munguira, M.L. & Martin, J. (1993) The conservation of endangered Lycaenid butterflies in Spain. *Biological Conservation* **66**, 17-22.

Munguira, M.L., Martin, J. & Balletto, E. (1993) Consercation biology of Lycaenidae: an European overview. In *conservation biology of Lycaenidae*. ed. New, T.R. pp. 23-43. IUCN, Gland, Switzerland.

# *Polyommatus eroides* (Frivaldszky, 1835)

## Taxonomy

Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Lycaenidae
Remark: Taxonomic problems abound in the *P. eros-eroides-erotides* complex (comm. K. Fiedler).

## Status

Present distribution class in Europe: <1%
Overall trend in Europe: decrease 50-80%
Threat status: *Critically endangered* - SPEC 3 - species with headquarters within and outside Europe, but considered threatened in Europe

## Distribution and status per country

Distribution extends far into Asia (Siberia) (Lukhtanov & Lukhtanov, 1994). In Europe concentrated in SE-Europe.

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| CZ | Czech Republic | <1% | extinct | Ex |
| PL | Poland | <1% | decr 75-100% | E |
| UA | Ukraine | <1% | decr 75-100% | E |
| TRA | Turkey (Asian part) | <1% | decr 50-75% | R |
| BY | Belarus | <1% | stable | R |
| AL | Albania | 1-5% | stable | - |
| GR | Greece | 1-5% | stable | - |
| BG | Bulgaria | 5-15% | stable | - |
| FYROM | FYR of Macedonia | <1% | unknown | R |
| RUS | Russia (European part) | <1% | unknown | V |
| SK | Slovakia | <1% | unknown | E |
| YU | Yugoslavia | <1% | unknown | R |

## Habitat

Dry, rocky or sandy, sometimes calcareous, grasslands, steppes and edges of forests. Also wet forest meadows (UA) and open places in forests between 1000 and 2000 m (TRA). In BY young pine plantations. Foodplants *Oxytropis* and *Astragalus* species (Fabaceae).

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| dry siliceous grasslands | 5 | (29%) |
| alpine and subalpine grasslands | 3 | (18%) |
| mesophile grasslands | 3 | (18%) |
| dry calcareous grasslands and steppes | 2 | (12%) |
| coniferous woodland | 1 | (6%) |
| humid grasslands and tall herb communities | 1 | (6%) |
| inland sand-dunes | 1 | (6%) |
| mixed woodland | 1 | (6%) |

## Threats

Populations often small, fragmented and isolated.

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Isolation and fragmentation of habitat | 6 | 2,2 |
| Chemical pollution (inc. herbicides and pesticides) | 6 | 1,5 |
| Agricultural improvements | 5 | 2,0 |
| Natural ecological change (e.g. myxomatosis effect on rabbits) | 4 | 2,3 |
| Agricultural abandonment and changing management (inc. successional change and inappropriate habitat management) | 4 | 1,8 |
| Recreational pressure and disturbance | 4 | 1,8 |
| Felling/destruction of woodland | 3 | 2,7 |
| Built development (inc. roads, housing and mining) | 3 | 2,0 |
| Abandonment and change of woodland management (inc. replanting with conifers and inappropriate habitat management) | 3 | 1,7 |
| Climatic change | 2 | 3,0 |
| Afforestation on non-woodland habitats | 2 | 3,0 |
| Land drainage | 2 | 2,5 |
| Collecting (killing or taking) | 2 | 1,5 |
| Land claims / coastal development | 1 | 1,0 |
| Others: | | |
| Overgrazing | 2 | 2,5 |
| Natural forest and shrubs succession | 2 | 2,5 |
| Fires | 2 | 2,0 |
| Ploughing of grasslands | 1 | 2,0 |
| Agricultural conversion | 1 | 2,0 |
| Waste disposal sites | 1 | 1,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken

Legal protection of species (no capture, trade, etc.) ( 2 countries): BY, UA
Legal protection of important butterfly habitats ( 5 countries): AL, CZ, FYROM, SK, YU
Habitat management: there is special attention for the species ( 1 country): AL
No specific measures have been taken ( 2 countries): RUS, TR

## Conservation measures proposed by compilers

Begin or improve monitoring (6 countries): FYROM, RUS, SK, TR, UA, YU
Ecological research on species requirements (5 countries): FYROM, RUS, SK, TR, YU
Improved habitat management (2 countries): SK, UA
Legal protection of habitats (2 countries): SK, TR
Further surveys needed (1 country): UA
Legal protection of species (1 country): SK

## References


Carbonell, F. (1993) Contribution to the knowledge of the genus *Polyommatus* Latreille (1804): Ultraspecific complex of *Polyommatus eros-eroides* in the Middle-East and in Transcaucasia (Lepidoptera: Lycaenidae): Part I. (Descriptions of new taxa). *Linneana Belgica* **14(4)**, 227-234

Carbonell, F. (1994) Contribution to the knowledge of the genus *Polyommatus* Latreille, 1804: Ultraspecific complex of *Polyommatus eros/eroides* in the Middle East and in Transcaucasia (Lepidoptera: Lycaenidae): Part 2. Diagnosis and discussion. *Linneana Belgica* **14(8)**, 439-454.

KrálíÖek, M. & Povolný, D. (1957) *Polyommatus eros eroides* (Frivaldszky 1837) v ÑeskoslovenskW / *Polyommatus eros eroides* (Frivaldszky 1837) in Czechoslovakia. *Ñasopis Ñeskoslovenske SpoleÖnosti Entomologicke* **53**, 193-201. [in Czech]

Lukhtanov, V. & Lukhtanov, A. (1994) *Die Tagfalter Nordwestasiens*. Dr. Ulf Eitschberger, Marktleuthen, Germany.

# *Polyommatus humedasae* Toso & Balletto, 1976

## Taxonomy
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Lycaenidae

## Status
Present distribution class in Europe: <1%
Overall trend in Europe: unknown
Present distribution less than 5000 km$^2$, restricted to less than five populations and declining.
Threat status: *Endangered* - SPEC 1 - species of global conservation concern because restricted to Europe and considered globally threatened
Datasheet compilers: Z. Manino and G. Carron.

## Distribution and status per country

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| I | Italy | <1% | unknown | E |

## Habitat
Dry rocky slopes with xerothermophilous vegetation with a high plant diversity and abundant nectarsources. Habitat is mosaic of bushy and herbaceous patches in mountain area (800-1000, locally up to 1600 m). Foodplants: *Onobrychis montana, O. viciifolia* (Fabaceae)
No Corine classification given.

## Threats

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Agricultural abandonment and changing management | 1 | 3,0 |
| Isolation and fragmentation of habitat | 1 | 3,0 |
| Afforestation on non-woodland habitats | 1 | 2,0 |
| Collecting (killing or taking) | 1 | 2,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken
Using a butterfly-net is strictly forbidden in the Pondel-site, which is the main population. Controls appear to be very efficient.

Legal protection of important butterfly habitats ( 1 country): I
Ecological research on the requirements of the species has been conducted (1 country): I

## Conservation measures proposed by compilers

Elaborate a management plan of the Pondel-site to prevent both natural and artificial afforestation
To map exact distribution area
Study the habitat requirements
Provide information on this species to local people and tourists

## References
Balletto, E. (1993) Polyommatus humedasae (Toso & Balletto, 1976). In *Conservation Biology of Lycaenidae.* ed. New, T.R., pp. 88-89. IUCN, Gland, Switzerland.

# *Polyommatus poseidon* (Herrich-Schäffer, 1851)

## Taxonomy

Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Lycaenidae

## Status

Present distribution class in Europe: <1%
Overall trend in Europe: decrease 20-50%
Threat status: *Endangered* - SPEC 3 - species with headquarters within and outside Europe, but considered threatened in Europe

## Distribution and status per country

Species can locally be very abundant in Turkey (Hesselbarth *et al.,* 1995; comm. K. Fiedler).

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| UA | Ukraine | <1% | decr 25-50% | E |
| TRA | Turkey (Asian part) | 5-15% | decr 15-25% | K |

## Habitat

Various open habitats, from moist to very dry and bare (TRA). Alpine steppe-like grassland and exposed mountain limestone (UA). Foodplant *Hedysarum candidum* (Fabaceae) (UA).

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| alpine and subalpine grasslands | 1 | (33%) |
| dry calcareous grasslands and steppes | 1 | (33%) |
| inland cliffs and exposed rocks | 1 | (33%) |

## Threats

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Isolation and fragmentation of habitat | 2 | 2,5 |
| Recreational pressure and disturbance | 2 | 2,5 |
| Built development (inc. roads, housing and mining) | 1 | 3,0 |
| Collecting (killing or taking) | 1 | 3,0 |
| Land claims / coastal development | 1 | 3,0 |
| Agricultural improvements | 1 | 2,0 |
| Chemical pollution (inc. herbicides and pesticides) | 1 | 2,0 |
| Others: | | |
| Overgrazing | 2 | 2,5 |
| Fires | 1 | 3,0 |
| Natural forest and shrubs succession | 1 | 3,0 |
| Land claims for agriculture | 1 | 2,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken

Legal protection of important butterfly habitats ( 1 country): UA
At least part of the populations are monitored (e.g. every 1-5 years) ( 1 country): UA
No specific measures have been taken ( 1 country): TR

## Conservation measures proposed by compilers

Begin or improve monitoring (2 countries): TR, UA
Improved habitat management (1 country): UA
Legal protection of habitats (1 country): TR
Further surveys needed (1 country): UA
Resolve taxonomical status (1 country): TR

## References

Hesselbarth, G., Van Oorschot, H, & Wagener, S. (1995) *Die Tagfalter der Türkei*. Selbstverlag Sigbert Wagener, Bocholt, Germany.

# *Polyommatus dama* (Staudinger, 1892)

## Taxonomy
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Lycaenidae

## Status
Present distribution class in Europe: <1%
Overall trend in Europe: decrease 50-80%
Threat status: *Endangered* - SPEC 1 - species of global conservation concern because restricted to Europe and considered globally threatened
Remarks: Special research on this species is urgently needed. The differentiation from other related species, the distribution and the ecological requirements are still unclear (comm. Wagener).

## Distribution and status per country
Species is only found near Malatya in S-Turkey (Hesselbarth *et al.*, 1995).

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| TRA | Turkey (Asian part) | <1% | decr. 50-75% | E |

## Habitat
The species is found on uncultivated steppeland.
No Corine classification given.

## Threats
*P. dama* is only known from the type-locality 'Malatya' where the species still survives in low numbers in a small area in the neighbourhood of the town. An actual threat could not be observed at that place. The construction of a dam nearby did not have influence on the population (comm. De Prins & Wagener).

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Agricultural improvements | 1 | 3,0 |
| Afforestation on non-woodland habitats | 1 | 3,0 |
| Chemical pollution (inc. herbicides and pesticides) | 1 | 3,0 |
| Isolation and fragmentation of habitat | 1 | 3,0 |
| Others: | | |
| Overgrazing | 1 | 3,0 |
| Land claims for agriculture | 1 | 3,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken
No specific measures have been taken.

## Conservation measures proposed by compilers
Strict protection of the one locality near Malatya. Only extensive grazing, no afforestation or other habitat-changes.

## References
Hesselbarth, G., Van Oorschot, H, & Wagener, S. (1995) *Die Tagfalter der Türkei*. Selbstverlag Sigbert Wagener, Bocholt, Germany.

# *Polyommatus caeruleus* (Staudinger, 1871)

## Taxonomy
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Lycaenidae

## Status
Present distribution class in Europe: 0%
Overall trend in Europe: extinct
Threat status: *Extinct* - SPEC 3 - species with headquarters within and outside Europe, but considered threatened in Europe

## Distribution and status per country
This butterfly is also found in Caucasus and N-Iran. There are only a few old records from easternmost Turkey (Hesselbarth *et al.*, 1995), therefore by some scientists regarded as a non-European species (comm. K. Fiedler).

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| TRA | Turkey (Asian part) | <1% | extinct | Ex |

## Habitat
Occurs between 2000 and 3000 m altitude, probably on alpine meadows or scrub. Foodplant unknown.
No Corine classification given.

## Threats

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Overgrazing | 1 | 3,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken
No specific measures have been taken.

## Conservation measures proposed by compilers
Further surveys needed (1 country): TR

## References
Hesselbarth, G., Van Oorschot, H, & Wagener, S. (1995) *Die Tagfalter der Türkei*. Selbstverlag Sigbert Wagener, Bocholt, Germany.

# *Polyommatus damone* (Eversmann, 1841)

## Taxonomy
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Lycaenidae

## Status
Present distribution class in Europe: 1-5%
Overall trend in Europe: decrease 20-50%
Threat status: *Vulnerable* - SPEC 3 - species with headquarters within and outside Europe, but considered threatened in Europe

## Distribution and status per country

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| UA | Ukraine | <1% | decr 25-50% | R |
| RUS | Russia (European part) | 1-5% | unknown | R |

## Habitat
Dry steppes and limestone slopes with scanty vegetation. Foodplant *Onobrychis* species (Fabaceae).

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| dry calcareous grasslands and steppes | 2 | (50%) |
| dry siliceous grasslands | 1 | (25%) |
| mesophile grasslands | 1 | (25%) |

## Threats

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Afforestation on non-woodland habitats | 1 | 3,0 |
| Agricultural abandonment and changing management (inc. successional change and inappropriate habitat management) | 1 | 3,0 |
| Agricultural improvements | 1 | 3,0 |
| Built development (inc. roads, housing and mining) | 1 | 3,0 |
| Chemical pollution (inc. herbicides and pesticides) | 1 | 3,0 |
| Isolation and fragmentation of habitat | 1 | 3,0 |
| Recreational pressure and disturbance | 1 | 3,0 |
| Collecting (killing or taking) | 1 | 2,0 |
| Land claims / coastal development | 1 | 2,0 |
| Climatic change | 1 | 1,0 |
| Others: | | |
| Overgrazing | 1 | 3,0 |
| Burning of grassland in spring or autumn | 1 | 3,0 |
| Natural forest and shrubs succession | 1 | 3,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken
No specific measures have been taken.

## Conservation measures proposed by compilers

Begin or improve monitoring (2 countries): RUS, UA
Improved habitat management (1 country): UA
Further surveys needed (2 countries): RUS, UA
Ecological research on species requirements (1 country): RUS

## References

Dantchenko, A.V. (1997) Notes on the biology and distribution of the *damone* and *damocles* species-complexes of the subgenus *Polyommatus* (*Agrodiaetus*) (Lepidoptera: Lycaenidae) Nachr. entomol. Ver. Apollo, Suppl. **16**, 23-42

Dantchenko, A. & Lukhtanov, V. (1993) Systematics and distribution of species of the *Polyommatus (Agrodiaetus) damone* group from Eastern Europe and Southwestern Siberia (Lepidoptera, Lycaenidae). *Atalanta* **24(1-4)**, 75-83.

# *Boloria titania* (Esper, 1793)

## Taxonomy

Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Nymphalidae

## Status

Present distribution class in Europe: 1-5%
Overall trend in Europe: decrease 20-50%
Threat status: *Vulnerable* - SPEC 3 - species with headquarters within and outside Europe, but considered threatened in Europe

## Distribution and status per country

Strong populations in Alps, but declining in lowland habitats in N- and E-Europe.

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| PL | Poland | <1% | extinct | E |
| SK | Slovakia | <1% | extinct | E |
| UA | Ukraine | <1% | decr 75-100% | E |
| LV | Latvia | <1% | decr 50-75% | E |
| RO | Romania | <1% | decr 50-75% | V |
| D | Germany | 5-15% | decr 25-50% | V |
| SLO | Slovenia | 1-5% | decr 15-25% | V |
| FIN | Finland | 1-5% | stable | R |
| CH | Switzerland | 5-15% | stable | - |
| A | Austria | >15% | stable | - |
| EST | Estonia | >15% | stable | |
| HR | Croatia | <1% | unknown | - |
| RUS | Russia (European part) | 1-5% | unknown | R |
| YU | Yugoslavia | 1-5% | unknown | - |
| BIH | Bosnia | 5-15% | unknown | R |
| F | France | 5-15% | unknown | I |
| FL | Liechtenstein | 5-15% | unknown | - |
| I | Italy | 5-15% | unknown | |
| BY | Belarus | unknown | unknown | I |

## Habitat

Swamps, bogs, edges, clearings, valleys and moist meadows with tall herbs in forests. Foodplants *Polygonum bistorta* (Polygonaceae) and *Viola* species (Violaceae).

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| humid grasslands and tall herb communities | 8 | (19%) |
| mesophile grasslands | 8 | (19%) |
| alpine and subalpine grasslands | 7 | (16%) |
| mixed woodland | 6 | (14%) |
| broad-leaved deciduous forests | 4 | (9%) |
| coniferous woodland | 4 | (9%) |
| blanket bogs | 2 | (5%) |
| alluvial and very wet forests and brush | 1 | (2%) |
| fens, transition mires and springs | 1 | (2%) |
| raised bogs | 1 | (2%) |
| water-fringe vegetation | 1 | (2%) |

## Threats

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Agricultural improvements | 8 | 2,0 |
| Built development (inc. roads, housing and mining) | 8 | 1,5 |
| Felling/destruction of woodland | 7 | 2,4 |
| Chemical pollution (inc. herbicides and pesticides) | 7 | 1,6 |
| Isolation and fragmentation of habitat | 6 | 2,7 |
| Afforestation on non-woodland habitats | 6 | 2,0 |
| Land drainage | 6 | 2,0 |
| Climatic change | 6 | 1,7 |
| Agricultural abandonment and changing management (inc. successional change and inappropriate habitat management) | 5 | 1,6 |
| Recreational pressure and disturbance | 4 | 2,5 |
| Natural ecological change (e.g. myxomatosis effect on rabbits) | 4 | 2,0 |
| Collecting (killing or taking) | 4 | 1,3 |
| Abandonment and change of woodland management (inc. replanting with conifers and inappropriate habitat management) | 3 | 2,3 |
| Land claims / coastal development | 1 | 3,0 |
| Others: | | |
| Burning of dry grassland in spring and automn | 1 | 3,0 |
| Skiing | 1 | 1,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken

Legal protection of species (no capture, trade, etc.) ( 2 countries): D, FIN
Legal protection of important butterfly habitats ( 3 countries): FIN, RUS, YU
Habitat management: there is special attention for the species ( 1 country): FIN
Ecological research on the requirements of the species has been conducted ( 2 countries): FIN, SLO
All populations are monitored on a regular basis (e.g. every 1-5 years) ( 1 country): SLO
At least part of the populations are monitored (e.g. every 1-5 years) ( 1 country): FIN

## Conservation measures proposed by compilers

Legal protection of habitats (5 countries): BIH, F, LV, RO, SLO
Improved habitat management (3 countries): BIH, UA, YU
Begin or improve monitoring (3 countries): BIH, EST, UA
Legal protection of species (3 countries): BIH, SLO, YU
Further surveys needed (3 countries): BY, HR, UA
Ecological research on species requirements (2 countries): BY, YU
Cut shading conifers along and in meadows or reintroduce cattle-grazing in forests (1 country): FIN

## References

Kuussaari, M., Pöyry, J., Savolainen, M. & Paukkunen, J. (1998) *Suomen uhanalaisia lajeja: Lektokopeataplä* (Clossiana titania). Suomen ymparistö 169, Helsinki, Finland.

Silvomen, K., Kuussaari, M. & Somernia, P. (1998) Larval biology of the titanias fritillary (*Clossiana titania*) based on a rearing experiment. *Baptria* **23(1)**, 9-14.

# *Boloria thore* (Hübner, 1803)

## Taxonomy
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Nymphalidae

## Status
Present distribution class in Europe: 5-15%
Overall trend in Europe: decrease 20-50%
Threat status: *Vulnerable* - SPEC 3 - species with headquarters within and outside Europe, but considered threatened in Europe

## Distribution and status per country

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| SLO | Slovenia | unknown | extinct | E |
| A | Austria | 1-5% | decr 75-100% | E |
| D | Germany | 5-15% | decr 25-50% | V |
| S | Sweden | 5-15% | decr 15-25% | - |
| CH | Switzerland | 1-5% | stable | - |
| FIN | Finland | 1-5% | incr 125-200% | R |
| BY | Belarus | <1% | unknown | R |
| LT | Lithuania | <1% | unknown | I |
| FL | Liechtenstein | 1-5% | unknown | - |
| I | Italy | 1-5% | unknown | |
| RUS | Russia (European part) | 5-15% | unknown | K |
| N | Norway | >15% | unknown | - |

## Habitat
Humid meadows, clearings and bog edges with tall herbs and bushes in taiga. In Alps along creeks and in ravines in medium elevations in montane and subalpine forests. Foodplant *Viola* species (Violaceae).

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| alpine and subalpine grasslands | 5 | (24%) |
| humid grasslands and tall herb communities | 4 | (19%) |
| fens, transition mires and springs | 3 | (14%) |
| coniferous woodland | 2 | (10%) |
| mixed woodland | 2 | (10%) |
| broad-leaved deciduous forests | 1 | (5%) |
| heath and scrub | 1 | (5%) |
| mesophile grasslands | 1 | (5%) |
| sclerophyllous scrub | 1 | (5%) |
| water-fringe vegetation | 1 | (5%) |

## Threats

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Land drainage | 5 | 1,8 |
| Felling/destruction of woodland | 5 | 1,3 |
| Afforestation on non-woodland habitats | 4 | 1,5 |
| Agricultural abandonment and changing management (inc. successional change and inappropriate habitat management) | 3 | 2,0 |
| Abandonment and change of woodland management (inc. replanting with conifers and inappropriate habitat management) | 2 | 1,5 |
| Natural ecological change (e.g. myxomatosis effect on rabbits) | 2 | 1,5 |
| Built development (inc. roads, housing and mining) | 2 | 1,0 |
| Chemical pollution (inc. herbicides and pesticides) | 2 | 1,0 |
| Climatic change | 2 | 1,0 |
| Recreational pressure and disturbance | 2 | 1,0 |
| Agricultural improvements | 1 | 3,0 |
| Collecting (killing or taking) | 1 | 2,0 |
| Isolation and fragmentation of habitat | 1 | 1,0 |
| Land claims / coastal development | 1 | 1,0 |
| Others: | | |
| Reindeer keeping | 1 | 1,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken

Legal protection of species (no capture, trade, etc.) ( 4 countries): A, D, FIN, LT
Legal protection of important butterfly habitats ( 1 country): RUS
Ecological research on the requirements of the species has been conducted ( 1 country): SLO
All populations are monitored on a regular basis (e.g. every 1-5 years) ( 1 country): SLO

## Conservation measures proposed by compilers

Legal protection of habitats (2 countries): BY, SLO
Ecological research on species requirements (2 countries): BY, LT
Improved habitat management (1 country): A
Begin or improve monitoring (1 country): RUS
Legal protection of species (1 country): SLO
Further surveys needed (1 country): RUS
Restrict reindeer grazing (1 country): FIN

## References

Pekkarinen, A (1977) Notes on the biology and taxonomy of *Clossiana thore* (Hb.) (Lepidoptera, Nymphalidae). *Ann-Entomol-Fenn* **43 (1)**, 3-6.

# *Boloria frigga* (Thunberg, 1791)

## Taxonomy
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Nymphalidae

## Status
Present distribution class in Europe: 5-15%
Overall trend in Europe: decrease 20-50%
Threat status: *Vulnerable* - SPEC 3 - species with headquarters within and outside Europe, but considered threatened in Europe

## Distribution and status per country

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| LV | Latvia | <1% | decr 75-100% | E |
| EST | Estonia | 1-5% | decr 25-50% | |
| FIN | Finland | >15% | decr 25-50% | I |
| S | Sweden | >15% | decr 15-25% | - |
| BY | Belarus | <1% | stable | R |
| LT | Lithuania | <1% | unknown | R |
| RUS | Russia (European part) | 1-5% | unknown | - |
| N | Norway | >15% | unknown | - |

## Habitat
Generally large, often shrubby peatbogs in open areas or coniferous forest and tundra heaths. Foodplant *Rubus chamaemorus* (Rosaceae).

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| raised bogs | 7 | (64%) |
| alpine and subalpine grasslands | 1 | (9%) |
| fens, transition mires and springs | 1 | (9%) |
| humid grasslands and tall herb communities | 1 | (9%) |
| mesophile grasslands | 1 | (9%) |

## Threats

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Land drainage | 7 | 2,3 |
| Isolation and fragmentation of habitat | 4 | 2,0 |
| Afforestation on non-woodland habitats | 3 | 2,0 |
| Climatic change | 3 | 2,0 |
| Chemical pollution (inc. herbicides and pesticides) | 2 | 2,0 |
| Built development (inc. roads, housing and mining) | 2 | 1,5 |
| Agricultural improvements | 2 | 1,0 |
| Collecting (killing or taking) | 2 | 1,0 |
| Recreational pressure and disturbance | 1 | 3,0 |
| Abandonment and change of woodland management (inc. replanting with conifers and inappropriate habitat management) | 1 | 1,0 |
| Agricultural abandonment and changing management (inc. successional change and inappropriate habitat management) | 1 | 1,0 |
| Felling/destruction of woodland | 1 | 1,0 |
| Others: | | |
| Destruction of peat bogs for fuel purposes | 1 | 1,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken

Legal protection of species (no capture, trade, etc.) ( 2 countries): BY, LT
Legal protection of important butterfly habitats ( 3 countries): BY, LT, RUS
Habitat management: there is special attention ofr the species (1 country): BY
At least part of the populations are monitored (e.g. every 1-5 years) ( 1 country): FIN

## Conservation measures proposed by compilers

Begin or improve monitoring (2 countries): EST, RUS
Ecological research on species requirements (2 countries): BY, LT
Legal protection of habitats (1 country): FIN
Further surveys needed (1 country): RUS

# *Nymphalis xanthomelas* (Esper, 1781)

## Taxonomy

Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Nymphalidae

## Status

Present distribution class in Europe: 1-5%
Overall trend in Europe: decrease 20-50%
Threat status: *Vulnerable* - SPEC 3 - species with headquarters within and outside Europe, but considered threatened in Europe

## Distribution and status per country

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| BG | Bulgaria | unknown | extinct | E |
| CZ | Czech Republic | <1% | extinct | E |
| D | Germany | <1% | extinct | E |
| RO | Romania | 1-5% | decr 50-75% | I |
| SLO | Slovenia | <1% | decr 25-50% | R |
| TRA | Turkey (Asian part) | 5-15% | decr 25-50% | K |
| MD | Moldova | <1% | decr 15-25% | R |
| UA | Ukraine | 5-15% | decr 15-25% | R |
| AL | Albania | 1-5% | stable | - |
| EST | Estonia | 1-5% | stable | |
| PL | Poland | 1-5% | stable | R |
| H | Hungary | 1-5% | fluctuating | - |
| BIH | Bosnia | <1% | unknown | R |
| BY | Belarus | <1% | unknown | - |
| GR | Greece | <1% | unknown | E |
| LV | Latvia | <1% | unknown | K |
| SK | Slovakia | <1% | unknown | R |
| YU | Yugoslavia | <1% | unknown | E |
| FYROM | FYR of Macedonia | 1-5% | unknown | E |
| HR | Croatia | 1-5% | unknown | - |
| RUS | Russia (European part) | 1-5% | unknown | - |

## Habitat

Broad-leaved deciduous forest on floodplains and along rivers and streams. Foodplants *Populus, Salix* (Salicaceae), *Celtis* and *Ulmus* (Ulmaceae). Larval-nests are found in branches overhanging the water (H).

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| mixed woodland | 10 | (27%) |
| broad-leaved deciduous forests | 8 | (22%) |
| alluvial and very wet forests and brush | 5 | (14%) |
| tree lines, hedges, small woods, bocage, parkland dehesa | 3 | (8%) |
| urban parks and large gardens | 3 | (8%) |
| coniferous woodland | 2 | (5%) |
| orchards, groves and tree plantations | 2 | (5%) |
| towns, villages, industrial sites | 2 | (5%) |
| fens, transition mires and springs | 1 | (3%) |
| water-fringe vegetation | 1 | (3%) |

## Threats

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Felling/destruction of woodland | 14 | 2,2 |
| Built development (inc. roads, housing and mining) | 11 | 1,6 |
| Chemical pollution (inc. herbicides and pesticides) | 9 | 1,4 |
| Abandonment and change of woodland management (inc. replanting with conifers and inappropriate habitat management) | 8 | 2,3 |
| Isolation and fragmentation of habitat | 8 | 2,0 |
| Land drainage | 8 | 1,4 |
| Climatic change | 7 | 2,3 |
| Agricultural abandonment and changing management (inc. successional change and inappropriate habitat management) | 7 | 2,0 |
| Natural ecological change (e.g. myxomatosis effect on rabbits) | 7 | 2,0 |
| Agricultural improvements | 7 | 1,9 |
| Recreational pressure and disturbance | 4 | 2,0 |
| Land claims / coastal development | 3 | 1,7 |
| Collecting (killing or taking) | 2 | 1,5 |
| Afforestation on non-woodland habitats | 2 | 1,5 |
| Others: | | |
| Fires | 2 | 2,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken

Legal protection of species (no capture, trade, etc.) ( 3 countries): AL, MD, UA
Legal protection of important butterfly habitats ( 7 countries): AL, FYROM, H, MD, RUS, SK, YU
Habitat management: there is special attention for the species ( 1 country): AL
Ecological research on the requirements of the species has been conducted ( 1 country): SLO
All populations are monitored on a regular basis (e.g. every 1-5 years) ( 1 country): SLO

## Conservation measures proposed by compilers

Begin or improve monitoring (7 countries): BIH, FYROM, MD, SK, TR, UA, YU
Improved habitat management (6 countries): BIH, FYROM, MD, SK, UA, YU
Further surveys needed (4 countries): HR, LV, MD, UA
Legal protection of habitats (4 countries): BIH, LV, RO, TR
Ecological research on species requirements (4 countries): BIH, BY, SK, TR
Legal protection of species (3 countries): BIH, FYROM, YU

## References

Menhofer, H. (1939) Untersuchungen über die heutige Verbreitung von *Vanessa xanthomelas* Esp. in Deutschland (Lepidoptera). *Entomologische Rundschau* **56**, 22-26.

# *Nymphalis vaualbum* (Denis & Schiffermüller, 1775)

## Taxonomy
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Nymphalidae

## Status
Present distribution class in Europe: 1-5%
Overall trend in Europe: decrease 50-80%
Threat status: *Endangered* - SPEC 3 - species with headquarters within and outside Europe, but considered threatened in Europe

## Distribution and status per country

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| A | Austria | <1% | extinct | E |
| CZ | Czech Republic | <1% | extinct | E |
| SK | Slovakia | <1% | extinct | E |
| UA | Ukraine | <1% | decr 75-100% | E |
| SLO | Slovenia | <1% | decr 50-75% | E |
| RO | Romania | 1-5% | decr 50-75% | I |
| AL | Albania | 1-5% | stable | - |
| BY | Belarus | <1% | fluctuating | |
| H | Hungary | 1-5% | fluctuating | - |
| BIH | Bosnia | <1% | unknown | R |
| TRA | Turkey (Asian part) | <1% | unknown | R |
| YU | Yugoslavia | <1% | unknown | E |
| HR | Croatia | 1-5% | unknown | - |
| RUS | Russia (European part) | 1-5% | unknown | - |

## Habitat
Lowland deciduous forest, often alluvial. In RUS also parks, orchards and cities. Foodplants species of Betula (Betulaceae), Populus, Salix (Salicaceae) and Ulmus (Ulmaceae), as well as Grossularia (Grossulariaceae) and *Hippophae rhamnoides* (Elaeagnaceae) in UA.

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| broad-leaved deciduous forests | 8 | (38%) |
| mixed woodland | 3 | (14%) |
| alluvial and very wet forests and brush | 2 | (10%) |
| coniferous woodland | 2 | (10%) |
| towns, villages, industrial sites | 2 | (10%) |
| tree lines, hedges, small woods, bocage, parkland dehesa | 2 | (10%) |
| urban parks and large gardens | 2 | (10%) |

## Threats

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Felling/destruction of woodland | 7 | 2,4 |
| Built development (inc. roads, housing and mining) | 6 | 2,2 |
| Abandonment and change of woodland management (inc. replanting with conifers and inappropriate habitat management) | 5 | 2,6 |
| Climatic change | 5 | 2,5 |
| Chemical pollution (inc. herbicides and pesticides) | 5 | 2,0 |
| Natural ecological change (e.g. myxomatosis effect on rabbits) | 4 | 2,5 |
| Isolation and fragmentation of habitat | 4 | 2,3 |
| Agricultural improvements | 4 | 1,8 |
| Land drainage | 4 | 1,8 |
| Agricultural abandonment and changing management (inc. successional change and inappropriate habitat management) | 4 | 1,5 |
| Recreational pressure and disturbance | 3 | 3,0 |
| Land claims / coastal development | 3 | 2,3 |
| Collecting (killing or taking) | 2 | 1,5 |
| Others: | | |
| Destruction of foodplants (trees) along the rivers | 1 | 3,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken

Legal protection of species (no capture, trade, etc.) ( 1 country): UA
Legal protection of important butterfly habitats ( 3 countries): H, RUS, YU
Ecological research on the requirements of the species has been conducted ( 1 country): SLO
All populations are monitored on a regular basis (e.g. every 1-5 years) ( 1 country): SLO

## Conservation measures proposed by compilers

Improved habitat management (3 countries): BIH, UA, YU
Begin or improve monitoring (3 countries): BIH, UA, YU
Further surveys needed (3 countries): RO, TR, UA
Legal protection of habitats (2 countries): BIH, RO
Legal protection of species (2 countries): BIH, YU
Ecological research on species requirements (1 country): BIH

# *Euphydryas intermedia* (Ménétriés, 1859)

## Taxonomy

Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Nymphalidae

## Status

Present distribution class in Europe: <1%
Overall trend in Europe: decrease 20-50%
Threat status: *Endangered* - SPEC 3 - species with headquarters within and outside Europe, but considered threatened in Europe

## Distribution and status per country

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| A | Austria | 1-5% | decr 50-75% | - |
| I | Italy | 1-5% | decr 15-25% | |
| SLO | Slovenia | <1% | stable | R |
| CH | Switzerland | 1-5% | stable | R |
| D | Germany | unknown | stable | - |
| F | France | <1% | unknown | V |
| RUS | Russia (European part) | <1% | unknown | K |

## Habitat

Herbaceous alpine and subalpine meadows, heaths and forest clearings. Foodplant *Lonicera caerulea* in the Alps. Other Caprifoliaceae, as well as Violaceae and Salicaceae in the Urals (RUS).

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| mesophile grasslands | 3 | (15%) |
| alpine and subalpine grasslands | 2 | (10%) |
| coniferous woodland | 2 | (10%) |
| humid grasslands and tall herb communities | 2 | (10%) |
| mixed woodland | 2 | (10%) |
| alluvial and very wet forests and brush | 1 | (5%) |
| blanket bogs | 1 | (5%) |
| broad-leaved deciduous forests | 1 | (5%) |
| broad-leaved evergreen woodland | 1 | (5%) |
| fens, transition mires and springs | 1 | (5%) |
| heath and scrub | 1 | (5%) |
| raised bogs | 1 | (5%) |
| screes | 1 | (5%) |
| water-fringe vegetation | 1 | (5%) |

## Threats

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Afforestation on non-woodland habitats | 2 | 1,5 |
| Natural ecological change (e.g. myxomatosis effect on rabbits) | 2 | 1,5 |
| Recreational pressure and disturbance | 2 | 1,5 |
| Collecting (killing or taking) | 2 | 1,0 |
| Abandonment and change of woodland management (inc. replanting with conifers and inappropriate habitat management) | 1 | 3,0 |
| Isolation and fragmentation of habitat | 1 | 3,0 |
| Agricultural abandonment and changing management (inc. successional change and inappropriate habitat management) | 1 | 2,0 |
| Climatic change | 1 | 2,0 |
| Felling/destruction of woodland | 1 | 2,0 |
| Agricultural improvements | 1 | 1,0 |
| Built development (inc. roads, housing and mining) | 1 | 1,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken

Ecological research on the requirements of the species has been conducted ( 1 country): SLO
All populations are monitored on a regular basis (e.g. every 1-5 years) ( 1 country): SLO
No specific measures have been taken ( 3 countries): D, F, RUS

## Conservation measures proposed by compilers

Restrict grazing and recreational pressure (1 country): F
Legal protection of habitats (1 country): F

# *Euphydryas maturna* (Linnaeus, 1758)

## Taxonomy
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Nymphalidae

## Status
Present distribution class in Europe: 1-5%
Overall trend in Europe: decrease 20-50%
Threat status: *Vulnerable* - SPEC 3 - species with headquarters within and outside Europe, but considered threatened in Europe
Species at present in Appendix II of Bern Convention.

## Distribution and status per country
Species declining all over Europe, except for NE-part where there are still large and stable populations (FIN, EST, LT).

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| B | Belgium | <1% | extinct | Ex |
| L | Luxemburg | <1% | extinct | Ex |
| CZ | Czech Republic | <1% | decr 75-100% | E |
| D | Germany | <1% | decr 75-100% | E |
| F | France | <1% | decr 75-100% | E |
| S | Sweden | <1% | decr 75-100% | E |
| A | Austria | 1-5% | decr 75-100% | E |
| RO | Romania | 1-5% | decr 50-75% | V |
| SK | Slovakia | <1% | decr 25-50% | E |
| LV | Latvia | 1-5% | decr 25-50% | R |
| H | Hungary | 1-5% | decr 15-25% | R |
| MD | Moldova | 1-5% | decr 15-25% | R |
| PL | Poland | 1-5% | decr 15-25% | V |
| UA | Ukraine | 1-5% | decr 15-25% | R |
| BG | Bulgaria | <1% | stable | R |
| SLO | Slovenia | <1% | stable | R |
| BY | Belarus | 1-5% | stable | - |
| EST | Estonia | >15% | stable | |
| FIN | Finland | >15% | stable | - |
| LT | Lithuania | >15% | stable | R |
| YU | Yugoslavia | <1% | unknown | V |
| FYROM | FYR of Macedonia | 1-5% | unknown | V |
| HR | Croatia | 1-5% | unknown | - |
| RUS | Russia (European part) | 1-5% | unknown | R |

## Habitat
Deciduous and mixed, often moist, forest with abundant flowery edges, roadsides, valleys and clearings. Foodplants before hibernation deciduous trees like *Populus tremula, Salix caprea* (Salicaceae), *Viburnum opulus* (Caprifoliaceae), *Fagus sylvatica* (Fagaceae) (UA), *Prunus spinosa* (Rosaceae) (HR) and especially *Fraxinus excelsior* (Oleaceae). After hibernation A wide variety of herbs including *Scabiosa, Succisa* (Dipsacaceae), *Plantago* (Plantaginaceae), *Melampyrum, Veronica* (Scrophulariaceae) and *Viola* (Violaceae).

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| broad-leaved deciduous forests | 16 | (35%) |
| mixed woodland | 7 | (15%) |
| humid grasslands and tall herb communities | 5 | (11%) |
| mesophile grasslands | 5 | (11%) |
| alluvial and very wet forests and brush | 4 | (9%) |
| alpine and subalpine grasslands | 2 | (4%) |
| tree lines, hedges, small woods, bocage, parkland dehesa | 2 | (4%) |
| blanket bogs | 1 | (2%) |
| dry calcareous grasslands and steppes | 1 | (2%) |
| heath and scrub | 1 | (2%) |
| orchards, groves and tree plantations | 1 | (2%) |
| urban parks and large gardens | 1 | (2%) |

## Threats

Typical woodland species, most threatened by changes in woodland management or the felling or destruction of the forests.

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Abandonment and change of woodland management (inc. replanting with conifers and inappropriate habitat management) | 18 | 2,4 |
| Felling/destruction of woodland | 16 | 2,4 |
| Chemical pollution (inc. herbicides and pesticides) | 12 | 1,8 |
| Afforestation on non-woodland habitats | 10 | 1,5 |
| Isolation and fragmentation of habitat | 10 | 2,2 |
| Agricultural abandonment and changing management (inc. successional change and inappropriate habitat management) | 10 | 2,0 |
| Land drainage | 10 | 1,7 |
| Built development (inc. roads, housing and mining) | 9 | 2,2 |
| Recreational pressure and disturbance | 8 | 2,3 |
| Agricultural improvements | 8 | 2,1 |
| Collecting (killing or taking) | 7 | 1,9 |
| Climatic change | 6 | 2,0 |
| Natural ecological change (e.g. myxomatosis effect on rabbits) | 5 | 1,8 |
| Land claims / coastal development | 2 | 3,0 |
| Others: | | |
| Habitat destruction | 1 | 2,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken

Legal protection of species (no capture, trade, etc.) ( 9 countries): CZ, D, F, FIN, FYROM, H, L, MD, SK
Legal protection of important butterfly habitats ( 8 countries): D, F, FYROM, H, LV, MD, SK, YU
Habitat management: there is special attention for the species ( 3 countries): FIN, H, S
Ecological research on the requirements of the species has been conducted ( 4 countries): FIN, S, SLO, UA
All populations are monitored on a regular basis (e.g. every 1-5 years) ( 2 countries): S, SLO
At least part of the populations are monitored (e.g. every 1-5 years) ( 6 countries): D, FIN, H, MD, SK, UA

## Conservation measures proposed by compilers

Begin or improve monitoring (8 countries): EST, F, FYROM, MD, RUS, SK, UA, YU
Further surveys needed (6 countries): HR, L, MD, SK, UA
Legal protection of habitats (4 countries): LT, LV, RO, SK
Ecological research on species requirements (4 countries): CZ, FYROM, SK, YU
Improved habitat management (3 countries): MD, SK, UA
Introduce grazing into forests (1 country): FIN

## References

Eliasson, C. (1991) Occurrence and biology of *Euphydryas maturna* in Central Sweden. *Entomologish Tjdshrift* **112(4)**, 113-124. [in Swedish]

Haslett, J.R. (1996) *Hypodryas maturna*. In *Background information on invertebrates of the Habitats Directive and the Bern Convention. Part I - Crustacea, Coleoptera and Lepidoptera.* eds. Helsdingen, P.J. van, Willemse, L.P.M. & Speight, M.C.D., pp. 140-144. Council of Europe, Strasbourg, Nature and environment, No. 79.

Švestka, M. (1986) K souÖasnému výskytu hnçdáskÁ rodÁ Euphydryas, Melitaea a Mellicta na Moravç. / On the occurrence of species of genera Euphydryas, Melitaea and Mellicta in Moravia. *Zprávy Ëeskoslovenské Spole«nosti entomologické* **22**, 47-60. [in Czech]

# *Euphydryas aurinia* (Rottemburg, 1775)

## Taxonomy
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Nymphalidae

## Status
Present distribution class in Europe: 5-15%
Overall trend in Europe: decrease 20-50%
Threat status: *Vulnerable* - SPEC 3 - species with headquarters within and outside Europe, but considered threatened in Europe
Species at present in Appendix II of Bern Convention.

## Distribution and status per country

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| NL | Netherlands | <1% | extinct | E |
| B | Belgium | 1-5% | decr 75-100% | E |
| D | Germany | 1-5% | decr 50-75% | V |
| DK | Denmark | 1-5% | decr 50-75% | E |
| PL | Poland | 1-5% | decr 50-75% | E |
| GB | United Kingdom | 5-15% | decr 50-75% | - |
| IRL | Ireland | 5-15% | decr 50-75% | - |
| LV | Latvia | 5-15% | decr 50-75% | V |
| A | Austria | 1-5% | decr 25-50% | E |
| FIN | Finland | 1-5% | decr 25-50% | V |
| L | Luxemburg | 1-5% | decr 25-50% | E |
| S | Sweden | 1-5% | decr 25-50% | V |
| CH | Switzerland | 1-5% | decr 15-25% | V |
| CZ | Czech Republic | 1-5% | decr 15-25% | V |
| UA | Ukraine | 1-5% | decr 15-25% | R |
| F | France | 5-15% | decr 15-25% | R |
| LT | Lithuania | 5-15% | decr 15-25% | R |
| TRA | Turkey (Asian part) | 5-15% | decr 15-25% | - |
| BY | Belarus | <1% | stable | R |
| AL | Albania | 1-5% | stable | - |
| GR | Greece | 1-5% | stable | R |
| BG | Bulgaria | 5-15% | stable | - |
| SLO | Slovenia | 5-15% | stable | I |
| E | Spain | >15% | stable | - |
| EST | Estonia | >15% | stable | |
| H | Hungary | 1-5% | incr 125-200% | R |
| FYROM | FYR of Macedonia | 1-5% | fluctuating | V |
| BIH | Bosnia | <1% | unknown | E |
| SK | Slovakia | <1% | unknown | E |
| I | Italy | 1-5% | unknown | |
| RO | Romania | 1-5% | unknown | R |
| TRE | Turkey (European part) | 1-5% | unknown | K |
| AND | Andorra | 5-15% | unknown | - |
| FL | Liechtenstein | 5-15% | unknown | - |
| HR | Croatia | 5-15% | unknown | - |
| RUS | Russia (European part) | 5-15% | unknown | - |
| YU | Yugoslavia | 5-15% | unknown | V |
| P | Portugal | >15% | unknown | - |

## Habitat
In most of Europe marshy, unfertilized meadows. These can be calcareous to acidophilous and harbour the most important foodplant, *Succisa pratensis* (Dipsacaceae). In DK on damp heathland. To the south increasingly on dry, calcareous grassland using other species of related genera as foodplants (*Knautia, Scabiosa*) and also *Centaurea* (Asteraceae), *Lonicera, Symphoricarpos* (Caprifoliaceae), *Gentiana*

(Gentianaceae), *Teucrium* (Lamiaceae), *Plantago* (Plantaginaceae), *Primula* (Primulaceae), *Digitalis, Veronica* (Scrophulariaceae) and *Centranthus* (Valerianceae). In Iberia *Lonicera* is the most important in dry and *Gentiana* in alpine habitat.
In B and E the habitats are reported to be always situated along woodland edges or even woodland clearings.

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| humid grasslands and tall herb communities | 20 | (26%) |
| mesophile grasslands | 17 | (22%) |
| dry calcareous grasslands and steppes | 7 | (9%) |
| broad-leaved deciduous forests | 5 | (6%) |
| alpine and subalpine grasslands | 4 | (5%) |
| dry siliceous grasslands | 4 | (5%) |
| heath and scrub | 4 | (5%) |
| blanket bogs | 3 | (4%) |
| fens, transition mires and springs | 3 | (4%) |
| water-fringe vegetation | 3 | (4%) |
| broad-leaved evergreen woodland | 2 | (3%) |
| mixed woodland | 2 | (3%) |
| alluvial and very wet forests and brush | 1 | (1%) |
| coniferous woodland | 1 | (1%) |
| tree lines, hedges, small woods, bocage, parkland dehesa | 1 | (1%) |

## Threats

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Agricultural improvements | 28 | 2,2 |
| Agricultural abandonment and changing management (inc. successional change and inappropriate habitat management) | 24 | 2,2 |
| Isolation and fragmentation of habitat | 21 | 2,0 |
| Land drainage | 18 | 2,3 |
| Afforestation on non-woodland habitats | 18 | 1,8 |
| Chemical pollution (inc. herbicides and pesticides) | 16 | 1,5 |
| Built development (inc. roads, housing and mining) | 15 | 1,5 |
| Abandonment and change of woodland management (inc. replanting with conifers and inappropriate habitat management) | 14 | 1,8 |
| Recreational pressure and disturbance | 10 | 1,8 |
| Felling/destruction of woodland | 9 | 1,9 |
| Natural ecological change (e.g. myxomatosis effect on rabbits) | 8 | 1,6 |
| Collecting (killing or taking) | 8 | 1,5 |
| Climatic change | 7 | 1,9 |
| Land claims / coastal development | 5 | 2,2 |
| Others: | | |
| Overgrazing | 2 | 3,0 |
| Successional change on unmanaged heathland | 1 | 3,0 |
| Too early cutting of hay meadows | 1 | 2,0 |
| Changes in meadow management | 1 | 3,0 |
| Natural forest and shrub succession | 1 | 2,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken

Legal protection of species (no capture, trade, etc.) (13 countries): AL, AND, B, D, DK, E, F, FIN, FL, GB, H, L, SLO
Legal protection of important butterfly habitats (17 countries): AL, B, BY, CZ, D, DK, E, F, FL, FYROM, GB, H, L, LV, RUS, SK, YU
Habitat management: there is special attention for the species ( 4 countries): AL, B, D, GB
Ecological research on the requirements of the species has been conducted ( 7 countries): B, DK, E, FIN, GB, SLO, UA
All populations are monitored on a regular basis (e.g. every 1-5 years) ( 2 countries): B, SLO
At least part of the populations are monitored (e.g. every 1-5 years) ( 7 countries): D, FIN, GB, H, IRL, S, UA
Other measures taken:
Conservation action plan has been written (1 country): GB
Reintroduction on two localities (1 country): B

## Conservation measures proposed by compilers

Begin or improve monitoring (13 countries): BIH, DK, EST, F, FYROM, GB, L, RUS, S, SK, TR, UA, YU
Legal protection of habitats (10 countries): B, BY, DK, GB, IRL, LT, LV, RO, SK, TR
Ecological research on species requirements (11 countries): BIH, BY, DK, E, FYROM, IRL, L, NL, SK, TR, YU
Improved habitat management (8 countries): B, DK, GB, IRL, L, LT, SK, UA
Further surveys needed (4 countries): F, GB, HR, UA
Legal protection of species (1 country): SK
Create new habitat by clearing of woodland and prevent afforestation (1 country): FIN
Proper management of habitats around important populations (1 country): B
Study the fluctuation in population numbers over the last 20 years (1 country): E
Management of woodlands to keep vines and open areas (1 country): E
Conduct research to the possibilities of reintroduction (1 country): NL

## References


Barnett, L.K. & Warren, M.S. (1995) *Species Action Plan*: Eurodryas aurinia. Butterfly Conservation, Wareham, United Kingdom.

Goffart, Ph., Nève, G., Mousson, L., Weiserbs, A., Baguette, M. & Lebrun, Ph. (1996) Situation actuelle, exigences écologiques et premiers résultats de deux tentavives de réintroduction du Damier de la succise (Eurodryas aurinia), un papillon en danger d'extinction en Wallonie. *Cahiers des Réserves Naturelles - RNOB* **9**, 41-54.

Klemetti, T. & Wahlberg, N. (1997) The ecology and population structure of the Marsh fritillary (*Eurodryas aurinia*) in Finland. *Baptria* **22(2)**, 87-93.

Lavery, T.A. (1993) a review of the distribution, ecology and status of the Marsh fritillaries, *Euphydryas aurinia*. *Irish Naturalists' Journal* **24**, 192-199.

Munguira, M.L., Martin, J., Garcia-Barros, E. & Viejo, J.L. (1997) Use of space and resources in a mediterranean population of the butterfly *Euphydryas aurinia*. *Acta Oecologica* **18**, 597-612.

Salter, M.G. (1992) *Eurodryas aurinia* (Rottemburg) (Lepidoptera: Nymphalidae) in Ireland. *Entomologists' Gazette* **43**, 124.

Švestka, M. (1986) K souÖasnému výskytu hnçdáskÁ rodÁ Euphydryas, Melitaea a Mellicta na Moravç. / On the occurrence of species of genera Euphydryas, Melitaea and Mellicta in Moravia. *Zprávy ÖeskoslovenskéSpoleÖnosti entomologické* **22**, 47-60. [in Czech]

Warren, M.S. (1994) The UK Status and Suspected Metapopulation Structure of a Threatened European Butterfly, the Marsh Fritillary *Eurodryas aurinia*. *Biological Conservation* **67(3)**, 239-249.

Warren, M.S. (1996) *Euphydryas aurinia*. In *Background information on invertebrates of the Habitats Directive and the Bern Convention. Part I - Crustacea, Coleoptera and Lepidoptera.* eds. Helsdingen, P.J. van, Willemse, L.P.M. & Speight, M.C.D., pp. 121-126. Council of Europe, Strasbourg, Nature and environment, No. 79.

Warren, M.S., Munguira, M.L. & Ferrin, J. (1994) Notes on the distribution, habitats and conservation of *Euphydryas aurinia* (rottemburg) (Lepidoptera: Nymphalidae). *Entomologist's Gazette* **45**, 5-12.

# *Euphydryas orientalis* (Herrich-Schäffer, [1845])

## Taxonomy
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Nymphalidae

## Status
Present distribution class in Europe: <1%
Overall trend in Europe: decrease 50-80%
Threat status: *Critically endangered* - SPEC 3 - species with headquarters within and outside Europe, but considered threatened in Europe

## Distribution and status per country

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| TRA | Turkey (Asian part) | <1% | decr 75-100% | E |

## Habitat
Rough, flowery meadows, often in forested landscape. Foodplants probably some species of Dipsacaceae.
No Corine classification given.

## Threats

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Built development (inc. roads, housing and mining) | 1 | 3,0 |
| Chemical pollution (inc. herbicides and pesticides) | 1 | 3,0 |
| Isolation and fragmentation of habitat | 1 | 2,0 |
| Agricultural improvements | 1 | 1,0 |
| Others: | | |
| Land claims for agriculture | 1 | 3,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken
No specific measures have been taken.

## Conservation measures proposed by compilers

Begin or improve monitoring (1 country): TR
Legal protection of habitats (1 country): TR
Ecological research on species requirements (1 country): TR

# *Melitaea aetherie* (Hübner, 1826)

## Taxonomy
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Nymphalidae

## Status
Present distribution class in Europe: <1%
Overall trend in Europe: decrease 20-50%
Threat status: *Endangered* - SPEC 3 - species with headquarters within and outside Europe, but considered threatened in Europe

## Distribution and status per country

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| I | Italy | <1% | decr 25-50% | |
| E | Spain | <1% | unknown | R |
| P | Portugal | <1% | unknown | - |

## Habitat
Dry, warm open places (I). In Spain waste areas on distrurbed chapparal (*Quercus ilex*-forests). Foodplant in Italy probably *Cynara cardunculus* (Asteraceae), in Spain *Cirsium* and *Centaurea*-species (e.g. *Centaurea calcitrapa*) (Asteraceae).

| Corine classification of habitat (number of mentions by national compilers) | |
|---|---|
| broad-leaved evergreen woodland | 1 (100%) |

## Threats

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Built development (inc. roads, housing and mining) | 2 | 1,5 |
| Abandonment and change of woodland management (inc. replanting with conifers and inappropriate habitat management) | 1 | 3,0 |
| Afforestation on non-woodland habitats | 1 | 2,0 |
| Collecting (killing or taking) | 1 | 1,0 |
| Isolation and fragmentation of habitat | 1 | 1,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken

Ecological research on the requirements of the species has been conducted ( 1 country): I
At least part of the populations are monitored (e.g. every 1-5 years) ( 1 country): I

## Conservation measures proposed by compilers

Ecological research on species requirements (1 country): E
Improved habitat management (1 country): E
Legal protection of habitats (1 country): E
Further surveys needed (1 country): E

## References

Ciringliaro, A., DiBeneditto, R. & Lombardo, V. (1988) Primo contributo alla conoscente dei Rhopalocera della Sicilia Noro-Orientale. *Bull.Soc.ent.ital.* **126(2)**, 171-174.

Moreno, M.D. (1991) *Mariposas diurnas a proteger en Andalucia*. Junta de Andalucia, Sevilla, Spain.

Romano, F.P. (1967) In Sicilia una colonia di *Melitaea aetherie* (Hübner 1826) vive anche sulle Madonie. *Memorie Soc. Eur. Ital*. **46**, 126.

Scalercio, S. *Melitaea aetherie* in Italia continentale. *Boll.Soc.ent.Ital*. [in press]

Verdugo, A. (1988) El ciclo biologo y distribucion en la provincia de Cadiz de *Melitaea aetherie* (Hübner 1826) (Lepidoptera: Nymphalidae). *Shilap Revista Lepidopterologia* **16**, 59-64.

# *Melitaea aurelia* Nickerl, 1850

## Taxonomy

Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Nymphalidae

## Status

Present distribution class in Europe: 5-15%
Overall trend in Europe: decrease 20-50%
Threat status: *Vulnerable* - SPEC 3 - species with headquarters within and outside Europe, but considered threatened in Europe

## Distribution and status per country

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| PL | Poland | <1% | decr 75-100% | E |
| CZ | Czech Republic | 1-5% | decr 75-100% | V |
| A | Austria | 5-15% | decr 50-75% | V |
| LV | Latvia | <1% | decr 25-50% | R |
| B | Belgium | 1-5% | decr 25-50% | E |
| D | Germany | 5-15% | decr 25-50% | V |
| SK | Slovakia | 5-15% | decr 25-50% | V |
| LT | Lithuania | <1% | decr 15-25% | R |
| CH | Switzerland | 1-5% | decr 15-25% | - |
| TRA | Turkey (Asian part) | 1-5% | decr 15-25% | R |
| UA | Ukraine | 1-5% | decr 15-25% | R |
| L | Luxemburg | 5-15% | decr 15-25% | V |
| BG | Bulgaria | 1-5% | stable | - |
| EST | Estonia | 5-15% | stable | |
| RO | Romania | 5-15% | stable | - |
| SLO | Slovenia | 5-15% | stable | I |
| H | Hungary | >15% | stable | - |
| BIH | Bosnia | <1% | unknown | V |
| GR | Greece | <1% | unknown | I |
| YU | Yugoslavia | <1% | unknown | V |
| BY | Belarus | 1-5% | unknown | R |
| HR | Croatia | 1-5% | unknown | - |
| I | Italy | 1-5% | unknown | |
| F | France | 5-15% | unknown | I |
| RUS | Russia (European part) | 5-15% | unknown | - |

## Habitat

Mostly dry, short and open, but sometimes moist (BY, LT, LV), grassy places, like forest clearings and edges, stands of trees in steppes and alpine meadows. Foodplants principally species of *Plantago* (Plantaginaceae) and *Veronica* (Scrophulariaceae), as well as other Scrophulariaceae (*Digitalis, Melampyrum, Rhinanthus*). Rarely also *Spiraea* (Rosaceae) (UA) and *Chrysanthemum* (Asteraceae) (CZ, SK, UA).

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| dry calcareous grasslands and steppes | 11 | (28%) |
| mesophile grasslands | 10 | (26%) |
| dry siliceous grasslands | 6 | (15%) |
| humid grasslands and tall herb communities | 4 | (10%) |
| alpine and subalpine grasslands | 2 | (5%) |
| heath and scrub | 2 | (5%) |
| alluvial and very wet forests and brush | 1 | (3%) |
| blanket bogs | 1 | (3%) |
| mixed woodland | 1 | (3%) |
| orchards, groves and tree plantations | 1 | (3%) |

## Threats

Changes in agricultural management, either improvement or abandonment, are the most important threats. Also the afforestation of grasslands is a threat in many countries. Where the species occurs on moist meadows land drainage is a very important threat.

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Agricultural improvements | 15 | 2,1 |
| Agricultural abandonment and changing management (inc. successional change and inappropriate habitat management) | 14 | 2,3 |
| Afforestation on non-woodland habitats | 13 | 2,0 |
| Isolation and fragmentation of habitat | 13 | 1,8 |
| Chemical pollution (inc. herbicides and pesticides) | 13 | 1,7 |
| Built development (inc. roads, housing and mining) | 11 | 1,8 |
| Abandonment and change of woodland management (inc. replanting with conifers and inappropriate habitat management) | 9 | 1,7 |
| Recreational pressure and disturbance | 8 | 1,6 |
| Felling/destruction of woodland | 8 | 1,9 |
| Natural ecological change (e.g. myxomatosis effect on rabbits) | 6 | 1,5 |
| Climatic change | 4 | 1,5 |
| Collecting (killing or taking) | 4 | 1,0 |
| Land drainage | 3 | 3,0 |
| Land claims / coastal development | 3 | 2,3 |
| Others: | | |
| Overgrazing | 3 | 2,7 |
| Burning of grassland in spring or autumn | 2 | 2,0 |
| Natural forest and shrubs succession | 2 | 2,5 |
| Ploughing of grasslands and steppes | 1 | 2,0 |
| Agricultural conversion | 1 | 1,0 |
| Waste disposal sites | 1 | 1,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken

Legal protection of species (no capture, trade, etc.) ( 3 countries): A, D, L
Legal protection of important butterfly habitats (10 countries): A, B, CZ, D, H, I, L, LV, SK, YU
Ecological research on the requirements of the species has been conducted ( 2 countries): I, SLO
All populations are monitored on a regular basis (e.g. every 1-5 years) ( 2 countries): B, SLO
At least part of the populations are monitored (e.g. every 1-5 years) ( 2 countries): I, SK

## Conservation measures proposed by compilers

Begin or improve monitoring (10 countries): BIH, BY, EST, HR, L, RUS, SK, TR, UA, YU
Ecological research on species requirements (7 countries): A, BIH, L, LT, SK, TR, YU
Legal protection of habitats (6 countries): B, BY, LT, LV, SK, TR
Improved habitat management (5 countries): B, L, LT, SK, UA
Further surveys needed (2 countries): RUS, UA
Regulate grazing and mowing (2 countries): F, TR
Clearing of grasslands from trees and bushes, followed by planned grazing, mowing or burning (2 countries): SK, B
Legal protection of species (1 country): BY

## References


Šulcs, A. (1973) Neue und wenig bekannte Arten der Lepidopteren-Fauna Lettlands. 5 Mitteilung. *Annales Entomologica Fennica* **39(1)**, 1-16.

Šulcs, A. & Viidalepp, J. (1974) Verbreitung der Grossschmetterlinge im Batticum. I. Tagfalter (Diurna). *Deutsche Entomologische Zeitschrift* **2(IV-V)**, 353-403.

# *Melitaea britomartis* Assmann, 1847

## Taxonomy

Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Nymphalidae

## Status

Present distribution class in Europe: 5-15%
Overall trend in Europe: decrease 20-50%
Threat status: *Vulnerable* - SPEC 3 - species with headquarters within and outside Europe, but considered threatened in Europe

## Distribution and status per country

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| CZ | Czech Republic | <1% | decr 75-100% | V |
| S | Sweden | <1% | decr 75-100% | V |
| A | Austria | 1-5% | decr 75-100% | E |
| I | Italy | <1% | decr 25-50% | |
| SK | Slovakia | 1-5% | decr 25-50% | V |
| D | Germany | 5-15% | decr 25-50% | V |
| CH | Switzerland | <1% | decr 15-25% | E |
| UA | Ukraine | 1-5% | decr 15-25% | R |
| PL | Poland | <1% | stable | V |
| BG | Bulgaria | 1-5% | stable | - |
| H | Hungary | 5-15% | stable | - |
| RO | Romania | 5-15% | stable | - |
| SLO | Slovenia | 5-15% | stable | I |
| BY | Belarus | <1% | unknown | - |
| HR | Croatia | 1-5% | unknown | - |
| RUS | Russia (European part) | 5-15% | unknown | - |

## Habitat

Warm, mesophile grasslands, steppes, flowery meadows and forest clearings. Habitat often dry, but also tall humid grassland (I), along rivers (UA) and on the border of dry and wet meadows (S). Foodplants similar to those of Melitaea aurelia.

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| mesophile grasslands | 7 | (29%) |
| dry calcareous grasslands and steppes | 6 | (25%) |
| dry siliceous grasslands | 4 | (17%) |
| broad-leaved deciduous forests | 2 | (8%) |
| humid grasslands and tall herb communities | 2 | (8%) |
| alpine and subalpine grasslands | 1 | (4%) |
| heath and scrub | 1 | (4%) |
| mixed woodland | 1 | (4%) |

## Threats

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Agricultural improvements | 10 | 2,1 |
| Afforestation on non-woodland habitats | 8 | 2,1 |
| Chemical pollution (inc. herbicides and pesticides) | 8 | 2,1 |
| Built development (inc. roads, housing and mining) | 8 | 1,9 |
| Agricultural abandonment and changing management (inc. successional change and inappropriate habitat management) | 7 | 2,2 |
| Isolation and fragmentation of habitat | 6 | 1,8 |
| Abandonment and change of woodland management (inc. replanting with conifers and inappropriate habitat management) | 5 | 2,5 |
| Recreational pressure and disturbance | 5 | 1,8 |
| Felling/destruction of woodland | 4 | 2,7 |
| Land claims / coastal development | 4 | 2,3 |
| Land drainage | 3 | 1,3 |
| Natural ecological change (e.g. myxomatosis effect on rabbits) | 3 | 1,3 |
| Collecting (killing or taking) | 3 | 1,0 |
| Climatic change | 2 | 1,0 |
| Others: | | |
| Overgrazing | 3 | 2,7 |
| Burning of grassland in spring or autumn | 2 | 2,0 |
| Natural forest and shrubs succession | 2 | 2,0 |
| Agricultural conversion of land | 1 | 2,0 |
| Waste disposal sites | 1 | 1,0 |
| Ploughing of grasslands and steppes | 1 | 1,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken

Legal protection of species (no capture, trade, etc.) ( 2 countries): A, D
Legal protection of important butterfly habitats ( 6 countries): A, CZ, D, H, I, SK
Ecological research on the requirements of the species has been conducted ( 2 countries): S, SLO
All populations are monitored on a regular basis (e.g. every 1-5 years) ( 2 countries): S, SLO
At least part of the populations are monitored (e.g. every 1-5 years) ( 3 countries): I, SK, UA

## Conservation measures proposed by compilers

Improved habitat management (3 countries): S, SK, UA
Begin or improve monitoring (3 countries): RUS, SK, UA
Legal protection of habitats (3 countries): S, SK, SLO
Ecological research on species requirements (3 countries): A, I, SK
Further surveys needed (3 countries): RUS, S , UA
Clearing of grasslands from trees and bushes, followed by planned grazing, mowing or burning (1 country): SK

## References

Kovacs, S.T. (1989). Investigations on the Northern Hungarien populations of *Mellicta britomartis* Assman 1847. *Folia Entomologica Hungarica* **47**, 213-219.

# *Lopinga achine* (Scopoli, 1763)

## Taxonomy
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Nymphalidae

## Status
Present distribution class in Europe: >15%
Overall trend in Europe: decrease 20-50%
Threat status: *Vulnerable* - SPEC 3 - species with headquarters within and outside Europe, but considered threatened in Europe
Species at present in Appendix II of Bern Convention.

## Distribution and status per country
*L. achine* is declining in large parts of Europe. Present strongholds are mainly in E-Europe.

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| B | Belgium | <1% | extinct | E |
| BG | Bulgaria | <1% | extinct | E |
| L | Luxemburg | <1% | extinct | E |
| D | Germany | <1% | decr 75-100% | E |
| SK | Slovakia | <1% | decr 75-100% | E |
| CZ | Czech Republic | 1-5% | decr 75-100% | E |
| PL | Poland | 1-5% | decr 50-75% | E |
| A | Austria | 5-15% | decr 50-75% | V |
| H | Hungary | 1-5% | decr 25-50% | - |
| LV | Latvia | 1-5% | decr 25-50% | R |
| CH | Switzerland | <1% | decr 15-25% | V |
| F | France | 1-5% | decr 15-25% | E |
| I | Italy | 1-5% | decr 15-25% | |
| RO | Romania | 1-5% | decr 15-25% | K |
| S | Sweden | 1-5% | decr 15-25% | V |
| UA | Ukraine | 1-5% | stable | - |
| LT | Lithuania | 5-15% | stable | - |
| SLO | Slovenia | 5-15% | stable | I |
| EST | Estonia | >15% | stable | |
| FIN | Finland | 1-5% | incr 125-200% | R |
| BY | Belarus | <1% | unknown | V |
| E | Spain | <1% | unknown | V |
| HR | Croatia | <1% | unknown | - |
| YU | Yugoslavia | 1-5% | unknown | R |
| BIH | Bosnia | 5-15% | unknown | - |
| RUS | Russia (European part) | >15% | unknown | - |

## Habitat
Principally moist, fairly open broad-leaved woodland with plenty of open, grassy spaces, sometimes near bogs (BY). Also alluvial forests (I) and spruce and mixed forests in N-Europe. In S open oak woodland (*Quercus robur*) with hazel (*Colylus avellana*), a successional stage lasting 30-50 years before the canopy closes if not grazed. On Gotland (S) partly open coniferous forest with a well-developed scrub layer.
Foodplants various grasses (Poaceae) and *Carex* species (Cyperaceae).

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| broad-leaved deciduous forests | 17 | (40%) |
| mixed woodland | 13 | (30%) |
| coniferous woodland | 5 | (12%) |
| alluvial and very wet forests and brush | 3 | (7%) |
| humid grasslands and tall herb communities | 2 | (5%) |
| dry calcareous grasslands and steppes | 1 | (2%) |
| heath and scrub | 1 | (2%) |
| water-fringe vegetation | 1 | (2%) |

## Threats

Changes in woodland or woodland management are the main threats all over the continent. Nevertheless agricultural abandonment and land drainage are important threats in some countries as well, mainly because the habitat was maintained by grazing in a successional change.

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Felling/destruction of woodland | 18 | 2,2 |
| Abandonment and change of woodland management (inc. replanting with conifers and inappropriate habitat management) | 17 | 2,1 |
| Isolation and fragmentation of habitat | 13 | 2,3 |
| Chemical pollution (inc. herbicides and pesticides) | 12 | 1,5 |
| Agricultural improvements | 11 | 1,9 |
| Built development (inc. roads, housing and mining) | 9 | 1,6 |
| Collecting (killing or taking) | 8 | 1,6 |
| Climatic change | 7 | 1,8 |
| Recreational pressure and disturbance | 7 | 1,7 |
| Agricultural abandonment and changing management (inc. successional change and inappropriate habitat management) | 6 | 2,2 |
| Land drainage | 6 | 2,2 |
| Natural ecological change (e.g. myxomatosis effect on rabbits) | 5 | 2,0 |
| Land claims / coastal development | 4 | 2,0 |
| Afforestation on non-woodland habitats | 3 | 2,7 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken

Legal protection of species (no capture, trade, etc.) ( 6 countries): A, BY, D, FIN, H, L
Legal protection of important butterfly habitats ( 9 countries): BY, D, E, H, I, LV, S, SK, YU
Habitat management: there is special attention for the species ( 1 country): S
Ecological research on the requirements of the species has been conducted ( 4 countries): FIN, S, SLO, UA
All populations are monitored on a regular basis (e.g. every 1-5 years) ( 1 country): SLO
At least part of the populations are monitored (e.g. every 1-5 years) ( 5 countries): D, I, S, SK, UA

## Conservation measures proposed by compilers

In S it is important to maintain suitable glades by grazing or clearing at regular intervals to prevent closure. To improve overgrown sites small clearings (10-30 m in diameter) should be created, wide enough to allow the sun to reach the ground (comm. Bergman).

Begin or improve monitoring (7 countries): BIH, EST, F, HR, SK, UA, YU
Ecological research on species requirements (6 countries): BIH, BY, CZ, E, SK, YU
Improved habitat management (3 countries): CZ, SK, UA
Legal protection of habitats (3 countries): BY, LV, SK
Legal protection of species (2 countries): RO, SK
Further surveys needed (2 countries): L, UA
Make foresters aware of this species (1 country): F
Avoid forestry in suitable habitat (1 country): FIN

## References


Bergman, K-O. (1998) *Host plant choice, habitat selection, dispersal ability and population structure of a threatened butterfly, Lopinga achine*. Licentiate thesis No 628 University of Linköping, Sweden.

Bergman K-O. (in press). Habitat utilization by *Lopinga achine* (Nymphalidae: Satyrinae) larvae and ovipositing females: implications for conservation. *Biological Conservation*.

Jutzeler, D. (1990) Zur Bedeutung von Pfeifengrasarten (*Molinia* spp.) als Existenzgrundlage von *Lopinga achine* (Scopoli, 1763) und *Coenonympha tullia* (Müller, 1764) (Lepidoptera: Satyridae) *Mitt. Entom. Gesellschaft Basel* **40(3/4)**, 94-110.

Meyer, M. (1996) *Lopinga achine*. In *Background information on invertebrates of the Habitats Directive and the Bern Convention. Part I - Crustacea, Coleoptera and Lepidoptera.* eds. Helsdingen, P.J. van, Willemse, L.P.M. & Speight, M.C.D., pp. 145-149. Council of Europe, Strasbourg, Nature and environment, No. 79.

Tibenský, R. (1995) The comment to occurrence of *Lopinga achine* in Slovenský kras (Lepidoptera, Satyridae). *Entomofauna carpathica* **7(1-2)**, 8-10. [in Slovak]

# *Coenonympha tullia* (Müller, 1764)

## Taxonomy
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Nymphalidae

## Status
Present distribution class in Europe: 5-15%
Overall trend in Europe: decrease 20-50%
Threat status: *Vulnerable* - SPEC 3 - species with headquarters within and outside Europe, but considered threatened in Europe

## Distribution and status per country

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| H | Hungary | <1% | extinct | E |
| HR | Croatia | <1% | extinct | E |
| B | Belgium | <1% | decr 75-100% | E |
| NL | Netherlands | <1% | decr 75-100% | E |
| A | Austria | 1-5% | decr 75-100% | V |
| CZ | Czech Republic | 1-5% | decr 75-100% | E |
| RO | Romania | <1% | decr 50-75% | E |
| D | Germany | 1-5% | decr 50-75% | V |
| SLO | Slovenia | <1% | decr 25-50% | E |
| IRL | Ireland | 1-5% | decr 25-50% | - |
| LV | Latvia | 1-5% | decr 25-50% | - |
| DK | Denmark | 5-15% | decr 25-50% | V |
| F | France | <1% | decr 15-25% | E |
| SK | Slovakia | 1-5% | decr 15-25% | V |
| GB | United Kingdom | 5-15% | decr 15-25% | - |
| FIN | Finland | >15% | decr 15-25% | - |
| S | Sweden | >15% | decr 15-25% | - |
| CH | Switzerland | <1% | stable | V |
| AL | Albania | 5-15% | stable | - |
| BY | Belarus | 5-15% | stable | - |
| PL | Poland | 5-15% | stable | - |
| UA | Ukraine | 5-15% | stable | I |
| EST | Estonia | >15% | stable | |
| LT | Lithuania | >15% | stable | - |
| I | Italy | <1% | unknown | |
| BIH | Bosnia | 5-15% | unknown | R |
| RUS | Russia (European part) | 5-15% | unknown | R |
| N | Norway | >15% | unknown | - |

## Habitat
Wet, grassy habitats, especially in bogs, mires, fens, moors, heaths and wetland margins, not necessarily in forests. Foodplants restricted to these habitats. Most important foodplants are several *Eriophorum* species (Cyperaceae). Others include many grasses (Poaceae) and also species of *Carex* (Cyperaceae) and *Juncus* (Juncaceae).

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| raised bogs | 14 | (24%) |
| blanket bogs | 12 | (20%) |
| fens, transition mires and springs | 11 | (19%) |
| humid grasslands and tall herb communities | 9 | (15%) |
| mesophile grasslands | 5 | (8%) |
| alpine and subalpine grasslands | 3 | (5%) |
| broad-leaved deciduous forests | 2 | (3%) |
| water-fringe vegetation | 2 | (3%) |
| mixed woodland | 1 | (2%) |

## Threats

Most important threat to this species of bogs is land drainage, mostly because of agricultural improvements in the surrounding area.

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Land drainage | 22 | 2,4 |
| Agricultural improvements | 17 | 2,1 |
| Agricultural abandonment and changing management (inc. successional change and inappropriate habitat management) | 13 | 1,8 |
| Isolation and fragmentation of habitat | 13 | 1,7 |
| Afforestation on non-woodland habitats | 11 | 1,7 |
| Built development (inc. roads, housing and mining) | 10 | 1,7 |
| Recreational pressure and disturbance | 8 | 1,9 |
| Chemical pollution (inc. herbicides and pesticides) | 8 | 1,5 |
| Climatic change | 6 | 1,2 |
| Land claims / coastal development | 5 | 2,2 |
| Felling/destruction of woodland | 5 | 1,4 |
| Abandonment and change of woodland management (inc. replanting with conifers and inappropriate habitat management) | 4 | 1,3 |
| Collecting (killing or taking) | 4 | 1,3 |
| Natural ecological change (e.g. myxomatosis effect on rabbits) | 3 | 1,3 |
| Others: | | |
| Peat-extraction | 1 | 3,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken

Legal protection of species (no capture, trade, etc.) ( 2 countries): A, D
Legal protection of important butterfly habitats (11 country): AL, B, CZ, D, DK, GB, LV, NL, RUS, SK, SLO
Habitat management: there is special attention for the species ( 3 countries): D, GB, NL
Ecological research on the requirements of the species has been conducted ( 4 countries): GB, NL, SLO, UA
All populations are monitored on a regular basis (e.g. every 1-5 years) ( 2 countries): B, SLO
At least part of the populations are monitored (e.g. every 1-5 years) ( 3 countries): GB, NL, UA

## Conservation measures proposed by compilers

Habitat conservation is the most important conservation measure for *C. tullia*. But habitat protection should be more than protecting the site. Drainage caused by surrounding agriculture should be stopped. Restoration of bogs should only be undertaken with great care and after thorough research, since it can cause the species to disappear quickly (NL).

Improved habitat management (7 countries): A, B, BIH, DK, IRL, SK, UA
Legal protection of habitats (7 countries): BIH, DK, FIN, IRL, LT, RO, SK
Begin or improve monitoring (7 countries): BIH, BY, DK, EST, F, RUS, UA
Ecological research on species requirements (5 countries): B, BIH, DK, GB, IRL
Stop lowering of the groundwater-table (4 countries): NL, GB, IRL, DK
Further surveys needed (3 countries): F, RUS, UA
Legal protection of species (2 countries): BIH, SLO
Prevent peat extraction (2 countries): GB, IRL
Take extreme care when restoring habitat (1 country): NL
Re-establishment (1 country): B

## References

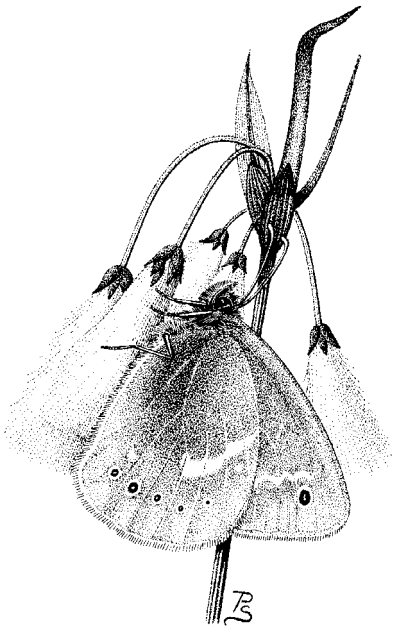

Bourn, N.A.D. & Warren, M.S. (1997) *Species Action Plan*: Coenonympha tullia. Butterfly Conservation, Wareham, United Kingdom.

Dennis, R.L.H. & Eales, H.T. (1997) Patch occupancy in *Coenonympha tullia* (Muller 1764) (Lepidoptera, Satyridae): habitat qualities matters as much as patch size and isolation. *Journal of Insect Conservation* **1(3)**, 167-176.

Ebenhard, T. (1995) Wetland butterflies in a fragmented landscape. *Entomologisk T i d s h r i f t* **116(3)**, 73-82. [in Swedish with English summary]

Jutzeler, D. (1990) Zur Bedeutung von Pfeifengrasarten (*Molinia* spp.) als Existenzgrundlage von *Lopinga achine* (Scopoli, 1763) und *Coenonympha tullia* (Müller, 1764) (Lepidoptera: Satyridae) *Mitt. Entom. Gesellschaft Basel* **40(3/4)**, 94-110.

Wynhoff, I. (1998) *Veenhooibeestje: verdroogd of verdronken?* De Vlinderstichting, Wageningen, rapportnr. VS 98.12

*Coenonympha tullia* is declining over large parts of its range. It is a characteristic species of bogs, moors and wet heathlands.

*Drawing by Paul Schoenmakers, The Netherlands*

# *Coenonympha oedippus* (Fabricius, 1787)

## Taxonomy
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Nymphalidae

## Status
Present distribution class in Europe: 1-5%
Overall trend in Europe: decrease 80-100%
Threat status: *Critically endangered* - SPEC 3 - species with headquarters within and outside Europe, but considered threatened in Europe
Species at present in Appendix II of Bern Convention.

## Distribution and status per country

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| BG | Bulgaria | unknown | extinct | E |
| D | Germany | <1% | extinct | E |
| SK | Slovakia | <1% | extinct | E |
| A | Austria | <1% | decr 75-100% | E |
| PL | Poland | <1% | decr 75-100% | E |
| UA | Ukraine | <1% | decr 75-100% | E |
| H | Hungary | <1% | decr 50-75% | E |
| F | France | <1% | decr 15-25% | E |
| SLO | Slovenia | <1% | decr 15-25% | E |
| CH | Switzerland | <1% | stable | E |
| BY | Belarus | <1% | unknown | E |
| FL | Liechtenstein | <1% | unknown | E |
| I | Italy | 1-5% | unknown | |
| RUS | Russia (European part) | 1-5% | unknown | I |

## Habitat
Wet or swampy, unfertilized meadows and heaths in forests or bogs. In SLO also mentioned from dry grasslands. Foodplants include grasses (Poaceae) as well as species of *Carex* and *Schoenus* (Cyperaceae). In H and SLO also *Iris pseudacorus* (Iridaceae).

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| humid grasslands and tall herb communities | 8 | (26%) |
| blanket bogs | 6 | (19%) |
| raised bogs | 4 | (13%) |
| fens, transition mires and springs | 3 | (10%) |
| broad-leaved deciduous forests | 2 | (6%) |
| mesophile grasslands | 2 | (6%) |
| mixed woodland | 2 | (6%) |
| water-fringe vegetation | 2 | (6%) |
| alpine and subalpine grasslands | 1 | (3%) |
| broad-leaved evergreen woodland | 1 | (3%) |

## Threats
Agricultural improvements (inc. land drainage) are the largest threat for *C. oedippus.* Furthermore it survives nowadays in small and fragmented habitats where colonies are threatened by isolation.

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Land drainage | 10 | 2,5 |
| Isolation and fragmentation of habitat | 7 | 2,6 |
| Agricultural improvements | 7 | 2,4 |
| Collecting (killing or taking) | 7 | 1,9 |
| Agricultural abandonment and changing management (inc. successional change and inappropriate habitat management) | 5 | 2,4 |
| Built development (inc. roads, housing and mining) | 5 | 2,2 |
| Chemical pollution (inc. herbicides and pesticides) | 5 | 1,8 |
| Land claims / coastal development | 4 | 2,5 |
| Afforestation on non-woodland habitats | 4 | 2,0 |
| Abandonment and change of woodland management (inc. replanting with conifers and inappropriate habitat management) | 3 | 2,7 |
| Recreational pressure and disturbance | 3 | 2,0 |
| Felling/destruction of woodland | 3 | 2,0 |
| Climatic change | 3 | 1,7 |
| Natural ecological change (e.g. myxomatosis effect on rabbits) | 2 | 1,5 |
| Others: | | |
| Habitat destruction | 1 | 3,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken

Legal protection of species (no capture, trade, etc.) ( 6 countries): A, BY, D, F, FL, H
Legal protection of important butterfly habitats ( 7 countries): A, BY, F, FL, H, I, SLO
Habitat management: there is special attention for the species ( 5 countries): A, BY, D, H, I
Ecological research on the requirements of the species has been conducted ( 2 countries): I, SLO
All populations are monitored on a regular basis (e.g. every 1-5 years) ( 1 country): SLO
At least part of the populations are monitored (e.g. every 1-5 years) ( 4 countries): A, D, H, I

## Conservation measures proposed by compilers

Begin or improve monitoring (4 countries): BY, F, FL, UA
Further surveys needed (2 countries): BY, UA
Improved habitat management (1 country): UA
Legal protection of habitats (1 country): SLO
Legal protection of species (1 country): SLO
Ecological research on habitat requirements (1 country): BY

## References


Lhonoré, J. (1996) *Coenonympha oedippus*. In *Background information on invertebrates of the Habitats Directive and the Bern Convention. Part I - Crustacea, Coleoptera and Lepidoptera.* eds. Helsdingen, P.J. van, Willemse, L.P.M. & Speight, M.C.D., pp. 98-104. Council of Europe, Strasbourg, Nature and environment, No. 79.

Plush, I.G. (1985) *Coenonympha oedippus* F. (Lepidoptera, Satyridae) in the Ukraine. *Zoological bulletin* **6**, 44.

# *Coenonympha hero* (Linnaeus, 1761)

## Taxonomy
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Nymphalidae

## Status
Present distribution class in Europe: >15%
Overall trend in Europe: decrease 20-50%
Threat status: *Vulnerable* - SPEC 3 - species with headquarters within and outside Europe, but considered threatened in Europe
Species at present in Appendix II of Bern Convention.

## Distribution and status per country
*C. hero* is declining in W- and C-Europe. Strongholds nowadays in E-Europe (Russia, Baltic states).

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| CZ | Czech Republic | <1% | extinct | Ex |
| DK | Denmark | <1% | extinct | Ex |
| L | Luxemburg | <1% | extinct | Ex |
| NL | Netherlands | <1% | extinct | Ex |
| A | Austria | <1% | decr 75-100% | E |
| B | Belgium | <1% | decr 75-100% | E |
| D | Germany | <1% | decr 75-100% | E |
| CH | Switzerland | <1% | decr 25-50% | E |
| SK | Slovakia | <1% | decr 25-50% | E |
| N | Norway | 1-5% | decr 25-50% | V |
| PL | Poland | 1-5% | decr 25-50% | V |
| S | Sweden | 1-5% | decr 25-50% | I |
| F | France | <1% | decr 15-25% | E |
| UA | Ukraine | 1-5% | decr 15-25% | I |
| LT | Lithuania | 5-15% | decr 15-25% | R |
| LV | Latvia | 5-15% | decr 15-25% | - |
| BY | Belarus | 1-5% | stable | - |
| EST | Estonia | >15% | stable | |
| RUS | Russia (European part) | >15% | unknown | R |

## Habitat
Wet, open spots in light deciduous, coniferous and mixed forest. These include bogs overgrown with forest, herbaceous marshes, heaths, forest margins, clearings, pastures along rivers and meadows in forest-steppe zones. Foodplants a wide variety of grasses (Poaceae).

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| humid grasslands and tall herb communities | 13 | (29%) |
| mixed woodland | 8 | (18%) |
| broad-leaved deciduous forests | 6 | (13%) |
| mesophile grasslands | 6 | (13%) |
| fens, transition mires and springs | 3 | (7%) |
| coniferous woodland | 2 | (4%) |
| heath and scrub | 2 | (4%) |
| alluvial and very wet forests and brush | 1 | (2%) |
| alpine and subalpine grasslands | 1 | (2%) |
| blanket bogs | 1 | (2%) |
| dry calcareous grasslands and steppes | 1 | (2%) |
| raised bogs | 1 | (2%) |

## Threats

Chief threats are from drainage, agricultural improvements and changing grassland and woodland management.

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Land drainage | 12 | 2,2 |
| Abandonment and change of woodland management (inc. replanting with conifers and inappropriate habitat management) | 10 | 2,6 |
| Agricultural improvements | 8 | 2,3 |
| Afforestation on non-woodland habitats | 8 | 2,0 |
| Agricultural abandonment and changing management (inc. successional change and inappropriate habitat management) | 7 | 2,1 |
| Built development (inc. roads, housing and mining) | 7 | 2,0 |
| Chemical pollution (inc. herbicides and pesticides) | 7 | 1,6 |
| Felling/destruction of woodland | 7 | 2,6 |
| Isolation and fragmentation of habitat | 6 | 2,5 |
| Collecting (killing or taking) | 6 | 1,3 |
| Recreational pressure and disturbance | 5 | 2,0 |
| Climatic change | 3 | 1,3 |
| Land claims / coastal development | 2 | 2,5 |
| Natural ecological change (e.g. myxomatosis effect on rabbits) | 1 | 3,0 |
| Others: | | |
| Natural forest succession | 1 | 2,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken

Legal protection of species (no capture, trade, etc.) ( 8 countries): A, B, BY, D, L, LT, RUS, UA
Legal protection of important butterfly habitats ( 7 countries): B, BY, D, LT, LV, RUS, SK
Habitat management: there is special attention for the species (1 country): BY
Ecological research on the requirements of the species has been conducted ( 1 country): UA
All populations are monitored on a regular basis (e.g. every 1-5 years) ( 1 country): B
At least part of the populations are monitored (e.g. every 1-5 years) ( 3 countries): D, S, UA

## Conservation measures proposed by compilers

Begin or improve monitoring (5 countries): BY, EST, F, SK, UA
Improved habitat management (4 countries): A, LT, SK, UA
Further surveys needed (3 countries): F, L, UA
Ecological research on species requirements (3 countries): BY, LT, SK
Legal protection of habitats (1 country): LV
Legal protection of species (1 country): SK
Habitats under recreational pressure need protection (1 country): SK
Re-establishment (1 country): B

## References


Kulfan, J. (1993) Zum Vorkommen von *Coenonympha hero* (Linnaeus, 1761) in der Slowakei (Lepidoptera, Satyridae). *Biológia Bratislava* **48(5)**, 559-560.

Meyer, M. (1996) *Coenonympha hero*. In *Background information on invertebrates of the Habitats Directive and the Bern Convention. Part I - Crustacea, Coleoptera and Lepidoptera.* eds. Helsdingen, P.J. van, Willemse, L.P.M. & Speight, M.C.D., pp. 93-97. Council of Europe, Strasbourg, Nature and environment, No. 79

# *Triphysa phryne* (Pallas, 1771)

## Taxonomy

Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Nymphalidae

## Status

Present distribution class in Europe: <1%
Overall trend in Europe: decrease 80-100%
Threat status: *Critically endangered* - SPEC 3 - species with headquarters within and outside Europe, but considered threatened in Europe

## Distribution and status per country

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| TRA | Turkey (Asian part) | <1% | extinct | E |
| UA | Ukraine | <1% | decr 75-100% | E |
| RUS | Russia (European part) | <1% | unknown | I |

## Habitat

Steppes, semi-desert, dry slopes on limestone (RUS, UA) and alpine meadows (TRA). Foodplant probably species of *Stipa* (Poaceae).

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| dry calcareous grasslands and steppes | 2 | (33%) |
| dry siliceous grasslands | 2 | (33%) |
| heath and scrub | 1 | (17%) |
| mixed woodland | 1 | (17%) |

## Threats

This butterfly and its habitats are threatened from agricultural improvements, fragmentation and recreational pressure.

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Agricultural improvements | 2 | 3,0 |
| Isolation and fragmentation of habitat | 2 | 3,0 |
| Recreational pressure and disturbance | 1 | 3,0 |
| Afforestation on non-woodland habitats | 1 | 2,0 |
| Built development (inc. roads, housing and mining) | 1 | 1,0 |
| Chemical pollution (inc. herbicides and pesticides) | 1 | 1,0 |
| Others: | | |
| Fires | 1 | 3,0 |
| Natural forest and shrubs succession | 1 | 1,0 |
| Overgrazing | 1 | 3,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken

Legal protection of species (no capture, trade, etc.) ( 1 country): UA
Legal protection of important butterfly habitats ( 2 countries): RUS, UA
No specific measures have been taken ( 1 country): TR

## Conservation measures proposed by compilers

Begin or improve monitoring (3 countries): RUS, TR, UA
Further surveys needed (2 countries): TR, UA
Legal protection of habitats (1 country): TR
Avoid grazing in habitats (1 country): TR

# *Erebia christi* Rätzer, 1890

## Taxonomy
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Nymphalidae

## Status
Present distribution class in Europe: <1%
Overall trend in Europe: decrease 20-50%
Threat status: *Vulnerable* - SPEC 1 - species of global conservation concern because restricted to Europe and considered globally threatened
Species at present in Appendix II of Bern Convention.

## Distribution and status per country
*E. christi* is restricted to a very small area at the southern part of the Simplon in Italy and Switzerland.

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| CH | Switzerland | <1% | decr 15-25% | R |
| I | Italy | <1% | unknown | |

## Habitat
Acidophilous, alpine grasslands on siliceous soils between 1300 and 2100 m. Foodplant *Festuca ovina* (Poaceae).
No Corine classification given.

## Threats
No threats mentioned.

## Conservation measures taken
Legal protection of species (no capture, trade, etc.) ( 2 countries): CH, I
Legal protection of important butterfly habitats ( 1 country): I
Ecological research on the requirements of the species has been conducted ( 1 country): I
All populations are monitored on a regular basis (e.g. every 1-5 years) ( 1 country): I

## Conservation measures proposed by compilers
No conservation measures proposed.

## References
Leigheb, G. (1976) Contributo allo studio delle *Erebia alpine*. 1. *Erebia christi* (Rátzer 1890) (Lepidoptera, Satyridae): specie nova per l'Italia. 2. *Erebia flavofasciata* (hayne) (Lepidoptera, Satyridae): morfologia, eco-etologia, corologia. *Redia* **59**, 331-353.
Sonderegger, P. (1996) *Erebia christi*. In *Background information on invertebrates of the Habitats Directive and the Bern Convention. Part I - Crustacea, Coleoptera and Lepidoptera.* eds.

Helsdingen, P.J. van, Willemse, L.P.M. & Speight, M.C.D., pp. 109-112. Council of Europe, Strasbourg, Nature and environment, No. 79

# *Erebia sudetica* Staudinger, 1861

## Taxonomy
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Nymphalidae

## Status
Present distribution class in Europe: <1%
Overall trend in Europe: decrease 20-50%
Threat status: *Vulnerable* - SPEC 1 - species of global conservation concern because restricted to Europe and considered globally threatened
Species at present in Appendix II of Bern Convention.

## Distribution and status per country

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| PL | Poland | <1% | extinct | Ex |
| RO | Romania | <1% | decr 50-75% | E |
| CZ | Czech Republic | <1% | stable | R |
| F | France | <1% | stable | - |
| CH | Switzerland | 1-5% | stable | R |

## Habitat
Moist, flowery subalpine and alpine meadows, sometimes near forest (alt. 1200-2000 m). Foodplants grasses (Poaceae), i.e. *Anthoxanthum odoratum* (RO) and *Poa annua* (CZ).

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| alpine and subalpine grasslands | 3 | (43%) |
| coniferous woodland | 1 | (14%) |
| inland cliffs and exposed rocks | 1 | (14%) |
| mesophile grasslands | 1 | (14%) |
| mixed woodland | 1 | (14%) |

## Threats

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Built development (inc. roads, housing and mining) | 2 | 2,5 |
| Agricultural improvements | 2 | 2,0 |
| Recreational pressure and disturbance | 2 | 2,0 |
| Chemical pollution (inc. herbicides and pesticides) | 2 | 1,5 |
| Land drainage | 1 | 2,0 |
| Agricultural abandonment and changing management (inc. successional change and inappropriate habitat management) | 1 | 1,0 |
| Felling/destruction of woodland | 1 | 1,0 |
| Land claims / coastal development | 1 | 1,0 |
| Others: | | |
| Overgrazing | 2 | 3,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken

Legal protection of species (no capture, trade, etc.) ( 1 country): F
Legal protection of important butterfly habitats ( 2 countries): CZ, F
Ecological research on the requirements of the species has been conducted ( 1 country): RO
Other measures taken:
Subspecies of the Massif Central is included in the Red list of the Auvergne (1 country): F

## Conservation measures proposed by compilers

Legal protection of habitats (2 countries): F, RO

## References


Cupedo, F. (1996) Erebia sudetica. In *Background information on invertebrates of the Habitats Directive and the Bern Convention. Part I - Crustacea, Coleoptera and Lepidoptera.* eds. Helsdingen, P.J. van, Willemse, L.P.M. & Speight, M.C.D., pp. 113-116. Council of Europe, Strasbourg, Nature and environment, No. 79

Cupedo, F. (1997) Die morphologische Gliederung des *Erebia malpus semisudetica* ssp. nov. und *Erebia sudetica belledonnae* ssp. nov. *Nota Lepidopterologica* **18(2)**, 92-125.

Laine, M. (1989) *Erebia sudetica* Stgr. dans les Alpes. Bibliography of Palaeartic Lepidoptera: **12** & Supplement; Bulletin de l'Association d'Entomologie D'Evrieux, 21-24.

Maechler, J. (1989) Note complémentaire à l'article du Dr. Laine concernant *Erebia sudetica* Stgr. Bibliography of Palaeartic Lepidoptera: **12** & Supplement; Bulletin de l'Association D'Entomologie D'Evrieux 21-25.

Savourey, M. (1989) *Erebia sudetica* Stgr et *E. melampus* Fuesslin en Savoie : le point sur leur répartition connue (fin 1989) (Lep. Nymphalidae Satyrinae). *Alexanor* **16(4)**, 195-199.

# *Erebia embla* (Thunberg, 1791)

## Taxonomy
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Nymphalidae

## Status
Present distribution class in Europe: 5-15%
Overall trend in Europe: decrease 20-50%
Threat status: *Vulnerable* - SPEC 3 - species with headquarters within and outside Europe, but considered threatened in Europe

## Distribution and status per country

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| LV | Latvia | <1% | decr 75-100% | E |
| FIN | Finland | >15% | decr 25-50% | - |
| S | Sweden | >15% | stable | - |
| EST | Estonia | <1% | unknown | |
| RUS | Russia (European part) | 1-5% | unknown | K |
| N | Norway | 5-15% | unknown | - |

## Habitat
Wet habitats in tundra and mountains such as bogs, boggy forest, swampy meadows and slopes with small streams. Foodplants probably *Carex* species (Cyperaceae). In RUS also *Deschampsia* species (Poaceae).

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| raised bogs | 5 | (45%) |
| coniferous woodland | 3 | (27%) |
| fens, transition mires and springs | 1 | (9%) |
| humid grasslands and tall herb communities | 1 | (9%) |
| mixed woodland | 1 | (9%) |

## Threats

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Land drainage | 5 | 2,4 |
| Afforestation on non-woodland habitats | 2 | 2,5 |
| Climatic change | 2 | 2,5 |
| Isolation and fragmentation of habitat | 2 | 2,5 |
| Agricultural improvements | 2 | 1,7 |
| Abandonment and change of woodland management (inc. replanting with conifers and inappropriate habitat management) | 2 | 1,5 |
| Chemical pollution (inc. herbicides and pesticides) | 2 | 1,5 |
| Felling/destruction of woodland | 1 | 3,0 |
| Agricultural abandonment and changing management (inc. successional change and inappropriate habitat management) | 1 | 2,0 |
| Built development (inc. roads, housing and mining) | 1 | 1,0 |
| Collecting (killing or taking) | 1 | 1,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken

Legal protection of species (no capture, trade, etc.) ( 1 country): LV
Legal protection of important butterfly habitats ( 2 countries): LV, RUS
At least part of the populations are monitored (e.g. every 1-5 years) ( 1 country): FIN
No specific measures have been taken ( 1 country): S

## Conservation measures proposed by compilers

No conservation measures proposed.

## References

Douwes, P. & Stille, B. (1988) Selective versus stochastic processes in the genetic differentiation of populations of the butterfly *Erebia embla* (Thnbg) (Lepidoptera, Satyridae). Hereditas **106 (1)**, 37-43.

# *Erebia medusa* (Denis & Schiffermüller, 1775)

## Taxonomy

Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Nymphalidae

## Status

Present distribution class in Europe: 5-15%
Overall trend in Europe: decrease 20-50%
Threat status: *Vulnerable* - SPEC 3 - species with headquarters within and outside Europe, but considered threatened in Europe

## Distribution and status per country

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| BY | Belarus | unknown | extinct | E |
| TRE | Turkey (European part) | <1% | extinct | E |
| A | Austria | >15% | decr 75-100% | - |
| B | Belgium | 5-15% | decr 50-75% | V |
| L | Luxemburg | 5-15% | decr 25-50% | V |
| D | Germany | 5-15% | decr 15-25% | - |
| F | France | 5-15% | decr 15-25% | V |
| SLO | Slovenia | 5-15% | decr 15-25% | I |
| UA | Ukraine | 5-15% | decr 15-25% | - |
| SK | Slovakia | >15% | decr 15-25% | - |
| TRA | Turkey (Asian part) | 1-5% | stable | K |
| AL | Albania | 5-15% | stable | - |
| CH | Switzerland | 5-15% | stable | - |
| GR | Greece | 5-15% | stable | - |
| PL | Poland | 5-15% | stable | - |
| BG | Bulgaria | >15% | stable | - |
| CZ | Czech Republic | >15% | stable | - |
| I | Italy | 1-5% | incr 125-200% | |
| H | Hungary | 5-15% | incr 125-200% | - |
| RO | Romania | >15% | fluctuating | - |
| FL | Liechtenstein | 1-5% | unknown | R |
| HR | Croatia | 1-5% | unknown | - |
| BIH | Bosnia | 5-15% | unknown | - |
| FYROM | FYR of Macedonia | 5-15% | unknown | - |
| RUS | Russia (European part) | 5-15% | unknown | K |
| YU | Yugoslavia | >15% | unknown | - |

## Habitat

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| coniferous woodland | 10 | (16%) |
| mesophile grasslands | 10 | (16%) |
| mixed woodland | 10 | (16%) |
| alpine and subalpine grasslands | 7 | (11%) |
| dry calcareous grasslands and steppes | 7 | (11%) |
| humid grasslands and tall herb communities | 6 | (10%) |
| broad-leaved deciduous forests | 4 | (6%) |
| dry siliceous grasslands | 4 | (6%) |
| alluvial and very wet forests and brush | 1 | (2%) |
| orchards, groves and tree plantations | 1 | (2%) |
| tree lines, hedges, small woods, bocage, parkland dehesa | 1 | (2%) |
| urban parks and large gardens | 1 | (2%) |

All kinds of open grassy, flowery spots in a (sometimes sparsely) forested landscape, for example unfertilized meadows from lowlands up to the Alpine zone. These can be

moist or dry, at sealevel or alpine and even include urban parks. Foodplants diverse grasses (Poaceae).

## Threats

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Agricultural improvements | 12 | 2,1 |
| Afforestation on non-woodland habitats | 12 | 1,7 |
| Built development (inc. roads, housing and mining) | 11 | 1,6 |
| Isolation and fragmentation of habitat | 10 | 1,5 |
| Chemical pollution (inc. herbicides and pesticides) | 9 | 1,4 |
| Abandonment and change of woodland management (inc. replanting with conifers and inappropriate habitat management) | 8 | 1,5 |
| Felling/destruction of woodland | 7 | 1,7 |
| Natural ecological change (e.g. myxomatosis effect on rabbits) | 6 | 1,7 |
| Agricultural abandonment and changing management (inc. successional change and inappropriate habitat management) | 5 | 2,6 |
| Climatic change | 5 | 2,0 |
| Land drainage | 5 | 2,0 |
| Recreational pressure and disturbance | 5 | 1,6 |
| Land claims / coastal development | 3 | 2,0 |
| Collecting (killing or taking) | 1 | 2,0 |
| Others: | | |
| Land claims for agriculture | 2 | 2,0 |
| Overgrazing | 2 | 1,5 |
| Burning | 1 | 3,0 |
| Habitat destruction | 1 | 2,0 |
| Natural succession | 2 | 2,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken

Legal protection of species (no capture, trade, etc.) ( 3 countries): A, D, L
Legal protection of important butterfly habitats ( 7 countries): AL, B, H, L, RUS, SK, YU
Habitat management: there is special attention for the species ( 1 country): AL
Ecological research on the requirements of the species has been conducted ( 3 countries): B, SLO, UA
All populations are monitored on a regular basis (e.g. every 1-5 years) ( 1 country): SLO
At least part of the populations are monitored (e.g. every 1-5 years) ( 3 countries): B, SK, UA

## Conservation measures proposed by compilers

Begin or improve monitoring (8 countries): BIH, FYROM, HR, L, SK, TR, UA, YU
Legal protection of habitats (6 countries): B, F, FYROM, HR, SK, TR
Ecological research on species requirements (6 countries): BIH, FYROM, L, SK, TR, YU
Improved habitat management (5 countries): A, B, L, SK, UA
Legal protection of species (1 country): SLO
Further surveys needed (1 country): UA
Appropriate management is light grazing or rotational mowing (1 country): B

## References


Savourey, M. (1994) Le genre Erebia en France - Mise à jour de l'inventaire par regions administratives. *Alexanor* **18(6)**, 343-350.

Savourey, M. (1996) Le genre Erebia en France - Mise à jour de l'inventaire par regions administratives - 2eme patie. *Alexanor* **19(5)**, 277-291.

Savourey, M. (1997) Le genre Erebia en France - Mise à jour de l'inventaire par regions administratives - 3eme partie. *Alexanor* **20(1)**, 3-17.

# *Erebia epistygne* (Hübner, 1824)

## Taxonomy
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Nymphalidae

## Status
Present distribution class in Europe: <1%
Overall trend in Europe: decrease 20-50%
Threat status: *Vulnerable* - SPEC 1 - species of global conservation concern because restricted to Europe and considered globally threatened

## Distribution and status per country
Species is restricted to small mountain ranges in SE-France and C-Spain (altitude 450-1500 m).

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| F | France | <1% | decr 15-25% | |
| E | Spain | 5-15% | unknown | R |

## Habitat
Grassy and rocky clearings in open woodland. Limestone habitats of Montes Universales (E) distinctive: dry, often flattish clearings, strewn with small rocks, in sparse pinewoods, with short grasses and sparse, low-growing shrubs. Foodplant *Festuca ovina* (Poaceae).

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| alpine and subalpine grasslands | 1 | (50%) |
| dry calcareous grasslands and steppes | 1 | (50%) |

## Threats
No threats given.

## Conservation measures taken
No information received.

## Conservation measures proposed by compilers
No conservation measures have been proposed.

## References

Savourey, M. (1994) Le genre Erebia en France - Mise à jour de l'inventaire par regions administratives. *Alexanor* **18(6)**, 343-350.

Savourey, M. (1996) Le genre Erebia en France - Mise à jour de l'inventaire par regions administratives - 2eme patie. *Alexanor* **19(5)**, 277-291.

Savourey, M. (1997) Le genre Erebia en France - Mise à jour de l'inventaire par regions administratives - 3eme partie. *Alexanor* **20(1)**, 3-17.

# *Melanargia titea* (Klug, 1832)

## Taxonomy
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Nymphalidae

## Status
Present distribution class in Europe: <1%
Overall trend in Europe: decrease 20-50%
Threat status: *Endangered* - SPEC 3 - species with headquarters within and outside Europe, but considered threatened in Europe

## Distribution and status per country

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| TRA | Turkey (Asian part) | 5-15% | decr 15-25% | K |

## Habitat
Waste land, archaeological sites and steppes. Foodplant unknown.
No Corine classification given.

## Threats

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Agricultural improvements | 1 | 3,0 |
| Chemical pollution (inc. herbicides and pesticides) | 1 | 3,0 |
| Isolation and fragmentation of habitat | 1 | 3,0 |
| Built development (inc. roads, housing and mining) | 1 | 3,0 |
| Recreational pressure and disturbance | 1 | 3,0 |
| Land claims / coastal development | 1 | 3,0 |
| Others: | | |
| Land claims for agriculture | 1 | 3,0 |
| Overgrazing | 1 | 3,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken
No specific measures have been taken.

## Conservation measures proposed by compilers

Begin or improve monitoring (1 country): TR
Legal protection of habitats (1 country): TR

# *Hipparchia maderensis* (Bethune-Baker, 1891)

## Taxonomy
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Nymphalidae

## Status
Present distribution class in Europe: <1%
Overall trend in Europe: decrease 20-50%
Threat status: *Vulnerable* - SPEC 1 - species of global conservation concern because restricted to Europe and considered globally threatened

## Distribution and status per country

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| MAD | Madeira | 1-5% | decr 15-25% | V |

## Habitat
Open forests, forest-edges of Laurisilva and stony places above 500 m.

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| broad-leaved evergreen woodland | 1 | (20%) |
| coniferous woodland | 1 | (20%) |
| dry siliceous grasslands | 1 | (20%) |
| mixed woodland | 1 | (20%) |
| volcanic features | 1 | (20%) |

## Threats
No threats mentioned.

## Conservation measures taken
No conservation measures taken.

## Conservation measures proposed by compilers
No conservation measures proposed.

## References
Meyer, M. (1993) Die Lepidoptera der makronesischen Region III. Die Tagfalter des nördlichen Makronesiens (Madeira, Azoren) aus biogeographischer Sicht. *Atalanta* **24(1/2)**, 121-162.

# *Hipparchia azorina* (Strecker, 1899)

## Taxonomy

Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Nymphalidae
Remarks: Taxonomical status of *Hipparchia azorina* s.l. under discussion. In this case the opinion of Meyer (1993) was followed.

## Status

Present distribution class in Europe: <1%
Overall trend in Europe: decrease 20-50%
Threat status: *Vulnerable* - SPEC 1 - species of global conservation concern because restricted to Europe and considered globally threatened

## Distribution and status per country

Restricted to the central islands São Jorge, Pico and Faial of the Azores.

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| AZO | Azores | <1% | decr 25-50% | E |

## Habitat

Secundary woodland and pastures above 500 m.

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| agricultural land and artificial landscapes | 1 | (33%) |
| heath and scrub | 1 | (33%) |
| mesophile grasslands | 1 | (33%) |

## Threats

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Agricultural improvements | 1 | 3,0 |
| Agricultural abandonment and changing management (inc. successional change and inappropriate habitat management) | 1 | 3,0 |
| Abandonment and change of woodland management (inc. replanting with conifers and inappropriate habitat management) | 1 | 3,0 |
| Felling/destruction of woodland | 1 | 2,0 |
| Isolation and fragmentation of habitat | 1 | 2,0 |
| Afforestation of non-woodland habitats | 1 | 1,0 |
| Built development (inc. roads, housing, mining) | 1 | 1,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken

No conservation measures taken.

## Conservation measures proposed by compilers

Protection of important butterfly habitats (1 country): AZO
Ecological research (1 country): AZO
Monitoring (1 country): AZO
Agricultural measures (1 country): AZO

## References

Meyer, M. (1993) Die Lepidoptera der makronesischen Region III. Die Tagfalter des nördlichen Makronesiens (Madeira, Azoren) aus biogeographischer Sicht. *Atalanta* **24(1/2)**, 121-162.
Oehmig, S. (1981) *Hipparchia azorina* (Strecker, 1899) (Satyridae) biology, ecology and distribution on the Azores Islands. *J-Res-Lepid.* **20(3)**, 136-160.

# *Hipparchia occidentalis* (Sousa, 1982)

## Taxonomy
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Nymphalidae

## Status
Present distribution class in Europe: <1%
Overall trend in Europe: decrease 20-50%
Threat status: *Endangered* - SPEC 1 - species of global conservation concern because restricted to Europe and considered globally threatened

## Distribution and status per country
Restricted to the western islands Flores and Corvo of the Azores.

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| AZO | Azores | <1% | decr 25-50% | E |

## Habitat
Secundary woodland, pastures with shrubs and heathland in altitudes above 500 m. Foodplant grasses (Poaceae).

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| agricultural land and artificial landscapes | 1 | (33%) |
| heath and scrub | 1 | (33%) |
| mesophile grasslands | 1 | (33%) |

## Threats

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Agricultural improvements | 1 | 3,0 |
| Agricultural abandonment and changing management (inc. successional change and inappropriate habitat management) | 1 | 3,0 |
| Abandonment and change of woodland management (inc. replanting with conifers and inappropriate habitat management) | 1 | 3,0 |
| Felling/destruction of woodland | 1 | 2,0 |
| Isolation and fragmentation of habitat | 1 | 2,0 |
| Afforestation of non-woodland habitats | 1 | 1,0 |
| Built development (inc. roads, housing, mining) | 1 | 1,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken
Ecological research on the requirements of the species has been conducted (1 country): AZO

## Conservation measures proposed by compilers
Protection of important butterfly habitats (1 country): AZO
Ecological research (1 country): AZO
Monitoring (1 country): AZO
Agricultural measures (1 country): AZO

## References
Meyer, M. (1993) Die Lepidoptera der makronesischen Region III. Die Tagfalter des nördlichen Makronesiens (Madeira, Azoren) aus biogeographischer Sicht. *Atalanta* **24(1/2)**, 121-162.

# *Hipparchia miguelensis* (Le Cerf, 1935)

## Taxonomy
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Nymphalidae

## Status
Present distribution class in Europe: <1%
Overall trend in Europe: decrease 20-50%
Threat status: *Vulnerable* - SPEC 1 - species of global conservation concern because restricted to Europe and considered globally threatened

## Distribution and status per country
Restricted to the eastern island São Miguel (and originally maybe Santa Maria) of the Azores.

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| AZO | Azores | <1% | decr 25-50% | V |

## Habitat
Woodland, secondary woodland and pastures above 450 m.
Foodplant grasses (Poaceae).

| Corine classification of habitat (number of mentions by national compilers) | | |
|---|---|---|
| agricultural land and artificial landscapes | 1 | (33%) |
| heath and scrub | 1 | (33%) |
| mesophile grasslands | 1 | (33%) |

## Threats

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Agricultural improvements | 1 | 3,0 |
| Agricultural abandonment and changing management (inc. successional change and inappropriate habitat managment) | 1 | 3,0 |
| Abandonment and change of woodland management (inc. replanting with conifers and inappropriate habitat management) | 1 | 3,0 |
| Felling/destruction of woodland | 1 | 2,0 |
| Isolation and fragmentation of habitat | 1 | 2,0 |
| Afforestation on non-woodland habitats | 1 | 1,0 |
| Built development (inc. roads, housing and mining) | 1 | 1,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken
Ecological research on the requirements of the species has been conducted (1 country): AZO

## Conservation measures proposed by compilers
Protection of important habitats (1 country): AZO
Ecological research (1 country): AZO
Monitoring (1 country): AZO
Agricultural measures (1 country): AZO

## References
Meyer, M. (1993) Die Lepidoptera der makronesischen Region III. Die Tagfalter des nördlichen Makronesiens (Madeira, Azoren) aus biogeographischer Sicht. *Atalanta* **24(1/2)**, 121-162.

# *Pseudochazara euxina* (Kusnetsov, 1909)

## Taxonomy
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Nymphalidae

## Status
Present distribution class in Europe: <1%
Overall trend in Europe: decrease 20-50%
Threat status: *Vulnerable* - SPEC 1 - species of global conservation concern because restricted to Europe and considered globally threatened

## Distribution and status per country

| Abbr. | Country | Present distr. class | Trend class | Old IUCN-status |
|---|---|---|---|---|
| UA | Ukraine | <1% | decr 15-25% | V |
| RUS | Russia (European part) | <1% | unknown | I |

## Habitat
In UA Crimean mountain steppes and pine forest on a limestone mountain area covered by grassland. Foodplant *Stipa pennata* (Poaceae).

| Corine classification of habitat (number of mentions by national compilers) | |
|---|---|
| inland cliffs and exposed rocks | 1 (50%) |
| alpine and subalpine grasslands | 1 (50%) |

## Threats

| Threats as indicated by national compilers | Number of mentions | Average grade of threat* |
|---|---|---|
| Afforestation of original steppe | 1 | 2,0 |
| Destruction of original Livada open pine forest | 1 | 2,0 |
| Recreational pressure and disturbance | 1 | 2,0 |
| Land claims / coastal development | 1 | 1,0 |
| Others: | | |
| Overgrazing | 1 | 2,0 |
| Burning of dry grassland in spring and autumn | 1 | 2,0 |

** Average grade of threat: 1 = low, 2 = medium, 3 = high*

## Conservation measures taken
In UA the type-locality is under protection in the Ialta state reserve.

Legal protection of species (no capture, trade, etc.) ( 1 country): UA
Legal protection of important butterfly habitats ( 1 country): UA

## Conservation measures proposed by compilers

Begin or improve monitoring (1 country): UA
Further surveys needed (1 country): UA

## References
Nekrutenko, Y.P. (1985) *The butterflies of the Crimea. Guide*. Naukova Dumka. Kiev. 152 pp. [in Russian]

# Appendices

# Appendix 1
## Range Affinity for European butterflies

For every species the Range Affinity according to Kudrna (1986) is given.
A number of Range affinities had to be changed, since the definition of Europe by Kudrna is different than in this report (Kudrna excludes the Asian part of Turkey and the Caucasian Republics) or because new information on the distribution of butterflies is available.
Three experts were consulted to check the Range affinities:

- Dr. P.S. Wagener, expert on butterflies of Turkey;
- Dr. V.A. Lukhtanov, expert on butterflies in NW-Asia;
- Dr. R. de Jong, expert on Hesperiidae.

In case of changes the experts are indicated.
For all the remaining species the authors estimated the Range Affinity according to literature available. These species are indicated with an asterix (*).
The Range Affinity is explained in chapter 2.2.

| Species | Range Affinity | Expert consulted |
|---|---|---|
| *Erynnis tages** | 3 | |
| *Erynnis marloyi** | 2 | |
| *Carcharodus alceae** | 2 | |
| *Carcharodus lavatherae** | 3 | |
| *Carcharodus floccifera** | 2 | |
| *Carcharodus orientalis** | 2 | |
| *Carcharodus baeticus** | 4 | |
| *Carcharodus stauderi** | 1 | |
| *Spialia phlomidis** | 2 | |
| *Spialia osthelderi* | 2 | Wagener |
| *Spialia sertorius** | 2 | |
| *Spialia orbifer** | 2 | |
| *Spialia therapne** | 4 | |
| *Muschampia proto** | 2 | |
| *Muschampia proteides* | 2 | Wagener |
| *Muschampia poggei* | 2 | Wagener |
| *Muschampia plurimacula* | 2 | Wagener |
| *Muschampia tessellum** | 2 | |
| *Muschampia cribrellum** | 2 | |
| *Pyrgus carthami** | 2 | |
| *Pyrgus sidae** | 2 | |
| *Pyrgus andromedae** | 4 | |
| *Pyrgus cacaliae** | 4 | |
| *Pyrgus centaureae** | 2 | |
| *Pyrgus malvae** | 2 | |
| *Pyrgus melotis* | 2 | Wagener |
| *Pyrgus malvoides** | 4 | |
| *Pyrgus serratulae** | 2 | |
| *Pyrgus onopordi** | 2 | |
| *Pyrgus carlinae** | 4 | |
| *Pyrgus cirsii** | 4 | |
| *Pyrgus cinarae* | 4 | De Jong |
| *Pyrgus armoricanus** | 2 | |
| *Pyrgus alveus** | 2 | |
| *Pyrgus bellieri** | 4 | |
| *Pyrgus warrenensis** | 4 | |
| *Pyrgus jupei* | 3 | Wagener |
| *Pyrgus bolkariensis* | 4 | Wagener |
| *Pyrgus aladaghensis* | 4 | Wagener |
| *Heteropterus morpheus** | 2 | |
| *Carterocephalus palaemon** | 2 | |
| *Eogenes alcides* | 3 | Wagener |
| *Eogenes lesliei* | 2 | Wagener |
| *Carterocephalus silvicola** | 2 | |
| *Thymelicus lineola** | 2 | |
| *Thymelicus sylvestris** | 3 | |
| *Thymelicus novus* | 2 | Wagener |
| *Thymelicus acteon* | 3 | De Jong |
| *Thymelicus hyrax** | 2 | |
| *Hesperia comma** | 2 | |
| *Ochlodes venata** | 2 | |
| *Gegenes pumilio** | 2 | |
| *Gegenes nostrodamus** | 2 | |

| Species | Affinity | consulted |
|---|---|---|
| *Borbo borbonica** | 2 | |
| *Pelopidas thrax** | 2 | |
| *Zerynthia rumina* | 2 | |
| *Zerynthia polyxena* | 2 | |
| *Zerynthia cerisy* | 2 | |
| *Zerynthia deyrollei* | 2 | Wagener |
| *Zerynthia caucasica* | 4 | Wagener |
| *Zerynthia cretica** | 4 | |
| *Archon apollinus** | 2 | |
| *Archon apollinaris* | 2 | |
| *Parnassius mnemosyne* | 2 | |
| *Parnassius nordmanni* | 4 | Wagener |
| *Parnassius phoebus* | 2 | |
| *Parnassius apollo* | 2 | |
| *Iphiclides podalirius* | 2 | |
| *Papilio machaon* | 2 | |
| *Papilio hospiton* | 4 | |
| *Papilio alexanor* | 2 | |
| *Leptidea sinapis complex* | 2 | |
| *Leptidea duponcheli* | 2 | |
| *Leptidea morsei* | 2 | |
| *Anthocharis cardamines* | 2 | |
| *Anthocharis euphenoides* | 4 | |
| *Anthocharis damone* | 2 | |
| *Anthocharis gruneri* | 2 | |
| *Zegris eupheme* | 2 | Lukhtanov, Wagener |
| *Zegris pyrothoe* | 1 | |
| *Euchloe belemia* | 2 | Wagener |
| *Euchloe crameri* | 2 | Wagener |
| *Euchloe simplonia* | 2 | Lukhtanov |
| *Euchloe ausonia* | 2 | Lukhtanov |
| *Euchloe tagis* | 2 | |
| *Euchloe insularis* | 4 | |
| *Euchloe charlonia* | 2 | |
| *Euchloe penia* | 2 | |
| *Aporia crataegi* | 2 | |
| *Pieris brassicae* | 2 | |
| *Pieris wollastoni** | 4 | |
| *Pieris cheiranthi** | 4 | |
| *Pieris krueperi* | 2 | |
| *Pieris mannii* | 2 | |
| *Pieris rapae* | 2 | |
| *Pieris ergane* | 2 | |
| *Pieris napi* | 2 | |
| *Pieris bryoniae* | 2 | Lukhtanov |
| *Pieris bowdeni* | 4 | Wagener |
| *Pieris balcana* | 4 | |
| *Pontia callidice* | 2 | |
| *Pontia daplidice complex* | 2 | |
| *Pontia chloridice* | 2 | |
| *Colotis evagore* | 1 | |
| *Catopsilia florella* | 1 | |
| *Colias phicomone* | 4 | |

| Species | Range Affinity | Expert consulted |
|---|---|---|

| Species | Range Affinity | Expert consulted |
|---|---|---|
| *Colias nastes* | 2 | |
| *Colias palaeno* | 2 | |
| *Colias erate* | 2 | |
| *Colias croceus* | 2 | |
| *Colias chlorocoma* | 3 | Wagener |
| *Colias hecla* | 2 | |
| *Colias myrmidone* | 3 | Lukhtanov |
| *Colias chrysotheme* | 2 | |
| *Colias aurorina* | 2 | |
| *Colias caucasica* | 4 | |
| *Colias thisoa* | 2 | Wagener |
| *Colias hyale* | 2 | |
| *Colias alfacariensis* | 3 | |
| *Gonepteryx rhamni* | 2 | |
| *Gonepteryx farinosa* | 2 | |
| *Gonepteryx cleopatra* | 2 | |
| *Gonepteryx maderensis** | 4 | |
| *Gonepteryx cleobule** | 4 | |
| *Hamearis lucina* | 2 | |
| *Cigaritis maxima* | 2 | Wagener |
| *Cigaritis cilissa* | 3 | Wagener |
| *Cigaritis acamas* | 2 | Wagener |
| *Lycaena phlaeas* | 2 | |
| *Lycaena helle* | 2 | |
| *Lycaena dispar* | 2 | |
| *Lycaena virgaureae* | 2 | |
| *Lycaena ottomanus* | 4 | |
| *Lycaena tityrus* | 2 | |
| *Lycaena alciphron* | 2 | |
| *Lycaena hippothoe* | 2 | |
| *Lycaena candens* | 2 | |
| *Lycaena thersamon* | 2 | |
| *Lycaena lampon* | 2 | Wagener |
| *Lycaena thetis* | 2 | |
| *Lycaena asabinus* | 2 | Wagener |
| *Lycaena ochimus* | 2 | Wagener |
| *Lycaena phoenicurus* | 2 | Wagener |
| *Lycaena euphratica* | 4 | Wagener |
| *Thecla betulae* | 2 | |
| *Neozephyrus quercus* | 2 | |
| *Laeosopis roboris* | 3 | |
| *Tomares ballus* | 2 | Wagener |
| *Tomares romanovi* | 2 | Wagener |
| *Tomares nogelii* | 3 | |
| *Tomares nesimachus* | 2 | Wagener |
| *Tomares callimachus* | 3 | Lukhtanov |
| *Callophrys rubi* | 2 | |
| *Callophrys mystaphia* | 2 | Wagener |
| *Callophrys suaveola* | 2 | Wagener |
| *Callophrys butleri** | 1 | |
| *Callophrys avis* | 3 | |
| *Satyrium w-album* | 2 | |
| *Satyrium pruni* | 2 | |
| *Satyrium spini* | 2 | |
| *Satyrium marcidum* | 2 | Wagener |
| *Satyrium ilicis* | 2 | |
| *Satyrium esculi* | 3 | |
| *Satyrium acaciae* | 3 | |
| *Satyrium abdominalis* | 2 | Wagener |
| *Satyrium myrtale* | 2 | Wagener |
| *Satyrium ledereri* | 2 | |
| *Satyrium hyrcanicum* | 2 | Wagener |
| *Neolycaena rhymnus* | 2 | |
| *Lampides boeticus* | 2 | |
| *Cacyreus marshalli* | 1 | |
| *Leptotes pirithous* | 2 | |
| *Cyclyrius webbianus** | 4 | |
| *Tongeia fischeri* | 1 | |
| *Tarucus theophrastus* | 2 | |
| *Tarucus balkanica* | 2 | |
| *Zizeeria knysna* | 2 | |
| *Zizeeria karsandra* | 1 | |
| *Cupido minimus* | 2 | |
| *Cupido osiris* | 2 | Lukhtanov |
| *Cupido lorquinii** | 2 | |
| *Cupido argiades* | 2 | |
| *Cupido decolorata* | 4 | |
| *Cupido alcetas* | 2 | Lukhtanov |
| *Celastrina argiolus* | 2 | |
| *Pseudophilotes baton* | 4 | |
| *Pseudophilotes vicrama* | 2 | |
| *Pseudophilotes abencerragus* | 2 | Wagener |
| *Pseudophilotes barbagiae* | 4 | |
| *Pseudophilotes bavius* | 2 | |
| *Scolitantides orion* | 2 | |
| *Glaucopsyche alexis* | 2 | |
| *Glaucopsyche paphos* | 4 | |
| *Glaucopsyche astraea* | 4 | Wagener |
| *Glaucopsyche melanops* | 3 | |
| *Iolana iolas* | 3 | |
| *Maculinea arion* | 2 | |
| *Maculinea teleius* | 2 | |
| *Maculinea nausithous* | 2 | Lukhtanov |
| *Maculinea alcon* | 2 | |
| *Maculinea rebeli* | 4 | |
| *Lachides galba* | 2 | Wagener |
| *Turanana endymion* | 2 | |
| *Turanana cytis* | 2 | Wagener |
| *Chilades trochylus* | 2 | |
| *Plebeius pylaon* | 2 | |
| *Plebeius trappi* | 4 | |
| *Plebeius hesperica* | 4 | |
| *Plebeius argus* | 2 | |
| *Plebeius idas* | 2 | |
| *Plebeius argyrognomon* | 2 | |
| *Plebeius christophi* | 2 | Wagener |
| *Plebeius alcedo* | 3 | Wagener |
| *Plebeius rosei* | 4 | Wagener |
| *Plebeius morgianus* | 2 | Wagener |
| *Plebeius optilete* | 2 | |
| *Plebeius loewii* | 1 | |
| *Plebeius eurypilus* | 1 | |
| *Plebeius psylorita* | 4 | |
| *Plebeius pyrenaica* | 4 | |
| *Plebeius glandon* | 4 | |
| *Plebeius orbitulus* | 2 | |
| *Aricia eumedon* | 2 | |
| *Aricia cramera* | 3 | |
| *Aricia agestis* | 2 | |
| *Aricia artaxerxes* | 2 | Lukhtanov |
| *Aricia morronensis* | 4 | |
| *Aricia teberdinus* | 4 | Wagener |
| *Aricia hyacinthus* | 4 | Wagener |
| *Aricia torulensis* | 4 | Wagener |
| *Aricia isaurica* | 2 | Wagener |
| *Aricia anteros* | 4 | |
| *Aricia nicias* | 4 | |
| *Polyommatus semiargus* | 2 | |
| *Polyommatus coelestina* | 2 | |
| *Polyommatus diana* | 4 | Wagener |
| *Polyommatus fatima* | 4 | Wagener |
| *Polyommatus escheri* | 3 | |
| *Polyommatus dorylas* | 3 | |
| *Polyommatus golgus* | 4 | |
| *Polyommatus nivescens* | 4 | |
| *Polyommatus amandus* | 2 | Lukhtanov |
| *Polyommatus cyane* | 1 | |
| *Polyommatus thersites* | 2 | |
| *Polyommatus myrrha* | 4 | Wagener |
| *Polyommatus aedon* | 2 | Wagener |
| *Polyommatus cornelia* | 4 | Wagener |
| *Polyommatus ciloicus* | 4 | Wagener |
| *Polyommatus buzulmavi* | 4 | Wagener |
| *Polyommatus icarus* | 2 | |
| *Polyommatus andronicus** | 4 | |
| *Polyommatus eroides* | 2 | |
| *Polyommatus eros* | 3 | |
| *Polyommatus menelaos* | 4 | |
| *Polyommatus kamtschadalus** | 1 | |
| *Polyommatus daphnis* | 3 | |
| *Polyommatus bellargus* | 2 | |
| *Polyommatus syriacus* | 2 | Wagener |
| *Polyommatus dezinus* | 4 | Wagener |
| *Polyommatus coridon* | 4 | |
| *Polyommatus caelestissima* | 4 | |
| *Polyommatus philippi* | 4 | |
| *Polyommatus ossmar* | 4 | Wagener |
| *Polyommatus corydonius* | 4 | Wagener |
| *Polyommatus hispana* | 4 | |
| *Polyommatus albicans* | 4 | |
| *Polyommatus alcestis* | 2 | Wagener |

| Species | Range Affinity | Expert consulted |
|---|---|---|
| *Polyommatus demavendi* | 2 | Wagener |
| *Polyommatus admetus* | 3 | |
| *Polyommatus fabressei* | 4 | |
| *Polyommatus humedasae* | 4 | |
| *Polyommatus exuberans* | 4 | |
| *Polyommatus ripartii* | 2 | Lukhtanov |
| *Polyommatus budashkini** | 1 | |
| *Polyommatus galloi* | 4 | |
| *Polyommatus aroaniensis* | 4 | |
| *Polyommatus nephohiptamenos* | 4 | |
| *Polyommatus eriwanensis* | 4 | Wagener |
| *Polyommatus mithridates* | 3 | Wagener |
| *Polyommatus antidolus* | 4 | Wagener |
| *Polyommatus kurdistanicus* | 4 | Wagener |
| *Polyommatus virgilia* | 4 | |
| *Polyommatus dolus* | 4 | |
| *Polyommatus fulgens** | 1 | |
| *Polyommatus menalcas* | 4 | Wagener |
| *Polyommatus poseidon* | 2 | |
| *Polyommatus hopffferi* | 4 | Wagener |
| *Polyommatus dama* | 4 | Wagener |
| *Polyommatus caeruleus* | 2 | Wagener |
| *Polyommatus lycius* | 4 | Wagener |
| *Polyommatus wagneri* | 2 | Wagener |
| *Polyommatus sertavulensis* | 4 | Wagener |
| *Polyommatus altivagans* | 2 | Wagener |
| *Polyommatus firdussii* | 2 | Wagener |
| *Polyommatus theresiae* | 4 | Wagener |
| *Polyommatus elbursicus* | 2 | Wagener |
| *Polyommatus ninae* | 4 | Wagener |
| *Polyommatus iphigenia* | 1 | |
| *Polyom. aserbeidschanus* | 4 | Wagener |
| *Polyommatus actis* | 4 | Wagener |
| *Polyommatus merhaba* | 4 | Wagener |
| *Polyommatus cyaneus* | 4 | Wagener |
| *Polyommatus turcicus* | 4 | Wagener |
| *Polyommatus huberti* | 4 | Wagener |
| *Polyommatus carmon* | 4 | Wagener |
| *Polyommatus charmeuxi* | 4 | Wagener |
| *Polyommatus tankeri* | 4 | Wagener |
| *Polyommatus damon* | 2 | |
| *Polyommatus baytopi* | 4 | Wagener |
| *Polyommatus phyllis* | 2 | Wagener |
| *Polyommatus damone* | 2 | |
| *Polyommatus damocles** | 3 | |
| *Libythea celtis** | 2 | |
| *Argynnis paphia* | 2 | |
| *Argynnis pandora* | 2 | |
| *Argynnis aglaja* | 2 | |
| *Argynnis adippe* | 2 | |
| *Argynnis niobe* | 2 | |
| *Argynnis elisa* | 4 | |
| *Argynnis laodice* | 2 | |
| *Issoria lathonia* | 2 | |
| *Issoria eugenia** | 1 | |
| *Brenthis ino* | 2 | |
| *Brenthis daphne* | 2 | |
| *Brenthis hecate* | 2 | |
| *Brenthis mofidii* | 2 | Wagener |
| *Boloria eunomia* | 2 | |
| *Boloria euphrosyne* | 2 | |
| *Boloria titania* | 2 | |
| *Boloria selene* | 2 | |
| *Boloria selenis* | 2 | |
| *Boloria angarensis* | 1 | Lukhtanov |
| *Boloria oscarus** | 1 | |
| *Boloria chariclea* | 2 | |
| *Boloria freija* | 2 | |
| *Boloria dia* | 2 | |
| *Boloria polaris* | 2 | |
| *Boloria thore* | 2 | |
| *Boloria frigga* | 2 | |
| *Boloria improba* | 2 | |
| *Boloria distincta** | 1 | |
| *Boloria pales* | 2 | |
| *Boloria caucasica* | 4 | Wagener |
| *Boloria napaea* | 2 | |
| *Boloria aquilonaris* | 2 | |
| *Boloria graeca* | 4 | |
| *Boloria alaskensis** | 1 | |
| *Vanessa atalanta* | 2 | |
| *Vanessa indica* | 1 | |
| *Vanessa cardui* | 2 | |
| *Vanessa virginiensis* | 1 | |
| *Inachis io* | 2 | |
| *Aglais urticae* | 2 | |
| *Polygonia c-album* | 2 | |
| *Polygonia egea* | 2 | Lukhtanov |
| *Araschnia levana* | 2 | |
| *Nymphalis antiopa* | 2 | |
| *Nymphalis polychloros* | 2 | |
| *Nymphalis xanthomelas* | 2 | |
| *Nymphalis vaualbum* | 2 | |
| *Euphydryas iduna* | 2 | |
| *Euphydryas cynthia* | 4 | |
| *Euphydryas intermedia* | 2 | |
| *Euphydryas maturna* | 2 | |
| *Euphydryas desfontainii* | 3 | |
| *Euphydryas aurinia* | 2 | |
| *Euphydryas orientalis* | 2 | |
| *Melitaea cinxia* | 2 | |
| *Melitaea phoebe* | 2 | |
| *Melitaea punica* | 2 | Wagener |
| *Melitaea collina* | 2 | Wagener |
| *Melitaea aetherie* | 2 | |
| *Melitaea arduinna* | 2 | |
| *Melitaea trivia** | 2 | |
| *Melitaea didyma* | 2 | |
| *Melitaea persea* | 2 | Wagener |
| *Melitaea interrupta* | 2 | Wagener |
| *Melitaea diamina* | 2 | |
| *Melitaea deione* | 3 | |
| *Melitaea varia* | 4 | |
| *Melitaea parthenoides* | 4 | |
| *Melitaea aurelia* | 2 | |
| *Melitaea britomartis* | 2 | |
| *Melitaea asteria* | 4 | |
| *Melitaea athalia* | 2 | |
| *Melitaea caucasogenita* | 4 | Wagener |
| *Limenitis populi* | 2 | |
| *Limenitis camilla* | 2 | |
| *Limenitis reducta* | 2 | |
| *Hypolimnas misippus** | 1 | |
| *Neptis sappho* | 2 | |
| *Neptis rivularis* | 2 | |
| *Charaxes jasius* | 2 | |
| *Euapartura mirza* | 2 | Wagener |
| *Apatura metis* | 2 | Wagener |
| *Apatura ilia* | 2 | |
| *Apatura iris* | 2 | |
| *Thaleropis ionia* | 3 | Wagener |
| *Kirinia roxelana* | 2 | |
| *Esperarge climene* | 2 | |
| *Pararge aegeria* | 2 | |
| *Pararge xiphioides** | 4 | |
| *Pararge xiphia** | 4 | |
| *Lasiommata megera* | 2 | |
| *Lasiommata paramegaera** | 2 | |
| *Lasiommata petropolitana* | 2 | |
| *Lasiommata maera* | 2 | |
| *Lasiommata menava* | 2 | Wagener |
| *Lasiommata deidamia** | 1 | |
| *Lopinga achine* | 2 | |
| *Ypthima asterope* | 1 | |
| *Coenonympha tullia* | 2 | |
| *Coenonympha oedippus* | 2 | |
| *Coenonympha amaryllis* | 1 | |
| *Coenonympha rhodopensis* | 4 | |
| *Coenonympha arcania* | 2 | |
| *Coenonympha glycerion* | 2 | |
| *Coenonympha gardetta* | 4 | |
| *Coenonympha darwiniana* | 4 | |
| *Coenonympha corinna* | 4 | |
| *Coenonympha elbana** | 4 | |
| *Coenonympha dorus* | 3 | |
| *Coenonympha hero* | 2 | |
| *Coenonympha leander* | 2 | |
| *Coenonympha saadi* | 2 | Wagener |
| *Coenonympha symphyta* | 4 | Wagener |
| *Coenonympha pamphilus* | 2 | |
| *Coenonympha thyrsis* | 4 | |
| *Triphysa phryne* | 2 | |

| Species | Range Affinity | Expert consulted |
|---|---|---|
| *Pyronia tithonus* | 2 | |
| *Pyronia cecilia* | 2 | Wagener |
| *Pyronia bathseba* | 2 | Wagener |
| *Aphantopus hyperantus* | 2 | |
| *Maniola telmessia* | 2 | Wagener |
| *Maniola cypricola* | 4 | |
| *Maniola halicarnassus** | 4 | |
| *Maniola nurag* | 4 | |
| *Maniola chia** | 4 | |
| *Maniola jurtina* | 2 | |
| *Maniola megala** | 4 | |
| *Hyponephele wagneri* | 2 | Wagener |
| *Hyponephele urartua* | 4 | Wagener |
| *Hyponephele naricina* | 2 | Wagener |
| *Hyponephele cadusia* | 2 | Wagener |
| *Hyponephele kocaki* | 4 | Wagener |
| *Hyponephele lycaon* | 2 | |
| *Hyponephele lupinus* | 2 | |
| *Hyponephele huebneri* | 1 | Lukhtanov |
| *Proterebia afra* | 2 | |
| *Erebia ligea* | 2 | |
| *Erebia euryale* | 2 | |
| *Erebia eriphyle* | 4 | |
| *Erebia manto* | 4 | |
| *Erebia claudina* | 4 | |
| *Erebia flavofasciata* | 4 | |
| *Erebia epiphron* | 4 | |
| *Erebia orientalis* | 4 | |
| *Erebia christi* | 4 | |
| *Erebia pharte* | 4 | |
| *Erebia melampus* | 4 | |
| *Erebia sudetica* | 4 | |
| *Erebia aethiops* | 2 | |
| *Erebia triaria* | 4 | |
| *Erebia rossii* | 2 | |
| *Erebia embla* | 2 | |
| *Erebia disa* | 2 | |
| *Erebia cyclopius* | 1 | Lukhtanov |
| *Erebia fasciata* | 1 | |
| *Erebia medusa* | 2 | |
| *Erebia hewitsonii* | 4 | Wagener |
| *Erebia polaris* | 2 | |
| *Erebia edda** | 1 | |
| *Erebia alberganus* | 4 | |
| *Erebia pluto* | 4 | |
| *Erebia gorge* | 4 | |
| *Erebia rhodopensis* | 4 | |
| *Erebia aethiopella* | 4 | |
| *Erebia mnestra* | 4 | |
| *Erebia gorgone* | 4 | |
| *Erebia epistygne* | 4 | |
| *Erebia ottomana* | 2 | |
| *Erebia graucasica* | 4 | Wagener |
| *Erebia iranica* | 2 | Wagener |
| *Erebia melancholica* | 4 | Wagener |
| *Erebia tyndarus* | 4 | |
| *Erebia nivalis* | 4 | |
| *Erebia calcaria* | 4 | |
| *Erebia cassioides* | 4 | |
| *Erebia hispania* | 4 | |
| *Erebia pronoe* | 4 | |
| *Erebia lefebvrei* | 4 | |
| *Erebia scipio* | 4 | |
| *Erebia stirius* | 4 | |
| *Erebia styx* | 4 | |
| *Erebia montana* | 4 | |
| *Erebia zapateri* | 4 | |
| *Erebia neoridas* | 4 | |
| *Erebia melas* | 4 | |
| *Erebia oeme* | 4 | |
| *Erebia meolans* | 4 | |
| *Erebia palarica* | 4 | |
| *Erebia discoidalis* | 2 | |
| *Erebia dabanensis** | 1 | |
| *Erebia pandrose* | 2 | |
| *Erebia sthennyo* | 4 | |
| *Melanargia russiae* | 2 | Lukhtanov, Wagener |
| *Melanargia galathea* | 3 | |
| *Melanargia lachesis* | 4 | |
| *Melanargia syriaca* | 4 | Wagener |
| *Melanargia hylata* | 2 | Wagener |
| *Melanargia grumi* | 4 | Wagener |
| *Melanargia titea* | 2 | Wagener |
| *Melanargia larissa* | 4 | Wagener |
| *Melanargia arge* | 4 | |
| *Melanargia occitanica* | 2 | Wagener |
| *Melanargia pherusia* | 4 | |
| *Melanargia ines* | 2 | Wagener |
| *Satyrus favonius* | 2 | Wagener |
| *Satyrus parthicus* | 2 | Wagener |
| *Satyrus ferula* | 2 | |
| *Satyrus amasinus* | 2 | Wagener |
| *Satyrus actaea* | 4 | Lukhtanov |
| *Minois dryas* | 2 | |
| *Hipparchia fagi* | 4 | |
| *Hipparchia alcyone* | 2 | |
| *Hipparchia syriaca* | 2 | |
| *Hipparchia autonoe* | 2 | |
| *Hipparchia neomiris* | 4 | |
| *Hipparchia aristaeus* | 4 | |
| *Hipparchia cretica* | 4 | |
| *Hipparchia semele* | 4 | |
| *Hipparchia mersina** | 4 | |
| *Hipparchia volgensis* | 4 | |
| *Hipparchia christenseni* | 4 | |
| *Hipparchia pellucida* | 2 | |
| *Hipparchia statilinus* | 3 | |
| *Hipparchia fatua* | 2 | |
| *Hipparchia parisatis* | 2 | Wagener |
| *Hipparchia fidia* | 3 | |
| *Hipparchia maderensis* | 4 | |
| *Hipparchia azorina* | 4 | |
| *Hipparchia occidentalis** | 4 | |
| *Hipparchia miguelensis* | 4 | |
| *Hipparchia wyssii* | 4 | |
| *Hipparchia bacchus* | 4 | |
| *Hipparchia gomera* | 4 | |
| *Hipparchia tilosi* | 4 | |
| *Hipparchia senthes* | 2 | |
| *Arethusana arethusa* | 2 | |
| *Brintesia circe* | 3 | |
| *Chazara briseis* | 2 | |
| *Chazara persephone* | 2 | Wagener |
| *Chazara egina* | 4 | Wagener |
| *Chazara bischoffii* | 2 | Wagener |
| *Chazara prieuri* | 3 | |
| *Pseudochazara geyeri* | 2 | |
| *Pseudochazara beroe* | 2 | Wagener |
| *Pseudochazara graeca* | 4 | |
| *Pseudochazara amymone* | 4 | |
| *Pseudochazara orestes* | 4 | |
| *Pseudochazara euxina* | 4 | |
| *Pseudochazara hippolyte** | 2 | |
| *Pseudochazara quirensis** | 1 | |
| *Pseudochazara lydia* | 4 | Wagener |
| *Pseudochazara mamurra** | 3 | |
| *Pseudochazara schakuhensis* | 2 | Wagener |
| *Pseudochazara pelopea* | 2 | Wagener |
| *Pseudochazara alpina** | 1 | |
| *Pseudochazara mniszechii* | 4 | |
| *Pseudochazara cingovskii* | 4 | |
| *Pseudochazara anthelea** | 4 | |
| *Pseudochazara thelephassa* | 2 | Wagener |
| *Oeneis norna* | 2 | |
| *Oeneis bore* | 2 | |
| *Oeneis glacialis* | 4 | |
| *Oeneis jutta* | 2 | |
| *Oeneis melissa* | 1 | |
| *Oeneis patrushevae** | 1 | |
| *Oeneis polixenes** | 1 | |
| *Oeneis tarpeia* | 2 | |
| *Danaus plexippus* | 1 | |
| *Danaus chrysippus* | 1 | |

# Appendix 2

## Method for calculating present distribution and trend in Europe from country data

### A. Calculate the present distribution in Europe

1. Convert the abundance-class of every species in every country to the midpoint area:
   p.a. <1% = 0.5%
   p.a. 1-5% = 3%
   p.a. 5-15% = 10%
   p.a. >15% = 57.5%
   If the present abundance is unknown, the country is not used in the further calculation for that species.
2. This percentage is used to calculate the area of distribution per country.
3. The sum of these areas gives the total area of distribution in Europe.
4. The percentage-class of the total area of Europe is determined.

### B. Calculate the trend in Europe

1. Select the countries where a trend is given.
2. For these countries the trend-class of every species is converted to the midpoint trend:
   extinct: trend = -1
   decrease 75-100%: trend = -0.875
   decrease 50-75%: trend = -0.625
   decrease 25-50%: trend = -0.375
   decrease 15-25% = -0.2
   stable: trend = 0
   increase 125-200%: trend = +0.625
   increase >200%: trend = +1
3. Use the present distribution (from A.2) to calculate the distribution per country ± 25 years ago:

$$old\ distribution = \left( \frac{present\ distribution}{trend + 1} \right)$$

4. Sum the old distribution per country to get the total area of distribution ± 25 years ago.
5. Use the present distribution in Europe (result of A.3) to calculate the European trend:

$$European\ trend = \left( \frac{present\ distribution\ in\ Europe}{old\ distribution\ in\ Europe} \right) - 1$$

### C. Assessment of data quality

1. For every species sum the present distribution per country (result of A.2) for the countries with a poor quality of trend estimation or where trend is 'unknown'.
2. Calculate the percentage of the total distribution area (result of A.3) where trend estimation is poor or unknown.

# Appendix 3
## Quality of estimations as indicated by the compilers

**Estimation of present distribution:**
*very good*: nearly all populations are known.
*good*: there is a distribution atlas available. Although maybe not complete, it gives a good idea on the present distribution. Many other records have been published in books and local papers.
*moderate*: I used extensive experience of myself and other specialists to make a best professional judgement.
*poor*: for many species I have no idea, but for the most threatened ones I used some limited experience of myself and colleagues.

**Estimation of trend:**
*very good*: I was able to correct for differences in investigation intensity or I could use the results of a butterfly monitoring scheme.
*good*: since most of the data is computerized I was able to make a good comparison.
*moderate*: I used extensive experience of myself and other specialists to make a best professional judgement.
*poor*: for many species I have no idea, but for the most threatened ones I used some limited experience of myself and colleagues.

| Country | Quality distribution | Quality Trend |
|---|---|---|
| Albania | moderate | poor |
| Andorra | moderate | poor |
| Austria | good | moderate |
| Belarus | moderate | moderate |
| Belgium | good | good |
| Bosnia | unknown | unknown |
| Bulgaria | moderate | moderate |
| Croatia | moderate | poor |
| Cyprus | good | poor |
| Czech Republic | very good | moderate |
| Denmark | good | good |
| Estonia | moderate | moderate |
| Finland | good | good |
| France | moderate | moderate |
| Germany | good | poor |
| Greece | good | moderate |
| Hungary | moderate | moderate |
| Ireland | good | moderate |
| Italy | good | moderate |
| Latvia | moderate | moderate |
| Liechtenstein | very good | moderate |
| Lithuania | moderate | moderate |
| Luxemburg | good | good |
| Former Yugoslav Republic of Macedonia | unknown | unknown |
| Malta | good | good |
| Moldova | moderate | moderate |
| Netherlands | very good | very good |
| Norway | good | poor |
| Poland | good | good |
| Portugal | poor | poor |
| Azores | moderate | moderate |
| Madeira | moderate | moderate |
| Romania | good | moderate |
| Russia (European part) | moderate | poor |
| Slovakia | good | moderate |
| Slovenia | good | good |
| Spain | good | moderate |
| Canary Islands | moderate | moderate |
| Sweden | good | good |
| Switzerland | good | moderate |
| Turkey (Asian part) | good | good |
| Turkey (European part) | good | good |
| Ukraine | good | good |
| United Kingdom | good | good |
| Yugoslavia | unknown | unknown |

Appendix 4: Present distribution (%) category of butterflies in the European countries, as reported by the compilers. The abbrevations of the countries are given in part I, section 2.1. * migratory species, no distr. data given.

| Species | A | AL | AND | AZO | B | BG | BIH | BY | CAN | CH | CY | CZ | D | DK | E | EST | F | FIN | FL | FYROM | GB | GR | H | HR | I | IRL | L | LT | LV | M | MAD | MD | N | NL | P | PL | RO | RUS | RUS-NE | RUS-SE | RUS-YA | S | SK | SLO | TRA | TRE | UA | YU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Erynnis tages* | >15 | 5-15 | >15 | | 5-15 | >15 | >15 | 1-5 | | 5-15 | | >15 | ? | 5-15 | >15 | 1-5 | >15 | | 5-15 | >15 | >15 | >15 | >15 | 5-15 | >15 | 5-15 | 5-15 | <1 | <1 | | | >15 | >15 | <1 | <1 | >15 | >15 | >15 | <1 | <1 | | >15 | >15 | >15 | >15 | 1-5 | >15 | >15 |
| *Erynnis marloyi* | | 5-15 | | | | <1 | | | | | | | | | | | | | | <1 | | 5-15 | | | | | | | | | | | | | | | | | | | | | | | | 5-15 | <1 | <1 | |
| *Carcharodus alceae* | 1-5 | 5-15 | >15 | | 5-15 | >15 | 5-15 | <1 | | 1-5 | >15 | 5-15 | 5-15 | | >15 | | >15 | | | 5-15 | | >15 | >15 | >15 | >15 | | 1-5 | | | | | 1-5 | | | >15 | 5-15 | 1-5 | >15 | 1-5 | 1-5 | | | 1-5 | 1-5 | >15 | 1-5 | 5-15 | 5-15 |
| *Carcharodus lavatherae* | 1-5 | 5-15 | >15 | | | 1-5 | 5-15 | | | <1 | | | <1 | | ? | | ? | | | 5-15 | | >15 | 1-5 | 5-15 | 5-15 | | | | | | | <1 | | | | 1-5 | 5-15 | | <1 | | | <1 | <1 | >15 | <1 | <1 | 5-15 |
| *Carcharodus floccifera* | <1 | 5-15 | ? | | | 1-5 | 5-15 | ? | | <1 | | | <1 | | ? | <1 | 5-15 | | | >15 | | 5-15 | 5-15 | 5-15 | 5-15 | | | 1-5 | <1 | | | <1 | | | <1 | <1 | 5-15 | >15 | 1-5 | 1-5 | <1 | | <1 | 1-5 | 1-5 | | 5-15 | 5-15 |
| *Carcharodus orientalis* | | 5-15 | | | | 1-5 | | | | | | | | | | | | | | <1 | | >15 | | <1 | | | | | | | | | | | | ? | 5-15 | | | | | | | >15 | 1-5 | <1 | |
| *Carcharodus baeticus* | | 5-15 | | | | | | | | <1 | | | | | >15 | | 5-15 | | | | | | | | 1-5 | | | | | | | | | | 1-5 | | | | | | | | | | | | | |
| *Carcharodus stauderi* | | | | | | | | | | | | | | | | | | | | | | <1 | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Spialia phlomidis* | | 5-15 | | | | <1 | | | | | | | | | | | | | | <1 | | 5-15 | | | | | | | | | | | | | | | | | | | | | | | 5-15 | <1 | | <1 |
| *Spialia osthelderi* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Spialia sertorius* | 5-15 | 5-15 | 5-15 | | 5-15 | | 1-5 | | | 5-15 | | 5-15 | 5-15 | | >15 | | >15 | | 1-5 | | | | 1-5 | 1-5 | >15 | | 1-5 | | | | | | | <1 | | <1 | 1-5 | | | | | | 5-15 | 5-15 | | | <1 | |
| *Spialia orbifer* | | 1-5 | | | | 5-15 | >15 | | | | | | | | | | | | | >15 | | >15 | 1-5 | 5-15 | <1 | | | | | | | | | | | | >15 | <1 | <1 | | | 1-5 | | >15 | 1-5 | <1 | >15 |
| *Spialia therapne* | | | | | | | | | | | | | | | | | 1-5 | | | | | | | | <1 | | | | | | | | | | | | | | | | | | | | | | | |
| *Muschampia proto* | | | | | | | | | | | | | | | >15 | | 1-5 | | | <1 | | 5-15 | | <1 | 1-5 | | | | | | | | | | 1-5 | | ? | | <1 | | | | | 1-5 | | 1-5 | 1-5 |
| *Muschampia proteides* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 5-15 | | | |
| *Muschampia poggei* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 5-15 | | | |
| *Muschampia plurimacula* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | |
| *Muschampia tessellum* | | | | | | <1 | | | | | | | | | | | | | | <1 | | 1-5 | | | | | | | | | | | | | | <1 | >15 | <1 | 1-5 | | | | | >15 | <1 | 5-15 | |
| *Muschampia cribrellum* | | | | | | | | | | | | | | | | | | | | <1 | | | | | | | | | | | | | | | | <1 | ? | | 1-5 | | | | | | | <1 | | |
| *Pyrgus carthami* | 5-15 | 5-15 | ? | | <1 | 1-5 | 1-5 | ? | | 1-5 | | 5-15 | 1-5 | | >15 | | 5-15 | | | 5-15 | | 1-5 | >15 | 1-5 | 5-15 | | | <1 | | | | <1 | | | 1-5 | >15 | 5-15 | <1 | 1-5 | | | 5-15 | 1-5 | <1 | <1 | 1-5 | 1-5 |
| *Pyrgus sidae* | | 1-5 | | | | 5-15 | <1 | | | | | | | | <1 | | 1-5 | | | 1-5 | | >15 | <1 | <1 | 1-5 | | | | | | | <1 | | | | <1 | 5-15 | | <1 | | | | ? | >15 | 1-5 | <1 | 1-5 |
| *Pyrgus andromedae* | 5-15 | | | | | | <1 | | | 5-15 | | | <1 | | ? | | 1-5 | <1 | 5-15 | <1 | | | | | 1-5 | | | | | | | | 5-15 | | | | 1-5 | <1 | | 5-15 | | 1-5 | | | <1 | <1 |
| *Pyrgus cacaliae* | 5-15 | | >15 | | | <1 | | | | >15 | | | <1 | | <1 | | 1-5 | | 5-15 | | | | | | 1-5 | | | | | | | | | | | 1-5 | | | | | | | | | | | |
| *Pyrgus centaureae* | | | | | | | | | | | | | | | | | | >15 | | | | | | | | | | | | | | | | >15 | | | | 1-5 | 1-5 | | | >15 | | | | | |
| *Pyrgus malvae* | >15 | 5-15 | | | 5-15 | >15 | 5-15 | 5-15 | | 5-15 | | >15 | >15 | >15 | >15 | >15 | >15 | >15 | 1-5 | >15 | 5-15 | >15 | >15 | >15 | <1 | | 5-15 | >15 | >15 | | | 5-15 | >15 | 1-5 | 1-5 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | 1-5 | <1 | >15 | >15 |
| *Pyrgus melotis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | >15 | | | |
| *Pyrgus malvoides* | 1-5 | | >15 | | | | | | | 5-15 | | | | | | | >15 | | 1-5 | 5-15 | | | | | 5-15 | | | | | | | | | | | | | | | | | | | 1-5 | | | | |
| *Pyrgus serratulae* | 5-15 | 5-15 | >15 | | <1 | 1-5 | 1-5 | <1 | | 1-5 | | 5-15 | 1-5 | | >15 | <1 | ? | | 5-15 | <1 | | >15 | 1-5 | <1 | 5-15 | | <1 | <1 | <1 | | | | | | | 1-5 | 1-5 | >15 | 5-15 | 5-15 | | | 1-5 | ? | >15 | 1-5 | 1-5 | <1 |
| *Pyrgus onopordi* | | | | | | | | | | <1 | | | <1 | | ? | | 5-15 | | | | | | | | 1-5 | | | | | | | | | | 5-15 | | | | | | | | | ? | | | | |
| *Pyrgus carlinae* | | | | | | | | | | 1-5 | | | | | | | 1-5 | | | | | | | | 1-5 | | | | | | | | | | | | | | | | | | | | | | | |
| *Pyrgus cirsii* | ? | | ? | | | | | | | <1 | | | <1 | | >15 | | ? | | | | | | | | <1 | | | | | | | | | | <1 | | | | | | | | | ? | 1-5 | | | |
| *Pyrgus cinarae* | | | | | | <1 | | | | | | | | | <1 | | | | | <1 | | 5-15 | | | | | | | | | | | | | | ? | | <1 | | | | | 5-15 | <1 | <1 | |
| *Pyrgus armoricanus* | 1-5 | 1-5 | | | <1 | 1-5 | 1-5 | | | 1-5 | | 1-5 | <1 | <1 | ? | | 5-15 | | | >15 | | >15 | 1-5 | >15 | 5-15 | | | | | | | | | | <1 | 1-5 | >15 | | ? | | <1 | 1-5 | 1-5 | >15 | 1-5 | 1-5 | <1 |
| *Pyrgus alveus* | >15 | 5-15 | | | | >15 | 1-5 | 1-5 | | 5-15 | | 5-15 | 1-5 | | ? | 1-5 | 5-15 | >15 | 5-15 | >15 | | 5-15 | 5-15 | 5-15 | 5-15 | | ? | 5-15 | 5-15 | | | | >15 | | 1-5 | 1-5 | 1-5 | >15 | 5-15 | >15 | | 5-15 | 5-15 | 5-15 | 1-5 | | >15 | 1-5 |
| *Pyrgus bellieri* | | 1-5 | | | | | | | | | | | | | ? | | 1-5 | | | | | | | | <1 | | | | | | | | | | | | | | | | | | | | | | | |
| *Pyrgus warrenensis* | ? | | | | | | | | | 1-5 | | | <1 | | | | | | | | | | | | 1-5 | | | | | | | | | | | | | | | | | | | | <1 | | | |
| *Pyrgus jupei* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | |
| *Pyrgus bolkariensis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | |

Appendix 4: Present distribution (%) category of butterflies in the European countries, as reported by the compilers. The abbrevations of the countries are given in part I, section 2.1. * migratory species, no distr. data given.

| Species | A | AL | AND | AZO | B | BG | BIH | BY | CAN | CH | CY | CZ | D | DK | E | EST | F | FIN | FL | FYROM | GB | GR | H | HR | I | IRL | L | LT | LV | M | MAD | MD | N | NL | P | PL | RO | RUS | RUS-NE | RUS-SE | RUS-YA | S | SK | SLO | TRA | TRE | UA | YU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Pyrgus aladaghensis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | |
| *Heteropterus morpheus* | <1 | | | | <1 | <1 | 5-15 | 1-5 | | 1-5 | | 5-15 | >15 | | 5-15 | 1-5 | 5-15 | | | | | | 1-5 | <1 | 5-15 | | | 5-15 | 1-5 | | | | | 1-5 | | 5-15 | <1 | >15 | 1-5 | 1-5 | 1-5 | | 1-5 | 1-5 | <1 | <1 | 1-5 | 1-5 |
| *Carterocephalus palaemon* | 5-15 | | | | 5-15 | 5-15 | 5-15 | 1-5 | | 5-15 | | >15 | >15 | | <1 | >15 | >15 | >15 | >15 | | <1 | <1 | >15 | <1 | 1-5 | | <1 | 1-5 | 5-15 | | | | 5-15 | 5-15 | | >15 | 5-15 | >15 | >15 | 5-15 | 1-5 | >15 | >15 | >15 | <1 | | >15 | 1-5 |
| *Carterocephalus silvicola* | | | | | | | | 5-15 | | | | | 1-5 | <1 | | >15 | | >15 | | | | | | | | | | >15 | >15 | | | | 1-5 | | | 5-15 | | >15 | >15 | 1-5 | 5-15 | >15 | <1 | | | <1 | |
| *Eogenes alcides* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Eogenes lesliei* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | |
| *Thymelicus lineola* | 5-15 | 5-15 | >15 | | >15 | 5-15 | 5-15 | 5-15 | | 5-15 | | >15 | 5-15 | >15 | >15 | >15 | >15 | >15 | 5-15 | >15 | >15 | >15 | >15 | 5-15 | >15 | | 5-15 | >15 | >15 | | | | 1-5 | >15 | ? | >15 | 1-5 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | 1-5 | >15 | 5-15 |
| *Thymelicus sylvestris* | 5-15 | 5-15 | >15 | | >15 | 5-15 | 5-15 | 1-5 | | >15 | | >15 | 5-15 | >15 | >15 | >15 | >15 | | 5-15 | >15 | >15 | >15 | >15 | 1-5 | >15 | | >15 | >15 | >15 | | | | | >15 | ? | >15 | 5-15 | >15 | 1-5 | >15 | ? | | >15 | >15 | >15 | 5-15 | >15 | 5-15 |
| *Thymelicus novus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Thymelicus acteon* | 5-15 | 5-15 | 5-15 | | 1-5 | 5-15 | 5-15 | | 5-15 | 1-5 | >15 | 5-15 | 5-15 | | >15 | | >15 | | | >15 | <1 | >15 | 5-15 | 1-5 | >15 | | 1-5 | | | | | | | <1 | ? | 1-5 | 1-5 | <1 | | | | | 1-5 | 1-5 | 5-15 | 1-5 | <1 | 5-15 |
| *Thymelicus hyrax* | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | | | | | | | | | | | | | | | | | | | | | | 5-15 | | | |
| *Hesperia comma* | >15 | 5-15 | >15 | | 1-5 | 5-15 | >15 | 1-5 | | 5-15 | | >15 | 5-15 | 5-15 | >15 | >15 | >15 | 1-5 | 5-15 | >15 | <1 | >15 | 5-15 | 1-5 | >15 | | 1-5 | 1-5 | 1-5 | | | 1-5 | >15 | 5-15 | >15 | 5-15 | 1-5 | ? | 5-15 | ? | 5-15 | >15 | >15 | >15 | 5-15 | | >15 | >15 |
| *Ochlodes venata* | >15 | 5-15 | >15 | | >15 | 5-15 | >15 | 5-15 | | >15 | | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | | >15 | >15 | >15 | | | | >15 | >15 | 5-15 | >15 | 1-5 | | >15 | >15 | 5-15 | >15 | >15 | >15 | 5-15 | 1-5 | >15 | >15 |
| *Gegenes pumilio* | | 5-15 | | | | | | | | | 1-5 | | | | <1 | | <1 | | | | | >15 | | 1-5 | 1-5 | | | | | 5-15 | | | | | | | | | | | | | | 1-5 | | | 1-5 |
| *Gegenes nostrodamus* | | 5-15 | | | | <1 | 1-5 | | | | | | | | 5-15 | | | | | <1 | | >15 | | 1-5 | 1-5 | | | | | | | | | <1 | | | | | | | | | 1-5 | <1 | | 1-5 |
| *Borbo borbonica* | | | | | | | | | | | | | | | <1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Pelopidas thrax* | | | | | | | | | | | 1-5 | | | | | | | | | | | <1 | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Zerynthia rumina* | | | <1 | | | | | | | | | | | | >15 | | 5-15 | | | | | | | | | | | | | | | | | >15 | | | | | | | | | | | | | |
| *Zerynthia polyxena* | <1 | 1-5 | | | | 5-15 | 5-15 | | | <1 | | 1-5 | <1 | | | | 5-15 | | | 5-15 | | >15 | 5-15 | 5-15 | 5-15 | | | | | | | <1 | | | | <1 | 1-5 | | <1 | | | 5-15 | 5-15 | 1-5 | 1-5 | 1-5 | 1-5 |
| *Zerynthia cerisy* | | 1-5 | | | | 5-15 | <1 | | | | 5-15 | | | | | | | | | 5-15 | | 5-15 | | <1 | | | | | | | | | | | | | <1 | | | | | | | >15 | 1-5 | | 5-15 |
| *Zerynthia deyrollei* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | >15 | | | |
| *Zerynthia caucasica* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Zerynthia cretica* | | | | | | | | | | | | | | | | | | | | | | 5-15 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Archon apollinus* | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | | | | | | | | | | | | | | | | | | | | | | 5-15 | 1-5 | | |
| *Archon apollinaris* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Parnassius mnemosyne* | <1 | 1-5 | 1-5 | | | 5-15 | 5-15 | 1-5 | | 1-5 | | 1-5 | <1 | | <1 | 5-15 | >15 | 1-5 | | 5-15 | | 5-15 | 5-15 | 5-15 | 5-15 | | | >15 | <1 | | | 1-5 | 1-5 | | 1-5 | 1-5 | 5-15 | 5-15 | 1-5 | 1-5 | 1-5 | 5-15 | 5-15 | 5-15 | <1 | 5-15 | 5-15 |
| *Parnassius nordmanni* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | |
| *Parnassius phoebus* | 1-5 | | | | | | | | | 1-5 | | | <1 | | | | 5-15 | | <1 | | | | | | 1-5 | | | | | | | | | | | | ? | <1 | | | | | | | | | |
| *Parnassius apollo* | 5-15 | 1-5 | >15 | | | 5-15 | 5-15 | ? | | 5-15 | | <1 | <1 | | >15 | | >15 | 1-5 | 1-5 | 5-15 | | 5-15 | | 1-5 | >15 | | | | <1 | | | | >15 | | | <1 | <1 | 1-5 | 1-5 | <1 | <1 | 5-15 | 1-5 | 5-15 | 5-15 | | <1 | 5-15 |
| *Iphiclides podalirius* | 5-15 | 5-15 | >15 | | 1-5 | 5-15 | >15 | | | 5-15 | | >15 | 1-5 | | >15 | | >15 | | <1 | >15 | | >15 | >15 | 5-15 | >15 | | <1 | | | | | >15 | | | >15 | 1-5 | 5-15 | 5-15 | 1-5 | >15 | | | 5-15 | 5-15 | >15 | 5-15 | >15 | 5-15 |
| *Papilio machaon* | >15 | 5-15 | >15 | | >15 | 5-15 | 1-5 | 1-5 | | >15 | >15 | >15 | >15 | <1 | >15 | >15 | >15 | >15 | >15 | 1-5 | <1 | >15 | >15 | 5-15 | >15 | | 5-15 | >15 | >15 | >15 | | | >15 | >15 | 5-15 | >15 | >15 | 5-15 | >15 | >15 | >15 | <1 | >15 | >15 | 5-15 | >15 | 5-15 | >15 | 1-5 |
| *Papilio hospiton* | | | | | | | | | | | | | | | | | 1-5 | | | | | | | | 1-5 | | | | | | | | | | | | | | | | | | | | | | | |
| *Papilio alexanor* | | 1-5 | | | | | <1 | | | | | | | | | | 5-15 | | | <1 | | 5-15 | | <1 | <1 | | | | | | | | | | | | | | | | | | | | 5-15 | | | <1 |
| *Leptidea sinapis complex* | >15 | >15 | >15 | | ? | >15 | >15 | 5-15 | | >15 | | >15 | >15 | <1 | >15 | >15 | >15 | >15 | 5-15 | >15 | 1-5 | >15 | >15 | >15 | >15 | >15 | 5-15 | >15 | >15 | | | 1-5 | >15 | | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | 5-15 | >15 | >15 |
| *Leptidea duponcheli* | | 1-5 | | | | 1-5 | | | | | | | | | | | 1-5 | | | 5-15 | | 5-15 | | | | | | | | | | | | | | | 1-5 | | | | | | | >15 | 1-5 | <1 | 1-5 |
| *Leptidea morsei* | 1-5 | | | | | | 1-5 | ? | | | | <1 | | | | | | | | | | | 1-5 | 1-5 | <1 | | | | | | | <1 | | | | <1 | ? | 1-5 | <1 | | | 1-5 | <1 | | | <1 | <1 |
| *Anthocharis cardamines* | >15 | 5-15 | >15 | | >15 | >15 | >15 | 5-15 | | >15 | 5-15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | 5-15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | | | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | 5-15 | >15 | >15 | >15 | >15 | 1-5 | >15 | >15 |
| *Anthocharis euphenoides* | | | >15 | | | | | | | | | | | | >15 | | 1-5 | | | | | | | | 1-5 | | | | | | | | | | 5-15 | | | | | | | | | | | | | |

Appendix 4: Present distribution (%) category of butterflies in the European countries, as reported by the compilers. The abbrevations of the countries are given in part I, section 2.1. * migratory species, no distr. data given.

| Species | A | AL | AND | AZO | B | BG | BIH | BY | CAN | CH | CY | CZ | D | DK | E | EST | F | FIN | FL | FYROM | GB | GR | H | HR | I | IRL | L | LT | LV | M | MAD | MD | N | NL | P | PL | RO | RUS | RUS-NE | RUS-SE | RUS-YA | S | SK | SLO | TRA | TRE | UA | YU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Anthocharis damone* | | | | | | | | | | | | | | | | | | | | <1 | | 1-5 | | | <1 | | | | | | | | | | | | | | | | | | | | 5-15 | <1 | | |
| *Anthocharis gruneri* | | 1-5 | | | | <1 | | | | | | | | | | | | | | <1 | | >15 | | | | | | | | | | | | | | | | | | | | | | | 5-15 | | | |
| *Zegris eupheme* | | | | | | | | | | | | | | | >15 | | | | | | | | | | | | | | | | | | | | | | 5-15 | | 1-5 | | | | | 5-15 | | 1-5 | |
| *Zegris pyrothoe* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | <1 | | | | | | | | |
| *Euchloe belemia* | | | | | | | | | 5-15 | | | | | | >15 | | | | | | | | | | | | | | | | | | | | >15 | | | | | | | | | 1-5 | | | |
| *Euchloe crameri* | | | ? | | | | | | | | | | | | >15 | | >15 | | | | | | | | 1-5 | | | | | | | | | | | | | | | | | | | | | | |
| *Euchloe simplonia* | | | | | | | | | | 1-5 | | | | | | | 1-5 | | | | | | | | 1-5 | | | | | | | | | | | | | | | | | | | | | | |
| *Euchloe ausonia* | | >15 | ? | | | 1-5 | <1 | | | | 5-15 | | | | | | 5-15 | | | 1-5 | | >15 | | 1-5 | >15 | | | | | | | <1 | | | >15 | | <1 | 5-15 | 1-5 | 1-5 | | | | | >15 | 5-15 | 1-5 | <1 |
| *Euchloe tagis* | | | | | | | | | | | | | | | >15 | | 1-5 | | | | | | | | <1 | | | | | | | | | | <1 | | | | | | | | | | | | |
| *Euchloe insularis* | | | | | | | | | | | | | | | | | <1 | | | | | | | | 1-5 | | | | | | | | | | | | | | | | | | | | | | |
| *Euchloe charlonia* | | | | | | | | | 1-5 | | | | | | <1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Euchloe penia* | | <1 | | | | <1 | | | | | | | | | | | | | | <1 | | 1-5 | | | | | | | | | | | | | | | | | | | | | | | 5-15 | <1 | | |
| *Aporia crataegi* | 5-15 | >15 | >15 | | 5-15 | >15 | >15 | 5-15 | | 5-15 | | <1 | >15 | >15 | >15 | >15 | >15 | >15 | 1-5 | >15 | <1 | >15 | 5-15 | 1-5 | >15 | | 5-15 | 5-15 | >15 | | | | 5-15 | <1 | | 1-5 | >15 | >15 | >15 | >15 | 1-5 | >15 | 5-15 | >15 | >15 | 5-15 | >15 | 5-15 |
| *Pieris brassicae* | >15 | >15 | >15 | >15 | >15 | >15 | 1-5 | 5-15 | | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | 1-5 | 5-15 | 5-15 | >15 | >15 | >15 | 5-15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | | >15 | >15 | >15 | >15 | | >15 | >15 | 5-15 | >15 | >15 | 5-15 | >15 | >15 | >15 | 5-15 | >15 | 1-5 |
| *Pieris wollastoni* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | | | | | | | | | | | | | | |
| *Pieris cheiranthi* | | | | | | | | | 5-15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Pieris krueperi* | | 5-15 | | | | 1-5 | | | | | | | | | | | | | | 1-5 | | 5-15 | | | | | | | | | | | | | | | | | | | | | | | 5-15 | | | |
| *Pieris mannii* | <1 | 5-15 | | | | 1-5 | 5-15 | | | 1-5 | | | | | 1-5 | | 1-5 | | | 5-15 | | >15 | 1-5 | 1-5 | 5-15 | | | | | | | | | | | <1 | | | | | | | <1 | 5-15 | >15 | 1-5 | | 1-5 |
| *Pieris rapae* | >15 | >15 | >15 | | >15 | 5-15 | >15 | 5-15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | <1 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | 5-15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 |
| *Pieris ergane* | ? | 1-5 | | | | 1-5 | 5-15 | | | | | | | | <1 | | 1-5 | | | 5-15 | | >15 | 1-5 | 1-5 | 5-15 | | | | | | | | | | | | <1 | | | | | | 1-5 | >15 | | | 1-5 |
| *Pieris napi* | >15 | 5-15 | >15 | | >15 | 5-15 | >15 | >15 | | >15 | | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | | | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | 5-15 |
| *Pieris bryoniae* | >15 | | | | | | | | | 5-15 | | <1 | >15 | | | | >15 | 1-5 | 5-15 | | | | 1-5 | | 5-15 | | | | | | | | | | | <1 | 1-5 | | | | | 5-15 | >15 | 1-5 | | <1 | |
| *Pieris bowdeni* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Pieris balcana* | | | | | | ? | ? | | | | | | | | | | | | | 5-15 | | >15 | | 5-15 | | | | | | | | | | | | | | | | | | | | | | | | <1 |
| *Pontia callidice* | 5-15 | | >15 | | | | | | | >15 | | | ? | | <1 | | 1-5 | | 1-5 | | | | | | 5-15 | | | | | | | | | | | | | >15 | 1-5 | <1 | | | | ? | 1-5 | | | |
| *Pontia daplidice complex* | | >15 | >15 | | | >15 | 5-15 | 1-5 | 5-15 | 1-5 | >15 | >15 | ? | | ? | | >15 | | | >15 | | >15 | >15 | 1-5 | 1-5 | | | | | >15 | | 1-5 | | | >15 | >15 | 5-15 | >15 | 5-15 | >15 | 1-5 | <1 | >15 | ? | >15 | 5-15 | >15 | >15 |
| *Pontia chloridice* | | <1 | | | | <1 | | | | | 1-5 | | | | | | | | | <1 | | 1-5 | | | | | | | | | >15 | | | | | | >15 | <1 | 1-5 | | | | | 5-15 | <1 | <1 | |
| *Colotis evagore* | | | | | | | | | | | | | | | <1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Catopsilia florella* | | | | | | | | | 5-15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Colias phicomone* | 5-15 | | >15 | | | | | | | >15 | | | ? | | 5-15 | | 1-5 | | 5-15 | | | | | | 5-15 | | | | | | | | | | | | | | | | | | | | | <1 | | |
| *Colias nastes* | | | | | | | | | | | | | | | | | | <1 | | | | | | | | | | | | | | | | | | | 5-15 | | | | | 5-15 | <1 | | | >15 | | | | |
| *Colias palaeno* | 1-5 | | | | <1 | | | 5-15 | | >15 | | 1-5 | 1-5 | | | >15 | 1-5 | >15 | <1 | | | | | | 1-5 | | | 5-15 | 1-5 | | | | | >15 | | | 1-5 | | ? | >15 | <1 | <1 | >15 | <1 | | | 1-5 | |
| *Colias erate* | 1-5 | | | | | 1-5 | | | | | | 5-15 | | | | | | | | <1 | | 1-5 | >15 | 1-5 | | | | | | | | 5-15 | | | | | 5-15 | >15 | | 1-5 | | | | ? | | 1-5 | >15 | 1-5 |
| *Colias croceus** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Colias chlorocoma* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Colias hecla* | | | | | | | | | | | | | | | | | | 1-5 | | | | | | | | | | | | | | | | 1-5 | | | | 1-5 | <1 | | | >15 | | | | | | |
| *Colias myrmidone* | <1 | | | | | ? | 5-15 | 1-5 | | | | 1-5 | <1 | | | | | | | | | | 1-5 | 1-5 | | | | | | | | | | | | | 1-5 | 5-15 | 5-15 | 5-15 | 1-5 | | | 1-5 | <1 | | | 5-15 | 1-5 |
| *Colias chrysotheme* | <1 | | | | | | | | | | | <1 | | | | | | | | | | | 5-15 | | | | | | | | | <1 | | | | | 5-15 | 5-15 | <1 | 1-5 | | | 1-5 | | | | 1-5 | |

Appendix 4: Present distribution (%) category of butterflies in the European countries, as reported by the compilers. The abbrevations of the countries are given in part I, section 2.1. * migratory species, no distr. data given.

| Species | A | AL | AND | AZO | B | BG | BIH | BY | CAN | CH | CY | CZ | D | DK | E | EST | F | FIN | FL | FYROM | GB | GR | H | HR | I | IRL | L | LT | LV | M | MAD | MD | N | NL | P | PL | RO | RUS | RUS-NE | RUS-SE | RUS-YA | S | SK | SLO | TRA | TRE | UA | YU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Colias aurorina* | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | | | | | | | | | | | | | | 1-5 | | | | | | | 5-15 | | | <1 |
| *Colias caucasica* | | | | | | <1 | <1 | | | | | | | | | | | | | <1 | | 1-5 | | | | | | | | | | | | | | | | | | | | | | | <1 | | | <1 |
| *Colias thisoa* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Colias hyale* | >15 | | | | | <1 | 1-5 | 5-15 | | 5-15 | | >15 | >15 | | | >15 | >15 | | 5-15 | | | | >15 | 5-15 | 1-5 | | 5-15 | >15 | >15 | | | 5-15 | | | >15 | >15 | >15 | >15 | 5-15 | 5-15 | | >15 | 5-15 | 1-5 | | >15 | 1-5 |
| *Colias alfacariensis* | >15 | <1 | >15 | | 1-5 | >15 | 1-5 | | | 5-15 | | 5-15 | >15 | | >15 | | ? | | 5-15 | 5-15 | | 5-15 | >15 | 5-15 | >15 | | 1-5 | | | | | | | | <1 | >15 | | | >15 | | | 5-15 | >15 | >15 | | 5-15 | 1-5 |
| *Gonepteryx rhamni* | >15 | 5-15 | >15 | | >15 | >15 | 1-5 | 5-15 | | >15 | | >15 | >15 | >15 | >15 | >15 | >15 | >15 | 5-15 | 5-15 | >15 | >15 | >15 | >15 | >15 | 5-15 | >15 | >15 | >15 | | | | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | 1-5 | >15 | 1-5 |
| *Gonepteryx farinosa* | | 1-5 | | | | <1 | | | | | | | | | | | | | | <1 | | >15 | | | | | | | | | | | | | | | | | | | | | | | | <1 | | <1 |
| *Gonepteryx cleopatra* | | 5-15 | 5-15 | | | | 1-5 | | | | >15 | | | | >15 | | ? | | | | | >15 | | 1-5 | 5-15 | | | | | 5-15 | | | | | >15 | | | | | | | | | ? | 5-15 | 1-5 | | 1-5 |
| *Gonepteryx maderensis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | | | | | | | | | | | | | | | |
| *Gonepteryx cleobule* | | | | | | | | | 5-15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Hamearis lucina* | 5-15 | 1-5 | 5-15 | | 5-15 | 5-15 | 5-15 | ? | | 5-15 | | 5-15 | 5-15 | | >15 | 1-5 | ? | | 5-15 | <1 | 1-5 | 5-15 | 5-15 | 5-15 | 5-15 | | <1 | ? | <1 | | | <1 | | | <1 | 1-5 | >15 | 5-15 | | <1 | | 1-5 | >15 | >15 | | <1 | 1-5 | 5-15 |
| *Cigaritis maxima* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Cigaritis cilissa* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Cigaritis acamas* | | | | | | | | | | | <1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Lycaena phlaeas* | >15 | 5-15 | >15 | | >15 | >15 | 5-15 | 5-15 | >15 | 5-15 | >15 | >15 | ? | >15 | >15 | >15 | >15 | >15 | | 5-15 | >15 | >15 | >15 | 5-15 | >15 | >15 | 5-15 | >15 | >15 | >15 | 5-15 | <1 | >15 | >15 | >15 | >15 | 5-15 | >15 | 5-15 | 1-5 | 5-15 | >15 | >15 | >15 | >15 | 5-15 | >15 | 5-15 |
| *Lycaena helle* | <1 | | | | 5-15 | | | <1 | | 1-5 | | <1 | <1 | | <1 | | <1 | 5-15 | | | | | <1 | | | 1-5 | <1 | <1 | | | | 5-15 | | | 1-5 | 1-5 | 5-15 | >15 | 1-5 | <1 | >15 | <1 | | | <1 | | |
| *Lycaena dispar* | <1 | 5-15 | | | 1-5 | 5-15 | 1-5 | 5-15 | | <1 | | 5-15 | 1-5 | | | 5-15 | 5-15 | <1 | | 5-15 | <1 | 1-5 | >15 | 1-5 | 1-5 | | 1-5 | 5-15 | 1-5 | | | 1-5 | | <1 | | 5-15 | 1-5 | >15 | 5-15 | 5-15 | 1-5 | | 5-15 | 1-5 | <1 | <1 | >15 | 1-5 |
| *Lycaena virgaureae* | 5-15 | ? | >15 | | 1-5 | 5-15 | >15 | 5-15 | | 5-15 | | >15 | 5-15 | >15 | >15 | >15 | 5-15 | >15 | | >15 | | 5-15 | 5-15 | 1-5 | 5-15 | | 1-5 | >15 | >15 | | | | >15 | | | >15 | 5-15 | 5-15 | >15 | >15 | 5-15 | >15 | >15 | 5-15 | 5-15 | | 1-5 | >15 |
| *Lycaena ottomanus* | | 5-15 | | | | <1 | <1 | | | | | | | | | | <1 | | | <1 | | 5-15 | <1 | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | <1 |
| *Lycaena tityrus* | 5-15 | ? | >15 | | 5-15 | >15 | >15 | 1-5 | | 5-15 | | >15 | 5-15 | <1 | >15 | | >15 | | 5-15 | 5-15 | | >15 | >15 | 5-15 | >15 | | 5-15 | >15 | 1-5 | 5-15 | | | | >15 | 5-15 | >15 | 1-5 | 5-15 | 1-5 | 1-5 | | | 5-15 | >15 | >15 | 1-5 | >15 | 1-5 |
| *Lycaena alciphron* | 1-5 | ? | >15 | | | >15 | 5-15 | 1-5 | | 1-5 | | 5-15 | 1-5 | | >15 | 5-15 | ? | | | 1-5 | | 5-15 | >15 | 1-5 | >15 | | | >15 | 1-5 | | | | | | 5-15 | >15 | 1-5 | 5-15 | 1-5 | 1-5 | 1-5 | | 5-15 | 1-5 | >15 | 1-5 | 5-15 | 5-15 |
| *Lycaena hippothoe* | 5-15 | 5-15 | >15 | | 5-15 | | 5-15 | 5-15 | | 5-15 | | >15 | 1-5 | >15 | 5-15 | >15 | | >15 | 1-5 | 1-5 | | | 5-15 | 5-15 | 5-15 | | 5-15 | >15 | >15 | | | | >15 | <1 | | >15 | 1-5 | 5-15 | >15 | <1 | 1-5 | >15 | >15 | 5-15 | | | 1-5 | 1-5 |
| *Lycaena candens* | | | | | | 1-5 | 1-5 | | | | | | | | | | | | | 1-5 | | 1-5 | | 1-5 | | | | | | | | | | | | | | | | | | | | | | 5-15 | | | 1-5 |
| *Lycaena thersamon* | <1 | 5-15 | | | | 5-15 | <1 | | | | >15 | <1 | | | | | | | | <1 | | 5-15 | >15 | 5-15 | 1-5 | | | | | | | | | | | | <1 | 5-15 | <1 | 1-5 | | | 1-5 | ? | >15 | 5-15 | >15 | <1 |
| *Lycaena lampon* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | |
| *Lycaena thetis* | | | | | | | | | | | | | | | | | | | | <1 | | 1-5 | | | | | | | | | | | | | | | | | | | | | | | | >15 | | | |
| *Lycaena asabinus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 5-15 | | | |
| *Lycaena ochimus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | >15 | | | |
| *Lycaena phoenicurus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | |
| *Lycaena euphratica* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Thecla betulae* | 5-15 | ? | 5-15 | | >15 | 1-5 | 1-5 | <1 | | 1-5 | | >15 | >15 | 5-15 | 5-15 | 5-15 | 5-15 | 5-15 | 5-15 | 5-15 | 1-5 | 1-5 | >15 | 5-15 | 1-5 | 1-5 | 1-5 | 5-15 | >15 | | | <1 | 1-5 | 1-5 | | 5-15 | <1 | >15 | 5-15 | 1-5 | 1-5 | 5-15 | 5-15 | 1-5 | <1 | <1 | >15 | 1-5 |
| *Neozephyrus quercus* | 5-15 | ? | 5-15 | | >15 | 1-5 | 1-5 | 1-5 | | 1-5 | 1-5 | >15 | >15 | >15 | >15 | 5-15 | | 1-5 | 1-5 | 5-15 | >15 | >15 | >15 | 1-5 | 5-15 | 1-5 | 1-5 | 1-5 | 5-15 | | | <1 | 5-15 | >15 | 5-15 | 5-15 | <1 | >15 | | 1-5 | <1 | >15 | 5-15 | 5-15 | 5-15 | <1 | 5-15 | <1 |
| *Laeosopis roboris* | | | 5-15 | | | | | | | | | | | | >15 | | 1-5 | | | | | | | | | | | | | | | | | | >15 | | | | | | | | | | | | | |
| *Tomares ballus* | | | | | | | | | | | | | | | >15 | | <1 | | | | | | | | | | | | | | | | | | >15 | | | | | | | | | | | | | |
| *Tomares romanovi* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Tomares nogelii* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | | ? | | | <1 | | | | | | | 1-5 | | 1-5 | |
| *Tomares nesimachus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 5-15 | | | |
| *Tomares callimachus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | <1 | | | | | 1-5 | | <1 | |

Appendix 4: Present distribution (%) category of butterflies in the European countries, as reported by the compilers. The abbrevations of the countries are given in part I, section 2.1. * migratory species, no distr. data given.

| Species | A | AL | AND | AZO | B | BG | BIH | BY | CAN | CH | CY | CZ | D | DK | E | EST | F | FIN | FL | FYROM | GB | GR | H | HR | I | IRL | L | LT | LV | M | MAD | MD | N | NL | P | PL | RO | RUS | RUS-NE | RUS-SE | RUS-YA | S | SK | SLO | TRA | TRE | UA | YU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Callophrys rubi* | >15 | 5-15 | >15 | | >15 | >15 | 5-15 | 5-15 | | 5-15 | | >15 | >15 | >15 | >15 | >15 | >15 | >15 | 5-15 | 5-15 | >15 | >15 | >15 | 5-15 | >15 | 1-5 | 5-15 | >15 | >15 | | | 5-15 | >15 | >15 | >15 | >15 | 5-15 | >15 | | >15 | 5-15 | >15 | >15 | >15 | >15 | 1-5 | >15 | 1-5 |
| *Callophrys mystaphia* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Callophrys suaveola* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Callophrys butleri* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | <1 | | | | | | | | | | |
| *Callophrys avis* | | | | | | | | | | | | | | | 1-5 | | <1 | | | | | | | | | | | | | | | | | | >15 | | | | | | | | | | | | | | | | |
| *Satyrium w-album* | 1-5 | ? | 5-15 | | ? | 1-5 | 5-15 | 1-5 | | 1-5 | | 5-15 | 5-15 | >15 | 5-15 | 5-15 | ? | <1 | ? | 1-5 | 5-15 | 5-15 | >15 | 1-5 | 1-5 | | <1 | 1-5 | 5-15 | | | <1 | 1-5 | <1 | | 5-15 | 1-5 | >15 | 1-5 | 1-5 | <1 | 5-15 | 5-15 | 1-5 | 1-5 | | 5-15 | <1 |
| *Satyrium pruni* | 5-15 | 5-15 | | | 5-15 | 1-5 | 5-15 | <1 | | <1 | | 5-15 | >15 | <1 | <1 | 5-15 | >15 | 5-15 | | 5-15 | <1 | <1 | >15 | 5-15 | <1 | | 1-5 | 1-5 | >15 | | | <1 | | | | 5-15 | 1-5 | >15 | 5-15 | 5-15 | 1-5 | 1-5 | 5-15 | 5-15 | | | >15 | 1-5 |
| *Satyrium spini* | 1-5 | ? | ? | | <1 | 1-5 | 5-15 | | | 1-5 | | 5-15 | 5-15 | | >15 | | 5-15 | | | 5-15 | | >15 | >15 | 5-15 | >15 | | <1 | <1 | | | | <1 | | | 5-15 | 1-5 | 1-5 | >15 | <1 | 1-5 | | | 5-15 | 5-15 | >15 | <1 | 5-15 | 1-5 |
| *Satyrium marcidum* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Satyrium ilicis* | 1-5 | 5-15 | >15 | | >15 | 5-15 | 5-15 | 1-5 | | <1 | | 5-15 | 5-15 | <1 | >15 | 1-5 | >15 | | | 5-15 | | >15 | >15 | 5-15 | >15 | | 1-5 | 5-15 | 1-5 | | | <1 | | 5-15 | >15 | 5-15 | ? | >15 | <1 | <1 | | 1-5 | 1-5 | >15 | >15 | 5-15 | 5-15 | 1-5 |
| *Satyrium esculi* | | | 5-15 | | | | | | | | | | | | >15 | | ? | | | | | | | | <1 | | | | | | | | | | 1-5 | | | | | | | | | | | | | | |
| *Satyrium acaciae* | <1 | 5-15 | ? | | <1 | 5-15 | 5-15 | | | 1-5 | | 5-15 | 1-5 | | >15 | | ? | | | 1-5 | | >15 | >15 | 1-5 | 5-15 | | | | | | | <1 | | | | 1-5 | 1-5 | 5-15 | | 1-5 | | | 5-15 | 1-5 | 5-15 | 1-5 | 1-5 | 1-5 |
| *Satyrium abdominalis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | >15 | | | |
| *Satyrium myrtale* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Satyrium ledereri* | | | | | | | | | | | | | | | | | | | | | | <1 | | | | | | | | | | | | | | | | | | | | | | | | 5-15 | | | |
| *Satyrium hyrcanicum* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Neolycaena rhymnus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | 1-5 | | | | | | | | 1-5 | |
| *Lampides boeticus* | | <1 | | 5-15 | | 1-5 | 1-5 | | 5-15 | | >15 | | | | >15 | | >15 | | | 5-15 | | >15 | 1-5 | 1-5 | >15 | | | | | >15 | >15 | | | | >15 | | 5-15 | ? | <1 | <1 | | | | ? | >15 | <1 | <1 | <1 |
| *Cacyreus marshalli* | | | | | | | | | | | | | | | >15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Leptotes pirithous* | | <1 | | | | 5-15 | 1-5 | | | | 1-5 | | | | >15 | | 1-5 | | | 5-15 | | >15 | 1-5 | 1-5 | >15 | | | | | 5-15 | | | | >15 | | 1-5 | 1-5 | | | | | ? | 5-15 | 1-5 | <1 | <1 |
| *Cyclyrius webbianus* | | | | | | | | | 5-15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Tongeia fischeri* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | | | | | | |
| *Tarucus theophrastus* | | | | | | | | | | | | | | | <1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Tarucus balkanica* | | <1 | | | | <1 | <1 | | | | 1-5 | | | | | | | | | 5-15 | | 1-5 | | <1 | | | | | | | | | | | | | | | | | | | | | | | 5-15 | <1 | | <1 |
| *Zizeeria knysna* | | | | | | | | | 5-15 | | 5-15 | | | | 5-15 | | | | | | | | | | | | | | | | | | | | >15 | | | | | | | | | | | | | | |
| *Zizeeria karsandra* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Cupido minimus* | >15 | 1-5 | >15 | | 5-15 | 1-5 | 5-15 | 1-5 | | 5-15 | | >15 | >15 | >15 | >15 | >15 | >15 | 1-5 | 5-15 | 5-15 | 5-15 | 5-15 | >15 | 5-15 | >15 | 1-5 | 5-15 | >15 | >15 | | | 5-15 | >15 | <1 | 1-5 | 5-15 | 5-15 | >15 | 5-15 | 5-15 | <1 | 5-15 | 5-15 | >15 | 5-15 | | 5-15 | 1-5 |
| *Cupido osiris* | <1 | <1 | | | | 1-5 | 5-15 | | | 1-5 | | | ? | | >15 | | ? | | | >15 | | >15 | 1-5 | <1 | 5-15 | | | | | | | | | | | | 5-15 | 5-15 | | 1-5 | | | <1 | 1-5 | >15 | <1 | 1-5 | 5-15 |
| *Cupido lorquinii* | | | | | | | | | | | | | | | 1-5 | | | | | | | | | | | | | | | | | | | | 1-5 | | | | | | | | | | | | | | |
| *Cupido argiades* | 1-5 | 1-5 | 5-15 | | <1 | 5-15 | 1-5 | 5-15 | | 1-5 | 5-15 | 5-15 | 1-5 | | 5-15 | 1-5 | ? | | | 5-15 | | 1-5 | >15 | >15 | 5-15 | | | >15 | 5-15 | | | <1 | | | | 5-15 | >15 | >15 | 5-15 | 5-15 | >15 | | 5-15 | 5-15 | 5-15 | <1 | >15 | 1-5 |
| *Cupido decolorata* | ? | 1-5 | | | | 1-5 | 1-5 | | | | | 1-5 | | | | | | | | 5-15 | | 1-5 | >15 | 5-15 | | | | | | | | | | | | | >15 | ? | | | | 1-5 | <1 | <1 | | 5-15 | 1-5 |
| *Cupido alcetas* | ? | | 5-15 | | | 5-15 | 1-5 | | | 5-15 | | 1-5 | | | 1-5 | | ? | | | 5-15 | | 1-5 | 5-15 | 5-15 | >15 | | | | | | | | | | | <1 | | 5-15 | 5-15 | 1-5 | | | 1-5 | 1-5 | 1-5 | | 1-5 | 1-5 |
| *Celastrina argiolus* | >15 | 5-15 | >15 | | >15 | >15 | 5-15 | 5-15 | | 5-15 | | >15 | >15 | >15 | >15 | >15 | >15 | >15 | 5-15 | >15 | >15 | >15 | >15 | >15 | >15 | 5-15 | 1-5 | >15 | >15 | 5-15 | | 1-5 | >15 | >15 | >15 | >15 | >15 | >15 | | >15 | 5-15 | >15 | 5-15 | >15 | >15 | 5-15 | >15 | 5-15 |
| *Pseudophilotes baton* | <1 | | 5-15 | | <1 | | <1 | | | 1-5 | | ? | 5-15 | | >15 | | 5-15 | | | <1 | | | | | >15 | | | | | | | | | | >15 | <1 | | | | | | | | | | | <1 |
| *Pseudophilotes vicrama* | 5-15 | 1-5 | | | | 1-5 | | <1 | | | <1 | 1-5 | 1-5 | | | 1-5 | | <1 | | | | >15 | >15 | 5-15 | 1-5 | | | <1 | <1 | | | | | | | 1-5 | <1 | 5-15 | | 1-5 | | | 1-5 | 1-5 | >15 | 1-5 | 5-15 | |
| *Pseudophilotes abencerragus* | | | | | | | | | | | | | | | 1-5 | | | | | | | | | | | | | | | | | | | | 1-5 | | | | | | | | | | | | | | |
| *Pseudophilotes barbagiae* | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | | | | | | | | | | | | | | | | | | | | | |
| *Pseudophilotes bavius* | | | | | | | | | | | | | | | | | | | | <1 | | 1-5 | | | | | | | | | | | | | | <1 | | | <1 | | | | | | 5-15 | <1 | 1-5 | <1 |

Appendix 4: Present distribution (%) category of butterflies in the European countries, as reported by the compilers. The abbrevations of the countries are given in part I, section 2.1. * migratory species, no distr. data given.

| Species | A | AL | AND | AZO | B | BG | BIH | BY | CAN | CH | CY | CZ | D | DK | E | EST | F | FIN | FL | FYROM | GB | GR | H | HR | I | IRL | L | LT | LV | M | MAD | MD | N | NL | P | PL | RO | RUS | RUS-NE | RUS-SE | RUS-YA | S | SK | SLO | TRA | TRE | UA | YU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Scolitantides orion* | 5-15 | 5-15 | | | | >15 | 5-15 | <1 | | 1-5 | | 5-15 | 1-5 | | 5-15 | ? | 5-15 | 1-5 | | >15 | | 1-5 | >15 | 1-5 | 1-5 | | | | | | | 1-5 | | | <1 | <1 | >15 | <1 | 1-5 | | <1 | 5-15 | 1-5 | <1 | <1 | 5-15 | 1-5 |
| *Glaucopsyche alexis* | 5-15 | 5-15 | 5-15 | | <1 | >15 | 5-15 | <1 | | 1-5 | | 5-15 | >15 | | >15 | <1 | >15 | >15 | 1-5 | 5-15 | | >15 | >15 | 1-5 | >15 | | 1-5 | <1 | <1 | | | 1-5 | 1-5 | | 1-5 | <1 | >15 | >15 | 5-15 | >15 | <1 | 1-5 | 5-15 | 5-15 | >15 | 1-5 | 5-15 | 5-15 |
| *Glaucopsyche paphos* | | | | | | | | | | | >15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Glaucopsyche astraea* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Glaucopsyche melanops* | | | | | | | | | | | | | | | >15 | | 1-5 | | | | | | | | <1 | | | | | | | | | >15 | | | | | | | | | | | | | |
| *Iolana iolas* | | 5-15 | | | | 1-5 | 1-5 | | | 1-5 | | | | | 1-5 | | 1-5 | | | 1-5 | | 5-15 | 1-5 | <1 | 1-5 | | | | | | | | | | 1-5 | | | | | <1 | ? | 5-15 | | | <1 |
| *Maculinea arion* | 5-15 | 5-15 | >15 | | <1 | 5-15 | 5-15 | 5-15 | | 5-15 | | 1-5 | 5-15 | <1 | 5-15 | 5-15 | 5-15 | <1 | 1-5 | 5-15 | <1 | 5-15 | 5-15 | 1-5 | 5-15 | | 1-5 | 5-15 | 1-5 | | | <1 | | <1 | | 5-15 | 1-5 | 5-15 | 1-5 | 5-15 | <1 | 1-5 | 5-15 | 5-15 | 1-5 | <1 | 5-15 | 1-5 |
| *Maculinea teleius* | <1 | | | | <1 | | | ? | | 1-5 | | 5-15 | 5-15 | | | | 1-5 | | <1 | | | | 5-15 | <1 | <1 | | | 1-5 | <1 | | | | <1 | | 5-15 | 1-5 | 5-15 | 1-5 | 1-5 | | | 1-5 | 1-5 | | 1-5 | |
| *Maculinea nausithous* | <1 | | | | | <1 | | <1 | | 1-5 | | >15 | >15 | | <1 | | 1-5 | | <1 | | | | 1-5 | <1 | | | | | | | | | <1 | | 5-15 | 1-5 | 5-15 | 1-5 | 1-5 | | | 1-5 | <1 | 1-5 | | 1-5 | |
| *Maculinea alcon* | <1 | 5-15 | | | 1-5 | | 5-15 | 1-5 | | <1 | | 5-15 | 5-15 | 5-15 | 1-5 | | 1-5 | | <1 | 5-15 | | 1-5 | 5-15 | | <1 | | | <1 | | | | | 5-15 | | 1-5 | 1-5 | 5-15 | 1-5 | 1-5 | | 1-5 | ? | 5-15 | 1-5 | | 1-5 | 1-5 |
| *Maculinea rebeli* | <1 | | 5-15 | | <1 | 1-5 | | | | 1-5 | | <1 | 5-15 | | 1-5 | | 1-5 | | 1-5 | | | | 5-15 | 1-5 | 1-5 | | | | | | | | | | <1 | | 1-5 | | | | | 1-5 | ? | | | | |
| *Lachides galba* | | | | | | | | | | | <1 | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | | | | | | | | |
| *Turanana endymion* | | | | | | | | | | | | | | | | | | | | | | <1 | | | | | | | | | | | | | | >15 | | | | | | | | | | |
| *Turanana cytis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | | | | | | | | |
| *Chilades trochylus* | | | | | | | | | | | 5-15 | | | | | | | | | | | 1-5 | | | | | | | | | | | | | | >15 | | | | | | | | | | |
| *Plebeius pylaon* | | | | | | 5-15 | | | | | | | | | | | | | | 1-5 | | 5-15 | 1-5 | | | | | | | | | | | | | >15 | 1-5 | <1 | <1 |
| *Plebeius trappi* | | | | | | | | | | 1-5 | | | | | | | | | | | | | | | <1 | | | | | | | | | | | | | | | | | | | | | | |
| *Plebeius hesperica* | | | | | | | | | | | | | | | 1-5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Plebeius argus* | >15 | >15 | >15 | | 5-15 | >15 | >15 | 5-15 | | 1-5 | | >15 | >15 | >15 | >15 | >15 | >15 | >15 | <1 | 5-15 | 1-5 | >15 | >15 | 5-15 | >15 | | 1-5 | >15 | >15 | | | >15 | >15 | >15 | >15 | 5-15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | 1-5 | >15 | 5-15 |
| *Plebeius idas* | 5-15 | 5-15 | >15 | | <1 | 5-15 | >15 | 1-5 | | 1-5 | | 5-15 | >15 | >15 | >15 | >15 | >15 | >15 | 1-5 | >15 | | 5-15 | 1-5 | 1-5 | 5-15 | | | >15 | >15 | | | 1-5 | >15 | <1 | | 5-15 | >15 | 5-15 | 1-5 | >15 | <1 | >15 | ? | 1-5 | 5-15 | | 5-15 | 5-15 |
| *Plebeius argyrognomon* | 5-15 | 5-15 | | | <1 | >15 | 1-5 | 1-5 | | <1 | | 5-15 | >15 | | | | 5-15 | | | 1-5 | | 1-5 | >15 | 1-5 | 5-15 | | | 1-5 | <1 | | | 5-15 | <1 | | 1-5 | 5-15 | 1-5 | 5-15 | 1-5 | >15 | | <1 | 1-5 | 1-5 | 1-5 | | >15 | 1-5 |
| *Plebeius christophi* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | | | | | | | | |
| *Plebeius alcedo* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 5-15 | | | | | | | | | | |
| *Plebeius rosei* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | | | | | | | | |
| *Plebeius morgianus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | | | | | | | | |
| *Plebeius optilete* | 1-5 | | | | | | | 1-5 | | 5-15 | | 1-5 | 5-15 | 5-15 | | >15 | <1 | >15 | | <1 | | | | | 1-5 | | | >15 | 5-15 | | | | >15 | <1 | | <1 | | 5-15 | | <1 | 1-5 | >15 | <1 | 1-5 | | | 1-5 | 1-5 |
| *Plebeius loewii* | | | | | | | | | | | | | | | | | | | | | | <1 | | | | | | | | | | | | | | >15 | | | | | | | | | | |
| *Plebeius eurypilus* | | | | | | | | | | | | | | | | | | | | | | <1 | | | | | | | | | | | | | | >15 | | | | | | | | | | |
| *Plebeius psylorita* | | | | | | | | | | | | | | | | | | | | | | <1 | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Plebeius pyrenaica* | | | | | | <1 | <1 | | | | | | | | <1 | | <1 | | | <1 | | <1 | | | | | | | | | | | | | | 1-5 | | <1 | | | | | | | | |
| *Plebeius glandon* | 5-15 | | >15 | | | | | | | >15 | | | 1-5 | | 1-5 | | <1 | <1 | 1-5 | | | | | | 1-5 | | | | | | | | 1-5 | | | | 1-5 | <1 | | | 5-15 | | | | | | |
| *Plebeius orbitulus* | >15 | | | | | | | | | >15 | | | 1-5 | | | | <1 | | 1-5 | | | | | | 1-5 | | | | | | | | 5-15 | | | | | | <1 | | 1-5 | | 1-5 | | | | |
| *Aricia eumedon* | 5-15 | ? | >15 | | | 5-15 | 5-15 | <1 | | 1-5 | | 5-15 | 5-15 | | 1-5 | 5-15 | 5-15 | >15 | 1-5 | 5-15 | | 1-5 | <1 | <1 | 1-5 | | | 5-15 | 1-5 | | | | >15 | | | 1-5 | | >15 | >15 | 5-15 | 5-15 | >15 | 1-5 | 1-5 | 5-15 | | 5-15 | 1-5 |
| *Aricia cramera* | | | ? | | | | | | >15 | | | | | | >15 | | ? | | | | | | | | 1-5 | | | | | | | | | | >15 | | | | | | | | | | | | |
| *Aricia agestis* | 5-15 | 5-15 | ? | | >15 | >15 | 5-15 | <1 | | >15 | 5-15 | 5-15 | ? | >15 | >15 | | >15 | | | 5-15 | 5-15 | >15 | >15 | 5-15 | >15 | | 1-5 | 1-5 | | >15 | | <1 | | >15 | >15 | 5-15 | 1-5 | >15 | | 1-5 | | 1-5 | 5-15 | >15 | >15 | 5-15 | >15 | 5-15 |
| *Aricia artaxerxes* | >15 | | | | | 1-5 | 5-15 | 1-5 | | 5-15 | | <1 | ? | <1 | | >15 | 1-5 | >15 | 5-15 | 5-15 | 1-5 | 5-15 | 1-5 | <1 | 1-5 | | | 1-5 | 1-5 | | | | >15 | | | <1 | | >15 | >15 | 1-5 | <1 | >15 | ? | 1-5 | 1-5 | | 1-5 | 5-15 |
| *Aricia morronensis* | | | | | | | | | | | | | | | 1-5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Aricia teberdinus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | | | | | <1 | | | |

Appendix 4: Present distribution (%) category of butterflies in the European countries, as reported by the compilers. The abbrevations of the countries are given in part I, section 2.1. * migratory species, no distr. data given.

| Species | A | AL | AND | AZO | B | BG | BIH | BY | CAN | CH | CY | CZ | D | DK | E | EST | F | FIN | FL | FYROM | GB | GR | H | HR | I | IRL | L | LT | LV | M | MAD | MD | N | NL | P | PL | RO | RUS | RUS-NE | RUS-SE | RUS-YA | S | SK | SLO | TRA | TRE | UA | YU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Aricia hyacinthus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Aricia torulensis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | |
| *Aricia isaurica* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Aricia anteros* | | 1-5 | | | | 1-5 | 1-5 | | | | | | | | | | | | | 1-5 | | 5-15 | | <1 | | | | | | | | | | | | | | | | | | | | | >15 | 1-5 | <1 | 1-5 |
| *Aricia nicias* | | | 5-15 | | | | | | | 1-5 | | | | | <1 | | <1 | >15 | | | | | | | 1-5 | | | | | | | | | | | | | 5-15 | 5-15 | <1 | | 5-15 | | | | | | |
| *Polyommatus semiargus* | >15 | ? | >15 | | 5-15 | 5-15 | 5-15 | 5-15 | | >15 | | >15 | ? | >15 | >15 | >15 | >15 | >15 | 5-15 | >15 | <1 | >15 | >15 | 5-15 | >15 | | 5-15 | >15 | >15 | | | <1 | >15 | <1 | 1-5 | >15 | 5-15 | >15 | >15 | >15 | 5-15 | >15 | >15 | >15 | 1-5 | 5-15 | >15 |
| *Polyommatus coelestina* | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | | | | | | | | | | | | | 1-5 | | 1-5 | | | | | | 5-15 | | <1 | |
| *Polyommatus diana* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Polyommatus fatima* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Polyommatus escheri* | | 5-15 | >15 | | | 1-5 | 1-5 | | | 1-5 | | | | | >15 | | 5-15 | | | 1-5 | | 5-15 | | <1 | 5-15 | | | | | | | | | | | | | | | | | | 1-5 | | <1 | | <1 |
| *Polyommatus dorylas* | 5-15 | 5-15 | >15 | | <1 | 5-15 | 1-5 | <1 | | 1-5 | | 1-5 | 5-15 | | >15 | | 5-15 | | | 5-15 | | >15 | >15 | <1 | 5-15 | | <1 | 1-5 | <1 | | | | | | | 5-15 | 5-15 | <1 | | <1 | | 1-5 | 5-15 | 5-15 | 5-15 | | 1-5 | 1-5 |
| *Polyommatus golgus* | | | | | | | | | | | | | | | <1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Polyommatus nivescens* | | | | | | | | | | | | | | | 5-15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Polyommatus amandus* | 1-5 | 5-15 | >15 | | | 5-15 | 1-5 | 5-15 | | 1-5 | | >15 | ? | >15 | 5-15 | >15 | 5-15 | >15 | | 5-15 | | >15 | 5-15 | <1 | 5-15 | | | >15 | >15 | | | <1 | >15 | | | 5-15 | 5-15 | >15 | | 5-15 | 5-15 | >15 | <1 | 1-5 | >15 | 1-5 | 1-5 | 5-15 |
| *Polyommatus cyane* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | <1 | | | | | | | | |
| *Polyommatus thersites* | 5-15 | 5-15 | ? | | <1 | >15 | | | | 1-5 | | 5-15 | >15 | | >15 | | >15 | | | 1-5 | | >15 | 5-15 | 1-5 | >15 | | | | | | | | | | | <1 | >15 | 5-15 | <1 | 5-15 | | | ? | 1-5 | >15 | 1-5 | 5-15 | 1-5 |
| *Polyommatus myrrha* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Polyommatus aedon* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 5-15 | | | |
| *Polyommatus cornelia* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | >15 | | | |
| *Polyommatus ciloicus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | |
| *Polyommatus buzulmavi* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Polyommatus icarus* | >15 | 5-15 | >15 | | >15 | >15 | >15 | >15 | 1-5 | >15 | >15 | >15 | ? | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | | >15 | >15 | >15 | 5-15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | 5-15 | ? | >15 |
| *Polyommatus andronicus* | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Polyommatus eroides* | | 1-5 | | | | 5-15 | | <1 | | | | <1 | | | | | | | | <1 | | 1-5 | | | | | | | | | | | | | | | <1 | | <1 | <1 | <1 | | | <1 | | <1 | <1 |
| *Polyommatus eros* | 5-15 | | | | | | <1 | | | >15 | | | 1-5 | | 1-5 | | 1-5 | | <1 | <1 | | | | <1 | 1-5 | | | | | | | | | | | | | | | | | | | | 1-5 | | | <1 |
| *Polyommatus menelaos* | | | | | | | | | | | | | | | | | | | | | | <1 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Polyommatus kamtschadalus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | | | | | |
| *Polyommatus daphnis* | 1-5 | 5-15 | 1-5 | | | >15 | 1-5 | <1 | | 1-5 | | 5-15 | 5-15 | | 5-15 | | 1-5 | | | 5-15 | | >15 | 5-15 | 1-5 | >15 | | | | | | | <1 | | | | 1-5 | 5-15 | 5-15 | 5-15 | <1 | 5-15 | | | 5-15 | 1-5 | >15 | 1-5 | >15 | 1-5 |
| *Polyommatus bellargus* | >15 | 5-15 | >15 | | <1 | >15 | 1-5 | ? | | 5-15 | | 5-15 | >15 | | >15 | | >15 | | 5-15 | 5-15 | 1-5 | >15 | >15 | 5-15 | >15 | | <1 | <1 | | | | 1-5 | | | >15 | 1-5 | 5-15 | 5-15 | | ? | | | 5-15 | >15 | >15 | <1 | 5-15 | 1-5 |
| *Polyommatus syriacus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Polyommatus dezinus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | |
| *Polyommatus coridon* | >15 | 5-15 | >15 | | 5-15 | 5-15 | 5-15 | 1-5 | | 5-15 | | >15 | 5-15 | | 5-15 | | >15 | | 5-15 | 5-15 | 5-15 | 5-15 | >15 | 5-15 | 5-15 | | 1-5 | <1 | | | | <1 | | | | >15 | 5-15 | 5-15 | <1 | 1-5 | | | 5-15 | >15 | | <1 | 5-15 | 1-5 |
| *Polyommatus caelestissima* | | | | | | | | | | | | | | | 5-15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Polyommatus philippi* | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Polyommatus ossmar* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 5-15 | | | |
| *Polyommatus corydonius* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 5-15 | | <1 | |
| *Polyommatus hispana* | | | | | | | | | | | | | | | ? | | 1-5 | | | | | | | | 1-5 | | | | | | | | | | | | | | | | | | | | | | | |
| *Polyommatus albicans* | | | | | | | | | | | | | | | >15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Appendix 4: Present distribution (%) category of butterflies in the European countries, as reported by the compilers. The abbrevations of the countries are given in part I, section 2.1. * migratory species, no distr. data given.

| Species | A | AL | AND | AZO | B | BG | BIH | BY | CAN | CH | CY | CZ | D | DK | E | EST | F | FIN | FL | FYROM | GB | GR | H | HR | I | IRL | L | LT | LV | M | MAD | MD | N | NL | P | PL | RO | RUS | RUS-NE | RUS-SE | RUS-YA | S | SK | SLO | TRA | TRE | UA | YU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Polyommatus alcestis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 5-15 | | | |
| *Polyommatus demavendi* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Polyommatus admetus* | | 5-15 | | | | 1-5 | 5-15 | | | | | | | | | | | | | 5-15 | | 5-15 | 1-5 | <1 | | | | | | | | | | | | | 1-5 | | | | | | <1 | | >15 | 1-5 | <1 | 1-5 |
| *Polyommatus fabressei* | | | | | | | | | | | | | | | 1-5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Polyommatus humedasae* | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | | | | | | | | | | | | | | | | | | | | | |
| *Polyommatus ripartii* | | | | | | 1-5 | <1 | | | | | | | | 5-15 | | 1-5 | | | 5-15 | | 5-15 | <1 | | <1 | | | | | | | | | | | <1 | | 5-15 | | 1-5 | | | | 5-15 | <1 | | <1 |
| *Polyommatus budashkini* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | | | | | | | |
| *Polyommatus galloi* | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | | | | | | | | | | | | | | | | | | | | |
| *Polyommatus aroaniensis* | | | | | | <1 | | | | | | | | | | | | | | | | 5-15 | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Polyommatus nephohiptamenos* | | | | | | <1 | | | | | | | | | | | | | | | | 1-5 | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Polyommatus eriwanensis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Polyommatus mithridates* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Polyommatus antidolus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Polyommatus kurdistanicus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | |
| *Polyommatus virgilia* | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | | | | | | | | | | | | | | | | | | | | | |
| *Polyommatus dolus* | | | | | | | | | | | | | | | 5-15 | | 1-5 | | | | | | | | <1 | | | | | | | | | | | | | | | | | | | | | | | |
| *Polyommatus fulgens* | | | | | | | | | | | | | | | <1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Polyommatus menalcas* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | >15 | | | |
| *Polyommatus poseidon* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 5-15 | | <1 | |
| *Polyommatus hopfferi* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 5-15 | | | |
| *Polyommatus dama* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | |
| *Polyommatus caeruleus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | |
| *Polyommatus lycius* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | |
| *Polyommatus wagneri* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 5-15 | | | |
| *Polyommatus sertavulensis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | |
| *Polyommatus altivagans* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Polyommatus firdussii* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 5-15 | | | |
| *Polyommatus theresiae* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | |
| *Polyommatus elbursicus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Polyommatus ninae* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 5-15 | | | |
| *Polyommatus iphigenia* | | | | | | | | | | | | | | | | | | | | | | <1 | | | | | | | | | | | | | | | | | | | | | | | | 5-15 | | | |
| *Polyom. aserbeidschanus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | |
| *Polyommatus actis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Polyommatus merhaba* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Polyommatus cyaneus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Polyommatus turcicus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Polyommatus huberti* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Polyommatus carmon* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 5-15 | | | |

Appendix 4: Present distribution (%) category of butterflies in the European countries, as reported by the compilers. The abbrevations of the countries are given in part I, section 2.1. * migratory species, no distr. data given.

| Species | A | AL | AND | AZO | B | BG | BIH | BY | CAN | CH | CY | CZ | D | DK | E | EST | F | FIN | FL | FYROM | GB | GR | H | HR | I | IRL | L | LT | LV | M | MAD | MD | N | NL | P | PL | RO | RUS | RUS-NE | RUS-SE | RUS-YA | S | SK | SLO | TRA | TRE | UA | YU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Polyommatus charmeuxi* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | |
| *Polyommatus tankeri* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Polyommatus damon* | 5-15 | 5-15 | | | | | 5-15 | ? | | 1-5 | | 1-5 | <1 | | >15 | | 5-15 | | <1 | 5-15 | | 1-5 | <1 | | | | | <1 | | | | | | <1 | 1-5 | <1 | <1 | <1 | | | <1 | | 1-5 | | | 1-5 |
| *Polyommatus baytopi* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Polyommatus phyllis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Polyommatus damone* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | <1 | | | | | | | <1 | | |
| *Polyommatus damocles* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | 1-5 | | | | | | | | | |
| *Libythea celtis* | | 1-5 | 5-15 | | | 5-15 | <1 | | | <1 | | | | | 5-15 | | ? | | | 1-5 | | >15 | >15 | 1-5 | 1-5 | | | | | | | | | 1-5 | | <1 | <1 | | | | | | <1 | 5-15 | <1 | <1 | <1 |
| *Argynnis paphia* | >15 | 5-15 | 5-15 | | 5-15 | 5-15 | >15 | 5-15 | | >15 | | >15 | >15 | 5-15 | >15 | >15 | >15 | 5-15 | 5-15 | >15 | 5-15 | 5-15 | >15 | 5-15 | 5-15 | 5-15 | >15 | >15 | >15 | | | 1-5 | 5-15 | <1 | 5-15 | >15 | >15 | >15 | >15 | >15 | >15 | 5-15 | >15 | 1-5 | >15 | 5-15 |
| *Argynnis pandora* | <1 | 1-5 | | | | 5-15 | 1-5 | | 5-15 | | <1 | <1 | | | >15 | | 1-5 | | | 1-5 | | >15 | >15 | 1-5 | 5-15 | | | | | | | <1 | | | >15 | | 5-15 | 5-15 | | <1 | | | <1 | 1-5 | >15 | 1-5 | >15 | 1-5 |
| *Argynnis aglaja* | >15 | 5-15 | >15 | | 5-15 | 5-15 | >15 | 5-15 | | 5-15 | | >15 | >15 | >15 | >15 | >15 | >15 | >15 | 5-15 | 5-15 | >15 | >15 | >15 | 5-15 | 5-15 | 5-15 | 5-15 | >15 | >15 | | | <1 | >15 | 1-5 | <1 | >15 | >15 | >15 | >15 | >15 | 5-15 | >15 | >15 | 1-5 | >15 | 5-15 |
| *Argynnis adippe* | 5-15 | 5-15 | >15 | | 5-15 | 5-15 | >15 | 5-15 | | 5-15 | | >15 | 5-15 | >15 | >15 | >15 | ? | >15 | 5-15 | 5-15 | <1 | 5-15 | >15 | 1-5 | 5-15 | | 1-5 | >15 | >15 | | | | >15 | | 5-15 | >15 | >15 | >15 | 5-15 | >15 | 5-15 | >15 | >15 | 5-15 | 1-5 | >15 | 5-15 |
| *Argynnis niobe* | >15 | 5-15 | 5-15 | | <1 | 5-15 | 5-15 | 5-15 | | 5-15 | | 5-15 | 1-5 | >15 | >15 | >15 | ? | >15 | 5-15 | 5-15 | | 5-15 | >15 | 5-15 | 5-15 | | | >15 | 5-15 | | | | 5-15 | 5-15 | 5-15 | 5-15 | >15 | >15 | 5-15 | >15 | 1-5 | 5-15 | >15 | >15 | >15 | 1-5 | >15 | 5-15 |
| *Argynnis elisa* | | | | | | | | | | | | | | | | | 1-5 | | | | | | | | <1 | | | | | | | | | | | | | | | | | | | | | | | |
| *Argynnis laodice* | | | | | | | | 1-5 | | | | | <1 | | | >15 | | <1 | | | | | 1-5 | | | | | 5-15 | 5-15 | | | | | | | 1-5 | 1-5 | >15 | 1-5 | <1 | <1 | | 1-5 | | | 5-15 | |
| *Issoria lathonia* | | 1-5 | >15 | | 1-5 | >15 | >15 | 5-15 | 1-5 | 5-15 | | >15 | ? | >15 | >15 | >15 | >15 | 1-5 | | >15 | | >15 | >15 | 1-5 | >15 | | 1-5 | >15 | >15 | | 1-5 | >15 | 5-15 | 5-15 | | >15 | >15 | >15 | 5-15 | >15 | 5-15 | 5-15 | >15 | 5-15 | >15 | >15 |
| *Issoria eugenia* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | <1 | | | | | | | | | | |
| *Brenthis ino* | 5-15 | 1-5 | >15 | | 5-15 | <1 | 1-5 | 5-15 | | 5-15 | | >15 | >15 | 5-15 | >15 | >15 | 5-15 | >15 | 1-5 | 1-5 | | | 5-15 | <1 | 1-5 | | 5-15 | >15 | >15 | | | | >15 | <1 | | >15 | <1 | >15 | >15 | >15 | 5-15 | >15 | 5-15 | 5-15 | 1-5 | | 5-15 | <1 |
| *Brenthis daphne* | 1-5 | 5-15 | 5-15 | | | 5-15 | >15 | <1 | | 1-5 | | <1 | <1 | | >15 | | 1-5 | | | 5-15 | | 5-15 | >15 | 5-15 | 5-15 | | | <1 | | | | | | 1-5 | 5-15 | 1-5 | 1-5 | 1-5 | | | 5-15 | 5-15 | 5-15 | 5-15 | 5-15 | 1-5 | |
| *Brenthis hecate* | <1 | 1-5 | | | | 1-5 | 5-15 | | | | | 1-5 | | | >15 | | 1-5 | | | 5-15 | | 5-15 | >15 | <1 | 1-5 | | | <1 | | | | | | | 5-15 | 5-15 | | 1-5 | | | 1-5 | 5-15 | 5-15 | 1-5 | 1-5 | 1-5 | |
| *Brenthis mofidii* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Boloria eunomia* | 1-5 | | 5-15 | | 5-15 | <1 | | 1-5 | | | | 1-5 | 1-5 | | <1 | 5-15 | <1 | >15 | | | | | | | <1 | | 1-5 | 1-5 | 1-5 | | | | >15 | | | 1-5 | | 5-15 | >15 | 1-5 | <1 | >15 | <1 | | | 1-5 | |
| *Boloria euphrosyne* | >15 | 5-15 | >15 | | 1-5 | 5-15 | >15 | 5-15 | | 5-15 | | >15 | 5-15 | 5-15 | >15 | >15 | >15 | >15 | 5-15 | >15 | 5-15 | 5-15 | 5-15 | 5-15 | ? | <1 | 5-15 | 5-15 | 5-15 | | | | >15 | <1 | <1 | 5-15 | >15 | >15 | >15 | 5-15 | <1 | >15 | 5-15 | >15 | 5-15 | | >15 | >15 |
| *Boloria titania* | >15 | | | | | | 5-15 | ? | | 5-15 | | | 5-15 | | | >15 | 5-15 | 1-5 | 5-15 | | | | | <1 | 5-15 | | | | <1 | | | | | | | <1 | 1-5 | 5-15 | <1 | <1 | | <1 | 1-5 | | | <1 | 1-5 |
| *Boloria selene* | >15 | | >15 | | 5-15 | 1-5 | 1-5 | 5-15 | | 1-5 | | >15 | >15 | >15 | >15 | >15 | >15 | >15 | 5-15 | | >15 | | 5-15 | 1-5 | 1-5 | | 5-15 | >15 | >15 | | | | >15 | 1-5 | 1-5 | >15 | | >15 | >15 | >15 | >15 | >15 | 5-15 | 5-15 | | | >15 | 1-5 |
| *Boloria selenis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | >15 | 5-15 | <1 | <1 | | | | | | | | |
| *Boloria angarensis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | 1-5 | | | | | | | | | | |
| *Boloria oscarus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | | | | | | | | | |
| *Boloria chariclea* | | | | | | | | | | | | | | | | | | 1-5 | | | | | | | | | | | | | | | 5-15 | | | | <1 | <1 | | | 1-5 | | | | | | |
| *Boloria freija* | | | | | | | | <1 | | | | | | | | <1 | | >15 | | | | | | | | | | | | | | | >15 | | | | 1-5 | 5-15 | <1 | | >15 | | | | | | |
| *Boloria dia* | >15 | ? | >15 | | 1-5 | 5-15 | >15 | 5-15 | | 1-5 | | >15 | 5-15 | | >15 | 1-5 | >15 | | 5-15 | 5-15 | | 5-15 | >15 | 5-15 | 5-15 | | 1-5 | >15 | 1-5 | | | >15 | | | | 5-15 | <1 | >15 | 5-15 | >15 | >15 | | >15 | >15 | 1-5 | 1-5 | >15 | 5-15 |
| *Boloria polaris* | | | | | | | | | | | | | | | | | | 1-5 | | | | | | | | | | | | | | | 5-15 | | | | 1-5 | 1-5 | | | <1 | | | | | | |
| *Boloria thore* | 1-5 | | | | | | | <1 | | 1-5 | | | 5-15 | | | | | 1-5 | 1-5 | | | | | | 1-5 | | | <1 | | | | | >15 | | | | 5-15 | 5-15 | <1 | | 5-15 | | ? | | | | | |
| *Boloria frigga* | | | | | | | | <1 | | | | | | | | 1-5 | | >15 | | | | | | | | | | <1 | <1 | | | | >15 | | | | 1-5 | 5-15 | | | >15 | | | | | | |
| *Boloria improba* | | | | | | | | | | | | | | | | | | <1 | | | | | | | | | | | | | | | 1-5 | | | | 1-5 | 1-5 | | | 1-5 | | | | | | |
| *Boloria distincta* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | | | | | | | | |
| *Boloria pales* | >15 | ? | >15 | | | <1 | 1-5 | | | >15 | | | 1-5 | | 5-15 | | <1 | | 5-15 | <1 | | | | | 1-5 | | | | | | | | | | | <1 | <1 | | | | | 1-5 | 5-15 | | | | <1 |
| *Boloria caucasica* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |

Appendix 4: Present distribution (%) category of butterflies in the European countries, as reported by the compilers. The abbrevations of the countries are given in part I, section 2.1. * migratory species, no distr. data given.

| Species | A | AL | AND | AZO | B | BG | BIH | BY | CAN | CH | CY | CZ | D | DK | E | EST | F | FIN | FL | FYROM | GB | GR | H | HR | I | IRL | L | LT | LV | M | MAD | MD | N | NL | P | PL | RO | RUS | RUS-NE | RUS-SE | RUS-YA | S | SK | SLO | TRA | TRE | UA | YU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Boloria napaea* | >15 | | ? | | | | | | | >15 | | | 1-5 | | <1 | | <1 | <1 | 1-5 | | | | | | 1-5 | | | | | | | | >15 | | | | | | | | | | >15 | | | | | | | |
| *Boloria aquilonaris* | 1-5 | | | | 1-5 | | | 1-5 | | <1 | | 1-5 | ? | 5-15 | | >15 | <1 | >15 | | | | | | | | | | 5-15 | 1-5 | | | | >15 | 1-5 | | 1-5 | <1 | 1-5 | 5-15 | <1 | <1 | >15 | <1 | | | | <1 | | |
| *Boloria graeca* | | ? | | | | <1 | <1 | | | | | | | | | | <1 | | | <1 | | 1-5 | | | <1 | | | | | | | | | | | | 1-5 | | | | | | | <1 | | | <1 |
| *Boloria alaskensis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | 1-5 | | | | | | | | | |
| *Vanessa atalanta** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Vanessa indica* | | | | | | | | | >15 | | | | | | | | | | | | | | | | | | | | | 1-5 | | | | | | | | | | | | | | | | | | |
| *Vanessa cardui** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Vanessa virginiensis* | | | | | | | | | <1 | | | | | | | | | | | | | | | | | | | | | ? | | | | | | | | | | | | | | | | | |
| *Inachis io* | >15 | 1-5 | >15 | | >15 | >15 | >15 | 5-15 | | >15 | | >15 | >15 | >15 | >15 | >15 | >15 | 5-15 | >15 | >15 | >15 | >15 | >15 | 5-15 | >15 | >15 | >15 | >15 | >15 | | | 1-5 | >15 | >15 | 1-5 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | 5-15 | 1-5 | >15 | >15 |
| *Aglais urticae* | >15 | 5-15 | >15 | | >15 | >15 | >15 | >15 | | >15 | | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | 5-15 | 5-15 | >15 | >15 | >15 | >15 | | | 5-15 | >15 | >15 | 5-15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | 1-5 | >15 | >15 |
| *Polygonia c-album* | >15 | 5-15 | >15 | | >15 | >15 | >15 | 5-15 | | 5-15 | | >15 | >15 | 5-15 | >15 | >15 | >15 | >15 | 5-15 | >15 | >15 | >15 | >15 | 5-15 | >15 | | 5-15 | >15 | >15 | | | 5-15 | >15 | >15 | 5-15 | >15 | >15 | >15 | >15 | 5-15 | >15 | >15 | 5-15 | 5-15 | >15 | >15 |
| *Polygonia egea* | | 5-15 | | | | 1-5 | 5-15 | | | | | | | | | | <1 | | | 1-5 | | >15 | | 5-15 | 5-15 | | | | | | | | | | | | 1-5 | | | | | | 5-15 | >15 | 1-5 | | 1-5 |
| *Araschnia levana* | 5-15 | | | | >15 | 5-15 | 5-15 | 5-15 | | >15 | | >15 | >15 | >15 | 1-5 | >15 | >15 | 1-5 | | | | 1-5 | >15 | 1-5 | <1 | | >15 | >15 | >15 | | | 1-5 | | >15 | <1 | >15 | >15 | >15 | >15 | >15 | >15 | <1 | >15 | 1-5 | | >15 | 1-5 |
| *Nymphalis antiopa* | >15 | 1-5 | >15 | | 1-5 | 5-15 | 1-5 | 5-15 | | 5-15 | | >15 | >15 | 5-15 | >15 | >15 | 5-15 | >15 | 5-15 | 5-15 | | >15 | >15 | 5-15 | 5-15 | | <1 | >15 | >15 | | | | >15 | <1 | 1-5 | >15 | 1-5 | >15 | >15 | 5-15 | 1-5 | >15 | >15 | 1-5 | 5-15 | 1-5 | >15 | 1-5 |
| *Nymphalis polychloros* | 5-15 | 1-5 | 5-15 | | 5-15 | >15 | 1-5 | 1-5 | | 1-5 | | >15 | 5-15 | <1 | >15 | 1-5 | 5-15 | <1 | ? | 5-15 | <1 | >15 | >15 | 5-15 | 5-15 | | 5-15 | >15 | 5-15 | | | <1 | <1 | <1 | >15 | >15 | 1-5 | >15 | | 5-15 | 1-5 | >15 | >15 | 1-5 | 5-15 | 1-5 | 5-15 | 1-5 |
| *Nymphalis xanthomelas* | | 1-5 | | | | ? | <1 | <1 | | | | <1 | <1 | | | 1-5 | | | | 1-5 | | <1 | 1-5 | 1-5 | | | | | <1 | | | <1 | | | | 1-5 | 1-5 | 1-5 | >15 | 5-15 | 1-5 | | <1 | <1 | 5-15 | | 5-15 | <1 |
| *Nymphalis vaualbum* | <1 | 1-5 | | | | | <1 | <1 | | | | <1 | | | | | | | | | | | 1-5 | 1-5 | | | | | | | | | | | 1-5 | 1-5 | 5-15 | 1-5 | <1 | | <1 | <1 | <1 | | <1 | <1 |
| *Euphydryas iduna* | | | | | | | | | | | | | | | | | | 5-15 | | | | | | | | | | | | | | | 1-5 | | | | <1 | <1 | | | 5-15 | | | <1 | | | |
| *Euphydryas cynthia* | 5-15 | | | | | <1 | | | | >15 | | | <1 | | | | <1 | | 1-5 | | | | | | 1-5 | | | | | | | | | | | | | | | | | | | | | <1 | | |
| *Euphydryas intermedia* | 1-5 | | | | | | | | | 1-5 | | | ? | | | | <1 | | | | | | | | | | | | | | | | | | | | <1 | <1 | <1 | | | | | <1 | | | | |
| *Euphydryas maturna* | 1-5 | | | | <1 | <1 | | 1-5 | | | | <1 | <1 | | | >15 | <1 | >15 | | 1-5 | | | 1-5 | 1-5 | | | <1 | >15 | 1-5 | | | 1-5 | | | | 1-5 | 1-5 | 1-5 | >15 | 5-15 | 1-5 | <1 | <1 | <1 | | | 1-5 | <1 |
| *Euphydryas desfontainii* | | | | | | | | | | | | | | | >15 | | <1 | | | | | | | | | | | | | | | | | | 1-5 | | | | | | | | | | | | | |
| *Euphydryas aurinia* | 1-5 | 1-5 | 5-15 | | 1-5 | 5-15 | <1 | <1 | | 1-5 | | 1-5 | 1-5 | 1-5 | >15 | >15 | 5-15 | 1-5 | 5-15 | 1-5 | 5-15 | 1-5 | 1-5 | 5-15 | 1-5 | 5-15 | 1-5 | 5-15 | 5-15 | | | | | <1 | >15 | 1-5 | 1-5 | 5-15 | | 1-5 | 1-5 | 1-5 | <1 | 5-15 | 5-15 | 1-5 | 1-5 | 5-15 |
| *Euphydryas orientalis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | |
| *Melitaea cinxia* | 5-15 | 5-15 | >15 | | 1-5 | >15 | 5-15 | 1-5 | | 1-5 | | 5-15 | 1-5 | >15 | >15 | 5-15 | >15 | <1 | | 5-15 | <1 | >15 | >15 | 1-5 | 5-15 | | 1-5 | 5-15 | 1-5 | | | <1 | 1-5 | <1 | 1-5 | 5-15 | >15 | >15 | 1-5 | 5-15 | 1-5 | 5-15 | 5-15 | >15 | >15 | 5-15 | >15 | >15 |
| *Melitaea phoebe* | 5-15 | ? | >15 | | <1 | >15 | 1-5 | <1 | | 5-15 | | <1 | 1-5 | | >15 | 1-5 | >15 | | ? | 5-15 | | >15 | >15 | 5-15 | >15 | | <1 | 5-15 | <1 | | | 5-15 | | | 5-15 | <1 | >15 | 5-15 | 1-5 | 5-15 | | | 5-15 | 5-15 | 5-15 | 5-15 | >15 | >15 |
| *Melitaea punica* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | >15 | | | |
| *Melitaea collina* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 5-15 | | | |
| *Melitaea aetherie* | | | | | | | | | | | | | | | <1 | | | | | | | | | | <1 | | | | | | | | | | <1 | | | | | | | | | | | | | |
| *Melitaea arduinna* | | | | | | <1 | | | | | | | | | | | | | | 1-5 | | 1-5 | | | | | | | | | | | | | | 1-5 | 5-15 | | <1 | | | | | 5-15 | | <1 | |
| *Melitaea trivia* | <1 | 1-5 | | | | >15 | 5-15 | | | | | <1 | | | >15 | | | | | 5-15 | | >15 | >15 | 1-5 | 1-5 | | | | | | | | | | 5-15 | | 1-5 | 5-15 | | 1-5 | | | 5-15 | <1 | >15 | 1-5 | >15 | 1-5 |
| *Melitaea didyma* | >15 | 5-15 | >15 | | | >15 | 5-15 | 5-15 | | 1-5 | | 5-15 | 1-5 | | >15 | | >15 | | ? | >15 | | >15 | >15 | 5-15 | >15 | | <1 | 1-5 | <1 | | | | | | 5-15 | 5-15 | >15 | >15 | <1 | 5-15 | <1 | | 5-15 | >15 | >15 | 5-15 | >15 | 5-15 |
| *Melitaea persea* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 5-15 | | | |
| *Melitaea interrupta* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Melitaea diamina* | 5-15 | | ? | | 5-15 | <1 | <1 | <1 | | 5-15 | | 5-15 | 5-15 | <1 | 5-15 | 1-5 | >15 | 1-5 | 5-15 | 1-5 | | | 5-15 | 1-5 | 5-15 | | 1-5 | <1 | <1 | | | <1 | 5-15 | <1 | | 1-5 | 1-5 | >15 | 5-15 | 1-5 | 5-15 | 1-5 | 1-5 | 1-5 | 1-5 | | 5-15 | 1-5 |
| *Melitaea deione* | | | 5-15 | | | | | | | <1 | | | | | >15 | | 5-15 | | | | | | | 1-5 | | | | | | | | | | 5-15 | | | | | | | | | | | | | |
| *Melitaea varia* | 1-5 | | | | | | | | | 1-5 | | | | | | | 1-5 | | | | | | | 1-5 | | | | | | | | | | | | | | | | | | | | | | | |
| *Melitaea parthenoides* | | | >15 | | | | | | | 1-5 | | | 5-15 | | >15 | | 5-15 | | | | | | | <1 | | | | | | | | | | 5-15 | | | | | | | | | | | | | |

Appendix 4: Present distribution (%) category of butterflies in the European countries, as reported by the compilers. The abbrevations of the countries are given in part I, section 2.1. * migratory species, no distr. data given.

| Species | A | AL | AND | AZO | B | BG | BIH | BY | CAN | CH | CY | CZ | D | DK | E | EST | F | FIN | FL | FYROM | GB | GR | H | HR | I | IRL | L | LT | LV | M | MAD | MD | N | NL | P | PL | RO | RUS | RUS-NE | RUS-SE | RUS-YA | S | SK | SLO | TRA | TRE | UA | YU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Melitaea aurelia* | 5-15 | | | | 1-5 | 1-5 | <1 | 1-5 | | 1-5 | | 1-5 | 5-15 | | | 5-15 | 5-15 | | | | | <1 | >15 | 1-5 | 1-5 | | 5-15 | <1 | <1 | | | | | | | <1 | 5-15 | 5-15 | 1-5 | 1-5 | <1 | | 5-15 | 5-15 | 1-5 | | 1-5 | <1 |
| *Melitaea britomartis* | 1-5 | | | | | 1-5 | | <1 | | <1 | | <1 | 5-15 | | | | | | | | | | 5-15 | 1-5 | <1 | | | | | | | | | | <1 | 5-15 | 5-15 | 1-5 | 5-15 | | <1 | 1-5 | 5-15 | | | 1-5 | |
| *Melitaea asteria* | 1-5 | | | | | | | | | 1-5 | | | | | | | | | | | | | | | <1 | | | | | | | | | | | | | | | | | | | | | | | |
| *Melitaea athalia* | >15 | 5-15 | >15 | | 1-5 | >15 | >15 | 5-15 | | 5-15 | | >15 | 5-15 | 5-15 | >15 | >15 | >15 | >15 | 5-15 | >15 | <1 | 5-15 | >15 | 5-15 | >15 | | 5-15 | >15 | >15 | | | 5-15 | >15 | 1-5 | 1-5 | >15 | >15 | >15 | >15 | >15 | 5-15 | >15 | >15 | 5-15 | 1-5 | >15 | 5-15 |
| *Melitaea caucasogenita* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | |
| *Limenitis populi* | 1-5 | | | | 1-5 | 5-15 | <1 | 1-5 | | 1-5 | | >15 | 1-5 | | | >15 | 1-5 | >15 | | 1-5 | | 1-5 | 1-5 | 1-5 | 1-5 | | <1 | >15 | 5-15 | | | | 5-15 | <1 | | 5-15 | 5-15 | >15 | >15 | >15 | 1-5 | >15 | 5-15 | 1-5 | | | 1-5 | 1-5 |
| *Limenitis camilla* | 1-5 | | 5-15 | | >15 | 1-5 | <1 | 1-5 | | 5-15 | | 5-15 | 5-15 | 5-15 | >15 | 5-15 | >15 | | 1-5 | <1 | 5-15 | <1 | 5-15 | 1-5 | 5-15 | | 5-15 | >15 | 1-5 | | | <1 | | 5-15 | <1 | 5-15 | 1-5 | 1-5 | 1-5 | 1-5 | <1 | | 5-15 | 5-15 | <1 | <1 | 5-15 | 1-5 |
| *Limenitis reducta* | 1-5 | 5-15 | 5-15 | | | >15 | 5-15 | | | <1 | 5-15 | | 1-5 | | >15 | | 5-15 | | | 5-15 | | >15 | 1-5 | 1-5 | >15 | | <1 | | | | | | | | 1-5 | | 1-5 | 1-5 | | <1 | | | 1-5 | 1-5 | 1-5 | 5-15 | <1 | 5-15 |
| *Hypolimnas misippus* | | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | ? | | | | | | | | | | | | | | | | | |
| *Neptis sappho* | <1 | | | | | 1-5 | 5-15 | ? | | | | <1 | | | | | | | | <1 | | 1-5 | 5-15 | 5-15 | <1 | | | | | | | <1 | | | | <1 | 1-5 | 5-15 | 1-5 | 1-5 | | | <1 | 1-5 | | | 5-15 | 1-5 |
| *Neptis rivularis* | 1-5 | | | | | 5-15 | 5-15 | ? | | 1-5 | | 1-5 | | | | | | | | <1 | | <1 | 5-15 | 1-5 | 1-5 | | | | | | | | | | 1-5 | >15 | 5-15 | 1-5 | 5-15 | | | 1-5 | 1-5 | <1 | | 5-15 | 1-5 |
| *Charaxes jasius* | | 1-5 | | | | | <1 | | | | 5-15 | | | | 5-15 | | 1-5 | | | | | 1-5 | | 1-5 | 1-5 | | | | | | | | | | >15 | | | | | | | | | 1-5 | | | <1 |
| *Euapartura mirza* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Apatura metis* | <1 | | | | | 1-5 | <1 | | | | | | | | | | | | | | | 1-5 | 1-5 | <1 | | | | | | | <1 | | | | | 1-5 | <1 | | <1 | | | <1 | 1-5 | <1 | <1 |
| *Apatura ilia* | 1-5 | 1-5 | 1-5 | | 5-15 | 5-15 | <1 | 1-5 | | 1-5 | | >15 | 1-5 | | 1-5 | 1-5 | >15 | | ? | 1-5 | | 1-5 | >15 | 1-5 | 1-5 | | <1 | 5-15 | <1 | | | <1 | | | <1 | >15 | 5-15 | >15 | 1-5 | 5-15 | 1-5 | | >15 | 1-5 | | | >15 | <1 |
| *Apatura iris* | 5-15 | | | | >15 | 1-5 | <1 | 1-5 | | 1-5 | | >15 | 5-15 | >15 | 5-15 | >15 | >15 | 1-5 | ? | 1-5 | 1-5 | 1-5 | >15 | 5-15 | 1-5 | | 1-5 | >15 | 5-15 | | | | | 1-5 | <1 | >15 | 5-15 | >15 | 1-5 | 1-5 | <1 | 1-5 | >15 | 1-5 | | | 5-15 | <1 |
| *Thaleropis ionia* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 5-15 | | | |
| *Kirinia roxelana* | | 1-5 | | | | 5-15 | <1 | | | | 5-15 | | | | | | | | | 5-15 | | >15 | | <1 | | | | | | | | | | | | | 1-5 | | | | | | | >15 | 5-15 | | 1-5 |
| *Esperarge climene* | | 1-5 | | | | <1 | | | | | | | | | | | | | | <1 | | 1-5 | | | | | | | | | | | | | | | | ? | | <1 | | | | | >15 | | 1-5 | <1 |
| *Pararge aegeria* | >15 | 5-15 | >15 | | >15 | >15 | >15 | 1-5 | | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | 5-15 | >15 | >15 | 5-15 | 5-15 | 5-15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | 1-5 | 1-5 | 1-5 | >15 | >15 | >15 | >15 | 1-5 | >15 | >15 |
| *Pararge xiphioides* | | | | | | | | | 5-15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Pararge xiphia* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 5-15 | | | | | | | | | | | | | | | | | |
| *Lasiommata megera* | >15 | 5-15 | >15 | | >15 | >15 | >15 | 5-15 | | 5-15 | >15 | >15 | >15 | >15 | >15 | | >15 | | 5-15 | >15 | >15 | >15 | >15 | 5-15 | >15 | >15 | >15 | 5-15 | <1 | >15 | | | 1-5 | >15 | >15 | >15 | >15 | >15 | | 1-5 | | 5-15 | >15 | >15 | >15 | 5-15 | 5-15 | >15 |
| *Lasiommata paramegaera* | | | | | | | | | | | | | | | | | 1-5 | | | | | | | | 1-5 | | | | | | | | | | | | | | | | | | | | | | | |
| *Lasiommata petropolitana* | >15 | 5-15 | | | | 5-15 | 1-5 | <1 | | 1-5 | | <1 | <1 | | <1 | >15 | 1-5 | >15 | 1-5 | 1-5 | | 1-5 | | | 1-5 | | | <1 | 1-5 | | | | >15 | | | <1 | | 5-15 | >15 | 1-5 | >15 | >15 | 5-15 | 1-5 | 1-5 | | <1 | 1-5 |
| *Lasiommata maera* | >15 | | >15 | | 5-15 | >15 | >15 | 5-15 | | 5-15 | 5-15 | >15 | 5-15 | | >15 | >15 | >15 | >15 | 1-5 | >15 | | >15 | | 1-5 | >15 | | <1 | >15 | >15 | | | >15 | >15 | | >15 | 5-15 | >15 | >15 | 5-15 | >15 | 1-5 | >15 | >15 | >15 | >15 | 5-15 | >15 | >15 |
| *Lasiommata menava* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | |
| *Lasiommata deidamia* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | 1-5 | <1 | | | | | | | | |
| *Lopinga achine* | 5-15 | | | | <1 | ? | 5-15 | <1 | | <1 | | 1-5 | <1 | | <1 | >15 | 1-5 | 1-5 | | | | | 1-5 | <1 | 1-5 | | <1 | 5-15 | 1-5 | | | | | | 1-5 | 1-5 | >15 | 5-15 | 1-5 | <1 | 1-5 | <1 | 5-15 | | 1-5 | 1-5 |
| *Ypthima asterope* | | | | | | | | | | | 5-15 | | | | | | | | | | | <1 | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Coenonympha tullia* | 1-5 | 5-15 | | | <1 | | 5-15 | 5-15 | | <1 | | 1-5 | 1-5 | 5-15 | | >15 | <1 | >15 | | | 5-15 | | <1 | <1 | <1 | 1-5 | | >15 | 1-5 | | | | >15 | <1 | | 5-15 | <1 | 5-15 | 5-15 | 1-5 | 1-5 | >15 | 1-5 | <1 | | | 5-15 | |
| *Coenonympha oedippus* | <1 | | | | | ? | | <1 | | <1 | | | <1 | | | | <1 | | <1 | | | | <1 | | 1-5 | | | | | | | | | | | <1 | | 1-5 | | <1 | | | <1 | <1 | | | <1 | |
| *Coenonympha amaryllis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | <1 | | | | | | | | |
| *Coenonympha rhodopensis* | | | | | | 1-5 | 1-5 | | | | | | | | | | | | | 1-5 | | 1-5 | | 1-5 | <1 | | | | | | | | | | | | | | | | | | | | | | 1-5 |
| *Coenonympha arcania* | >15 | 5-15 | >15 | | 5-15 | >15 | 5-15 | 5-15 | | 5-15 | | >15 | >15 | <1 | >15 | 5-15 | >15 | | | 1-5 | | 5-15 | >15 | 5-15 | >15 | | >15 | >15 | 5-15 | | | 1-5 | 1-5 | <1 | 1-5 | >15 | >15 | 5-15 | 1-5 | 5-15 | | >15 | >15 | 5-15 | 5-15 | 5-15 | >15 | 5-15 |
| *Coenonympha glycerion* | 1-5 | | | | <1 | 5-15 | 5-15 | 5-15 | | 1-5 | | >15 | ? | | >15 | >15 | 1-5 | >15 | | 1-5 | | 1-5 | >15 | 1-5 | 1-5 | | | >15 | >15 | | | 1-5 | | | <1 | >15 | >15 | >15 | 5-15 | >15 | 5-15 | | >15 | 5-15 | 1-5 | | >15 | 5-15 |
| *Coenonympha gardetta* | >15 | 1-5 | | | | | <1 | | | >15 | | | ? | | | | <1 | | 5-15 | | | | | | 1-5 | | | | | | | | | | | | | | | | | | | 1-5 | | | | <1 |
| *Coenonympha darwiniana* | | | | | | | | | | 1-5 | | | | | | | <1 | | | | | | | | 1-5 | | | | | | | | | | | | | | | | | | | | | | | |

Appendix 4: Present distribution (%) category of butterflies in the European countries, as reported by the compilers. The abbrevations of the countries are given in part I, section 2.1. * migratory species, no distr. data given.

| Species | A | AL | AND | AZO | B | BG | BIH | BY | CAN | CH | CY | CZ | D | DK | E | EST | F | FIN | FL | FYROM | GB | GR | H | HR | I | IRL | L | LT | LV | M | MAD | MD | N | NL | P | PL | RO | RUS | RUS-NE | RUS-SE | RUS-YA | S | SK | SLO | TRA | TRE | UA | YU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Coenonympha corinna* | | | | | | | | | | | | | | | | | <1 | | | | | | | | 1-5 | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Coenonympha elbana* | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Coenonympha dorus* | | | 1-5 | | | | | | | | | | | | >15 | | 1-5 | | | | | | | | 1-5 | | | | | | | | | | >15 | | | | | | | | | | | | | | |
| *Coenonympha hero* | <1 | | | | <1 | | | 1-5 | | <1 | | <1 | <1 | <1 | | >15 | <1 | | | | | | | | | | <1 | 5-15 | 5-15 | | | | 1-5 | <1 | | 1-5 | | >15 | 1-5 | 1-5 | | 1-5 | <1 | | | | 1-5 | |
| *Coenonympha leander* | | 5-15 | | | | 5-15 | | | | | | | | | | | | | | 1-5 | | 1-5 | | | | | | | | | | | | | | | <1 | 1-5 | | 1-5 | | | | | 5-15 | | | 1-5 |
| *Coenonympha saadi* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 5-15 | | | |
| *Coenonympha symphyta* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Coenonympha pamphilus* | >15 | | >15 | | >15 | >15 | >15 | >15 | | >15 | | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | 5-15 | >15 | >15 | >15 | >15 | | >15 | >15 | >15 | >15 | >15 | >15 | >15 | 5-15 | >15 | 5-15 | >15 | >15 | >15 | >15 | >15 |
| *Coenonympha thyrsis* | | | | | | | | | | | | | | | | | | | | | | 5-15 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Triphysa phryne* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | 1-5 | | | | | | 5-15 | | <1 | |
| *Pyronia tithonus* | | 5-15 | >15 | | >15 | 5-15 | 5-15 | | | 1-5 | | | 1-5 | | >15 | | >15 | | | >15 | >15 | 5-15 | 5-15 | 1-5 | >15 | 5-15 | 5-15 | | | | | | >15 | >15 | <1 | <1 | | | | | <1 | 1-5 | 1-5 | <1 | <1 | 5-15 |
| *Pyronia cecilia* | | 5-15 | | | | | | | | | | | | | >15 | | 5-15 | | | | | 5-15 | | 1-5 | >15 | | | | | | | | | | >15 | | | | | | | | | 1-5 | <1 | | |
| *Pyronia bathseba* | | | | | | | | | | | | | | | >15 | | 1-5 | | | | | | | | | | | | | | | | | >15 | | | | | | | | | | | | | |
| *Aphantopus hyperantus* | >15 | 1-5 | | | >15 | 5-15 | 5-15 | 5-15 | | >15 | | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | <1 | >15 | 5-15 | >15 | 5-15 | 1-5 | >15 | >15 | >15 | >15 | | | <1 | >15 | >15 | | >15 | >15 | >15 | 5-15 | ? | >15 | >15 | >15 | 5-15 | | >15 | 5-15 |
| *Maniola telmessia* | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | | | | | | | | | | | | | | | | | | | | | >15 | | | |
| *Maniola cypricola* | | | | | | | | | | | >15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Maniola halicarnassus* | | | | | | | | | | | | | | | | | | | | | | <1 | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | |
| *Maniola nurag* | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | | | | | | | | | | | | | | | | | | | | | | |
| *Maniola chia* | | | | | | | | | | | | | | | | | | | | | | <1 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Maniola jurtina* | >15 | >15 | >15 | | >15 | >15 | >15 | 5-15 | >15 | >15 | | >15 | >15 | >15 | >15 | >15 | >15 | 1-5 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | >15 | | <1 | >15 | >15 | >15 | >15 | >15 | >15 | 5-15 | >15 | 5-15 | >15 | >15 | >15 | >15 | >15 | >15 |
| *Maniola megala* | | | | | | | | | | | | | | | | | | | | | | <1 | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Hyponephele wagneri* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 5-15 | | | |
| *Hyponephele urartua* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | |
| *Hyponephele naricina* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Hyponephele cadusia* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | |
| *Hyponephele kocaki* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | |
| *Hyponephele lycaon* | 1-5 | 5-15 | 1-5 | | | 5-15 | 5-15 | 1-5 | | 1-5 | | 1-5 | <1 | | >15 | >15 | 1-5 | <1 | | 5-15 | | >15 | 5-15 | 1-5 | 5-15 | | | 5-15 | 5-15 | | | <1 | | | 1-5 | 5-15 | 1-5 | >15 | 5-15 | >15 | 1-5 | | 5-15 | 1-5 | >15 | | >15 | 5-15 |
| *Hyponephele lupinus* | | 1-5 | | | | 1-5 | 5-15 | | | | 5-15 | <1 | | | >15 | | <1 | | | 5-15 | | >15 | 1-5 | <1 | 1-5 | | | | | | | <1 | | 1-5 | 5-15 | | 1-5 | | | <1 | | >15 | 1-5 | >15 | 5-15 |
| *Hyponephele huebneri* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | | | | | | |
| *Proterebia afra* | | | | | | | | | | | | | | | | | | | | | | 1-5 | | <1 | | | | | | | | | | | | | 1-5 | | 1-5 | | | | | 1-5 | | <1 | |
| *Erebia ligea* | >15 | 5-15 | | | <1 | 5-15 | 5-15 | 1-5 | | 5-15 | | 5-15 | >15 | | | >15 | ? | >15 | 5-15 | 5-15 | | 1-5 | | 1-5 | 5-15 | | | 1-5 | 5-15 | | | >15 | | | 1-5 | 5-15 | >15 | >15 | 1-5 | 5-15 | >15 | 5-15 | >15 | | | 1-5 | 5-15 |
| *Erebia euryale* | >15 | 5-15 | >15 | | | 5-15 | 5-15 | | | 5-15 | | 1-5 | 1-5 | | 5-15 | | 1-5 | | 5-15 | 5-15 | | 1-5 | | <1 | 5-15 | | | | | | | | | | 1-5 | 5-15 | 1-5 | 5-15 | <1 | | | 5-15 | >15 | | | 1-5 | 5-15 |
| *Erebia eriphyle* | 1-5 | | | | | | | | | 1-5 | | | ? | | | | | | 1-5 | | | | | | <1 | | | | | | | | | | | | | | | | | | | | | | | |
| *Erebia manto* | 5-15 | | | | | | 1-5 | | | >15 | | | ? | | 1-5 | | <1 | | 5-15 | | | | | | 1-5 | | | | | | | | | | | <1 | <1 | | | | | | 1-5 | 5-15 | | | <1 | 1-5 |
| *Erebia claudina* | 1-5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Erebia flavofasciata* | <1 | | | | | | | | | <1 | | | | | | | | | | | | | | | <1 | | | | | | | | | | | | | | | | | | | | | | | |
| *Erebia epiphron* | | 5-15 | >15 | | | | 5-15 | | | >15 | | <1 | ? | | 5-15 | | 1-5 | | 5-15 | 5-15 | 1-5 | <1 | | <1 | 5-15 | <1 | | | | | | | | | | <1 | 1-5 | | | | | | 1-5 | 5-15 | | | <1 | >15 |
| *Erebia orientalis* | | | | | | 1-5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 |

Appendix 4: Present distribution (%) category of butterflies in the European countries, as reported by the compilers. The abbrevations of the countries are given in part I, section 2.1. * migratory species, no distr. data given.

| Species | A | AL | AND | AZO | B | BG | BIH | BY | CAN | CH | CY | CZ | D | DK | E | EST | F | FIN | FL | FYROM | GB | GR | H | HR | I | IRL | L | LT | LV | M | MAD | MD | N | NL | P | PL | RO | RUS | RUS-NE | RUS-SE | RUS-YA | S | SK | SLO | TRA | TRE | UA | YU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Erebia christi* | | | | | | | | | | <1 | | | | | | | | | | | | | | | <1 | | | | | | | | | | | | | | | | | | | | | | | | |
| *Erebia pharte* | 5-15 | | | | | | | | | >15 | | | ? | | | | 1-5 | | 5-15 | | | | | | 1-5 | | | | | | | | | | | <1 | <1 | | | | | | <1 | 1-5 | | | | | |
| *Erebia melampus* | 5-15 | | | | | | | | | 5-15 | | | ? | | | | <1 | | 5-15 | | | | | | 1-5 | | | | | | | | | | | | | | | | | | | | | <1 | | |
| *Erebia sudetica* | | | | | | | | | | 1-5 | | <1 | | | | | <1 | | | | | | | | | | | | | | | | | | <1 | <1 | | | | | | | | | | | | |
| *Erebia aethiops* | >15 | 5-15 | | | <1 | 5-15 | 5-15 | <1 | | 5-15 | | 5-15 | 5-15 | | | | 5-15 | | 5-15 | 5-15 | 5-15 | 1-5 | 5-15 | 5-15 | 5-15 | | <1 | ? | <1 | | | | | | | 1-5 | 1-5 | 5-15 | 1-5 | 5-15 | | | 5-15 | >15 | 5-15 | | 1-5 | >15 |
| *Erebia triaria* | | 1-5 | | | | | 1-5 | | | 1-5 | | | | | >15 | | <1 | | | | | | | <1 | 1-5 | | | | | | | | | | <1 | | | | | | | | | | | | <1 | <1 |
| *Erebia rossii* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | 1-5 | | | | | | | | | | |
| *Erebia embla* | | | | | | | | | | | | | | | | <1 | | >15 | | | | | | | | | | | <1 | | | | 5-15 | | | | 1-5 | >15 | <1 | | >15 | | | | | | | |
| *Erebia disa* | | | | | | | | | | | | | | | | | | 5-15 | | | | | | | | | | | | | | | 5-15 | | | | 5-15 | 5-15 | | | 5-15 | | | | | | | |
| *Erebia cyclopius* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | <1 | <1 | | | | | | | | | |
| *Erebia fasciata* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | <1 | | | | | | | | | | |
| *Erebia medusa* | >15 | 5-15 | | | 5-15 | >15 | 5-15 | ? | | 5-15 | | >15 | 5-15 | | | | 5-15 | | 1-5 | 5-15 | | 5-15 | 5-15 | 1-5 | 1-5 | | 5-15 | | | | | | | | | 5-15 | >15 | 5-15 | | 1-5 | | | >15 | 5-15 | 1-5 | <1 | 5-15 | >15 |
| *Erebia hewitsonii* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | | |
| *Erebia polaris* | | | | | | | | | | | | | | | | | | 1-5 | | | | | | | | | | | | | | | 5-15 | | | | ? | 1-5 | ? | | | | | | | | | | |
| *Erebia edda* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | <1 | | | | | | | | | | |
| *Erebia alberganus* | 5-15 | | | | | <1 | | | | 5-15 | | | | | | | 1-5 | | | <1 | | | | | 5-15 | | | | | | | | | | | | | | | | | | | | | | | | <1 |
| *Erebia pluto* | 1-5 | | | | | | | | | 5-15 | | | ? | | | | <1 | | 1-5 | | | | | | 1-5 | | | | | | | | | | | | | | | | | | | | <1 | | | | | |
| *Erebia gorge* | 5-15 | 5-15 | 5-15 | | | <1 | 1-5 | | | >15 | | | ? | | 1-5 | | <1 | | 1-5 | | | | | <1 | 1-5 | | | | | | | | | | <1 | 1-5 | | | | | | 1-5 | 1-5 | | | <1 | <1 |
| *Erebia rhodopensis* | | | | | | <1 | | | | | | | | | | | | | | <1 | | <1 | | | | | | | | | | | | | | | | | | | | | | | | | | <1 |
| *Erebia aethiopella* | | | | | | | | | | | | | | | | | <1 | | | | | | | | <1 | | | | | | | | | | | | | | | | | | | | | | | | |
| *Erebia mnestra* | 1-5 | | | | | | | | | 5-15 | | | | | | | <1 | | | | | | | | 1-5 | | | | | | | | | | | | | | | | | | | | | | | | |
| *Erebia gorgone* | | | >15 | | | | | | | | | | | | 1-5 | | <1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Erebia epistygne* | | | | | | | | | | | | | | | 5-15 | | <1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Erebia ottomana* | | 5-15 | | | | 1-5 | 1-5 | | | | | | | | | | <1 | | | 5-15 | | 5-15 | | 1-5 | <1 | | | | | | | | | | | | | | | | | | | | <1 | | | 5-15 |
| *Erebia graucasica* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | | | | | | 1-5 | | | |
| *Erebia iranica* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | | | | | | <1 | | | |
| *Erebia melancholica* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | | | | | | 1-5 | | | |
| *Erebia tyndarus* | 5-15 | | | | | | | | | 5-15 | | | ? | | | | | | 5-15 | | | | | | 1-5 | | | | | | | | | | | | | | | | | | | | | <1 | | |
| *Erebia nivalis* | 5-15 | | | | | | | | | <1 | | | | | | | | | | | | | | | <1 | | | | | | | | | | | | | | | | | | | | | | | |
| *Erebia calcaria* | ? | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | | | | | | | | | | | | | | | | | | 5-15 | | | |
| *Erebia cassioides* | >15 | 1-5 | >15 | | | <1 | 1-5 | | | 1-5 | | | | | 5-15 | | 1-5 | | | 5-15 | | <1 | | | 1-5 | | | | | | | | | | | | <1 | | | | | | | | | | 5-15 |
| *Erebia hispania* | | | >15 | | | | | | | | | | | | 5-15 | | <1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Erebia pronoe* | 5-15 | 5-15 | | | | 1-5 | 1-5 | | | 1-5 | | | ? | | 1-5 | | <1 | | 5-15 | 1-5 | | | | 1-5 | 1-5 | | | | | | | | | | <1 | <1 | | | | | | 1-5 | >15 | | | <1 | 5-15 |
| *Erebia lefebvrei* | | | 5-15 | | | | | | | | | | | | 1-5 | | <1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Erebia scipio* | | | | | | | | | | | | | | | | | <1 | | | | | | | | <1 | | | | | | | | | | | | | | | | | | | | | | | |
| *Erebia stirius* | 1-5 | | | | | | | | | | | | | | | | | | | | | | | <1 | 1-5 | | | | | | | | | | | | | | | | | | | | 5-15 | | | <1 | |
| *Erebia styx* | 1-5 | | | | | | | | | <1 | | | ? | | | | | | | | | | | | 1-5 | | | | | | | | | | | | | | | | | | | | <1 | | | | |
| *Erebia montana* | 1-5 | | | | | | | | | 1-5 | | | | | | | <1 | | <1 | | | | | | 1-5 | | | | | | | | | | | | <1 | | | | | | | | | | | |

Appendix 4: Present distribution (%) category of butterflies in the European countries, as reported by the compilers. The abbrevations of the countries are given in part I, section 2.1. * migratory species, no distr. data given.

| Species | A | AL | AND | AZO | B | BG | BIH | BY | CAN | CH | CY | CZ | D | DK | E | EST | F | FIN | FL | FYROM | GB | GR | H | HR | I | IRL | L | LT | LV | M | MAD | MD | N | NL | P | PL | RO | RUS | RUS-NE | RUS-SE | RUS-YA | S | SK | SLO | TRA | TRE | UA | YU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Erebia zapateri* | | | | | | | | | | | | | | | 1-5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Erebia neoridas* | | | 1-5 | | | | | | | | | | | | 5-15 | | 1-5 | | | | | | | | 1-5 | | | | | | | | | | | | | | | | | | | | | | | |
| *Erebia melas* | | 5-15 | | | | 1-5 | 5-15 | | | | | | | | | | | | | 1-5 | | 1-5 | | 1-5 | | | | | | | | | | | | 1-5 | | | | | | | 1-5 | | | <1 | 1-5 |
| *Erebia oeme* | 5-15 | 5-15 | >15 | | | 1-5 | 5-15 | | | 5-15 | | | ? | | <1 | | <1 | | 5-15 | 1-5 | | 1-5 | | <1 | <1 | | | | | | | | | | | | | | | | | | 1-5 | | | | 1-5 |
| *Erebia meolans* | 1-5 | | >15 | | | | | | | 1-5 | | | >15 | | >15 | | 5-15 | | 1-5 | | | | | | 1-5 | | | | | | | | | | | | | | | | | | | | | | <1 | |
| *Erebia palarica* | | | | | | | | | | | | | | | 1-5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Erebia discoidalis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | 1-5 | | | | | | | | | | |
| *Erebia dabanensis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | | | | | | | | |
| *Erebia pandrose* | >15 | 5-15 | >15 | | | <1 | 5-15 | | | >15 | | | ? | | 1-5 | | <1 | >15 | 5-15 | 1-5 | | | | | 1-5 | | | | | | | | >15 | | | <1 | <1 | 1-5 | | | | >15 | 1-5 | >15 | | | <1 | 5-15 |
| *Erebia sthennyo* | | | | | | | | | | | | | | | 1-5 | | <1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Melanargia russiae* | | 1-5 | 5-15 | | | | | | | | | | | | >15 | | 1-5 | | | <1 | | 1-5 | <1 | | ? | | | | | | | | | | 5-15 | | | 5-15 | 1-5 | 1-5 | | | | | 1-5 | | 1-5 | |
| *Melanargia galathea* | >15 | >15 | | | 5-15 | >15 | >15 | <1 | | >15 | | >15 | >15 | | >15 | | >15 | | 5-15 | >15 | >15 | >15 | >15 | 5-15 | ? | | >15 | | | | | 1-5 | | | | >15 | >15 | 5-15 | | 5-15 | | | >15 | >15 | 5-15 | 5-15 | >15 | >15 |
| *Melanargia lachesis* | | | >15 | | | 5-15 | | | | | | | | | >15 | | 1-5 | | | | | | | | | | | | | | | | | >15 | | | | | | | | | | | | | 5-15 |
| *Melanargia syriaca* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 5-15 | | | |
| *Melanargia hylata* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 5-15 | | | |
| *Melanargia grumi* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 5-15 | | | |
| *Melanargia titea* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 5-15 | | | |
| *Melanargia larissa* | | >15 | | | | | 1-5 | | | | | | | | | | | | | 1-5 | | >15 | | 1-5 | | | | | | | | | | | | | | | | | | | | | >15 | 5-15 | | ? |
| *Melanargia arge* | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | | | | | | | | | | | | | | | | | | | | | |
| *Melanargia occitanica* | | | | | | | | | | | | | | | >15 | | <1 | | | | | | | | <1 | | | | | | | | | | >15 | | | | | | | | | | | |
| *Melanargia pherusia* | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | | | | | | | | | | | | | | | | | | | | |
| *Melanargia ines* | | | | | | | | | | | | | | | >15 | | | | | | | | | | | | | | | | | | | | >15 | | | | | | | | | | | |
| *Satyrus favonius* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 5-15 | | | |
| *Satyrus parthicus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Satyrus ferula* | ? | 5-15 | | | | 5-15 | 1-5 | | | 5-15 | | | | | 1-5 | | 1-5 | | | 1-5 | | >15 | | <1 | 5-15 | | | | | | | | | | | | 5-15 | | 1-5 | | | 1-5 | | 1-5 | 1-5 |
| *Satyrus amasinus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 5-15 | | | |
| *Satyrus actaea* | | 5-15 | 5-15 | | | | | | | | | | | | >15 | | 1-5 | | | | | | | | <1 | | | | | | | | | | <1 | | | | | | | | | | | | |
| *Minois dryas* | 5-15 | 1-5 | | | | ? | 5-15 | ? | | 1-5 | | 5-15 | 1-5 | | 1-5 | | 5-15 | | 5-15 | <1 | | 1-5 | >15 | 1-5 | 1-5 | | <1 | | | | | 1-5 | | | <1 | >15 | 1-5 | 1-5 | >15 | | | >15 | >15 | <1 | <1 | 5-15 | 1-5 |
| *Hipparchia fagi* | 1-5 | 5-15 | 5-15 | | | 5-15 | 1-5 | | | 1-5 | | 1-5 | <1 | | >15 | | 5-15 | | | 5-15 | | >15 | >15 | 5-15 | 5-15 | | <1 | | | | | | | | 1-5 | | 5-15 | 1-5 | | 1-5 | | | 5-15 | 1-5 | | | 5-15 | 5-15 |
| *Hipparchia alcyone* | <1 | 5-15 | >15 | | | | | 1-5 | | 1-5 | | 1-5 | <1 | | >15 | | 1-5 | | | | | | | | 1-5 | | <1 | 5-15 | <1 | | | | 1-5 | | 5-15 | 1-5 | 1-5 | 1-5 | | <1 | | | 1-5 | | | 1-5 | |
| *Hipparchia syriaca* | | | | | | 1-5 | 1-5 | | | | 5-15 | | | | | | | | | 5-15 | | 5-15 | | 1-5 | | | | | | | | | | | | <1 | | | | | | | | >15 | 1-5 | | 5-15 |
| *Hipparchia autonoe* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | 1-5 | | | | | | | | | |
| *Hipparchia neomiris* | | | | | | | | | | | | | | | | | 1-5 | | | | | | | | 1-5 | | | | | | | | | | | | | | | | | | | | | | |
| *Hipparchia aristaeus* | | | | | | 1-5 | | | | | | | | | | | | | | 1-5 | | >15 | | | 1-5 | | | | | | | | | | | | | | | | | | | | 1-5 | | |
| *Hipparchia cretica* | | | | | | | | | | | | | | | | | | | | | | 5-15 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Hipparchia semele* | 5-15 | 5-15 | 5-15 | | 5-15 | 5-15 | 1-5 | 5-15 | | 1-5 | | 5-15 | 1-5 | >15 | >15 | >15 | >15 | 1-5 | | | >15 | | >15 | 1-5 | 5-15 | >15 | <1 | 5-15 | 5-15 | | | | 5-15 | >15 | 5-15 | >15 | 5-15 | 1-5 | | | | 5-15 | 5-15 | 5-15 | | | >15 | 5-15 |
| *Hipparchia mersina* | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | | | | | | | | | | | | | | | | | | | | | | 5-15 | | | |
| *Hipparchia volgensis* | | | | | | 1-5 | | | | | | | | | | | | | | 1-5 | | 5-15 | | | | | | | | | | | | | | | 1-5 | | <1 | | | | | | <1 | | 1-5 |

Appendix 4: Present distribution (%) category of butterflies in the European countries, as reported by the compilers. The abbrevations of the countries are given in part I, section 2.1. * migratory species, no distr. data given.

| Species | A | AL | AND | AZO | B | BG | BIH | BY | CAN | CH | CY | CZ | D | DK | E | EST | F | FIN | FL | FYROM | GB | GR | H | HR | I | IRL | L | LT | LV | M | MAD | MD | N | NL | P | PL | RO | RUS | RUS-NE | RUS-SE | RUS-YA | S | SK | SLO | TRA | TRE | UA | YU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Hipparchia christenseni* | | | | | | | | | | | | | | | | | | | | | | <1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Hipparchia pellucida* | | | | | | | | | | | >15 | | | | | | | | | | | <1 | | | | | | | | | | | | | | | | <1 | | | | | | | | 5-15 | | 1-5 | |
| *Hipparchia statilinus* | 1-5 | 5-15 | 5-15 | | <1 | >15 | 5-15 | | | 1-5 | | <1 | <1 | | >15 | | 5-15 | | | >15 | | 5-15 | 5-15 | 1-5 | ? | | | <1 | | | | | | 1-5 | >15 | 1-5 | 1-5 | <1 | | <1 | | | <1 | 1-5 | 5-15 | 1-5 | 5-15 | >15 |
| *Hipparchia fatua* | | | | | | 1-5 | <1 | | | | | | | | | | | | | <1 | | >15 | | | | | | | | | | | | | | | | | | | | | | | >15 | <1 | | <1 |
| *Hipparchia parisatis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Hipparchia fidia* | | | | | | | | | | | | | | | >15 | | 1-5 | | | | | | | | <1 | | | | | | | | | | >15 | | | | | | | | | | | | | |
| *Hipparchia maderensis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | | | | | | | | | | | | | | | | |
| *Hipparchia azorina* | | | | <1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Hipparchia occidentalis* | | | | <1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Hipparchia miguelensis* | | | | <1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Hipparchia wyssii* | | | | | | | | | 5-15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Hipparchia bacchus* | | | | | | | | | 1-5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Hipparchia gomera* | | | | | | | | | 1-5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Hipparchia tilosi* | | | | | | | | | 1-5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Hipparchia senthes* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 5-15 | | | |
| *Arethusana arethusa* | 1-5 | 5-15 | | | | >15 | | | | <1 | | 1-5 | <1 | | >15 | | 5-15 | | | >15 | | 5-15 | >15 | <1 | 1-5 | | | | | | | | | | 1-5 | | 1-5 | 1-5 | | 1-5 | | | 5-15 | 5-15 | >15 | <1 | 1-5 | >15 |
| *Brintesia circe* | 1-5 | 5-15 | 5-15 | | | 5-15 | 5-15 | | | 5-15 | >15 | 5-15 | 1-5 | | >15 | | 5-15 | | | 1-5 | | >15 | >15 | 1-5 | 5-15 | | <1 | | | | | | | 5-15 | | 5-15 | 1-5 | | <1 | | | 5-15 | 1-5 | >15 | 1-5 | 5-15 | 5-15 |
| *Chazara briseis* | 1-5 | 5-15 | 5-15 | | <1 | 5-15 | 5-15 | | | <1 | | 1-5 | 1-5 | | >15 | | 5-15 | | | 1-5 | | 5-15 | 5-15 | 1-5 | 5-15 | | <1 | | | | | | | | | <1 | 5-15 | >15 | <1 | 5-15 | | | 5-15 | 5-15 | >15 | <1 | 5-15 | 5-15 |
| *Chazara persephone* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | 1-5 | | | | | | >15 | | | |
| *Chazara egina* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | |
| *Chazara bischoffii* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | >15 | | | |
| *Chazara prieuri* | | | | | | | | | | | | | | | 1-5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Pseudochazara geyeri* | | 1-5 | | | | | | | | | | | | | | | | | | <1 | | <1 | | | | | | | | | | | | | | | <1 | | | | | | | | 5-15 | | | |
| *Pseudochazara beroe* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 5-15 | | | |
| *Pseudochazara graeca* | | | | | | | | | | | | | | | | | | | | <1 | | 5-15 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Pseudochazara amymone* | | | | | | | | | | | | | | | | | | | | | | <1 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Pseudochazara orestes* | | | | | | <1 | | | | | | | | | | | | | | | | <1 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Pseudochazara euxina* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | | | | | | | <1 | |
| *Pseudochazara hippolyte* | | | | | | | | | | | | | | | 1-5 | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | 1-5 | | | | | | | | |
| *Pseudochazara quirensis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | | | | | | | | |
| *Pseudochazara lydia* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 5-15 | | | |
| *Pseudochazara mamurra* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 5-15 | | | |
| *Pseudochazara schakuhensis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | |
| *Pseudochazara pelopea* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | >15 | | | |
| *Pseudochazara alpina* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <1 | | | | | | | | | | |
| *Pseudochazara mniszechii* | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | | | | | | | | | | | | | | | | | | | | | | | >15 | | | |
| *Pseudochazara cingovskii* | | 1-5 | | | | | | | | | | | | | | | | | | <1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Pseudochazara anthelea* | | 5-15 | | | | 1-5 | <1 | | | | | | | | | | | | | <1 | | 5-15 | | <1 | | | | | | | | | | | | | | | | | | | | | | | >15 | | | |

Appendix 4: Present distribution (%) category of butterflies in the European countries, as reported by the compilers. The abbrevations of the countries are given in part I, section 2.1. * migratory species, no distr. data given.

| Species | A | AL | AND | AZO | B | BG | BIH | BY | CAN | CH | CY | CZ | D | DK | E | EST | F | FIN | FL | FYROM | GB | GR | H | HR | I | IRL | L | LT | LV | M | MAD | MD | N | NL | P | PL | RO | RUS | RUS-NE | RUS-SE | RUS-YA | S | SK | SLO | TRA | TRE | UA | YU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Pseudochazara thelephassa* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 5-15 | | | |
| *Oeneis norna* | | | | | | | | | | | | | | | | | | >15 | | | | | | | | | | | | | | | 5-15 | | | | | 1-5 | <1 | | | >15 | | | | | | |
| *Oeneis bore* | | | | | | | | | | | | | | | | | | <1 | | | | | | | | | | | | | | | 1-5 | | | | | <1 | 1-5 | | | 1-5 | | | | | | |
| *Oeneis glacialis* | 5-15 | | | | | | | | | 5-15 | | | 1-5 | | | | <1 | | 1-5 | | | | | | <1 | | | | | | | | | | | | | | | | | | | | | | | | |
| *Oeneis jutta* | | | | | | | | 1-5 | | | | | | | | 5-15 | | >15 | | | | | | | | | | 1-5 | <1 | | | 5-15 | | | | <1 | | 1-5 | 5-15 | <1 | | >15 | | | | | | |
| *Oeneis melissa* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | <1 | | | | | | | | | |
| *Oeneis patrushevae* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | <1 | | | | | | | | | |
| *Oeneis polixenes* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | | | | | | | | | | |
| *Oeneis tarpeia* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1-5 | <1 | 1-5 | | | | | | | | |
| *Danaus plexippus* | | | | <1 | | | | | 5-15 | | | | | | <1 | | | | | | | | | | | | | | | | 1-5 | | | | | | | | | | | | | | | | | |
| *Danaus chrysippus* | | 1-5 | | | | | | | 1-5 | | | | | | | | <1 | | | | | 1-5 | | | <1 | | | | | | ? | | | | | | | | | | | | | | 1-5 | | | <1 |

Appendix 5: Trend in distribution over the last 25 years of butterflies in the European countries. The abbrevations of the countries are given in part I, section 2.1. * migratory species, no trend.
-4: decrease 75-100%; -3: decr. 50-75%; -2: decr. 25-50%; -1: decr. 15-25%; 0: stable; +1: increase 125-200%; +2: incr. >200%; +: extinct; ~: unknown; ?: unknown

| Species | A | AL | AND | AZO | B | BG | BIH | BY | CAN | CH | CY | CZ | D | DK | E | EST | F | FIN | FL | FYROM | GB | GR | H | HR | I | IRL | L | LT | LV | M | MAD | MD | N | NL | P | PL | RO | RUS | RUSNE | RUSSE | RUSYA | S | SK | SLO | TRA | TRE | UA | YU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Erynnis tages* | 0 | 0 | ? | | -3 | 0 | ? | 0 | | 0 | | 0 | -1 | -3 | 0 | 0 | 0 | | ? | ? | -1 | 0 | 0 | ? | ? | -1 | -1 | ? | + | | | 0 | ? | -4 | ? | 0 | 0 | 0 | ? | ? | | -1 | 0 | 0 | 0 | -3 | 0 | ? |
| *Erynnis marloyi* | | 0 | | | | 0 | | | | | | | | | | | | | | ? | | 0 | | | | | | | | | | | | | | | | | | | | | | | 0 | + | ? | |
| *Carcharodus alceae* | -3 | 0 | ? | | -3 | 0 | ? | ? | | ? | ? | -1 | -2 | | ? | | 0 | | | ? | | 0 | 0 | ? | ? | | -2 | | | | 0 | | | ? | +1 | -1 | 0 | ? | 0 | | | -2 | 0 | 0 | ? | 0 | ? |
| *Carcharodus lavatherae* | -3 | 0 | ? | | | 0 | ~ | | | -1 | | | -4 | | ? | | ? | | | ? | | 0 | -3 | ? | ? | | | | | | -1 | | | | -2 | ? | | -1 | | | + | -1 | 0 | + | -4 | ? |
| *Carcharodus floccifera* | -4 | 0 | ? | | | 0 | ? | ? | | -1 | | | -4 | | ? | ? | ? | | | ? | | 0 | +1 | ? | ? | | | +2 | ? | | | -1 | | | ? | 0 | 0 | ? | ? | 0 | 0 | | -4 | 0 | ? | | 0 | ? |
| *Carcharodus orientalis* | | 0 | | | | 0 | | | | | | | | | | | | | | ? | | 0 | | ? | | | | | | | | | | | | ? | 0 | | | | | | 0 | -3 | -4 | |
| *Carcharodus baeticus* | | 0 | | | | | | | | + | | | | | ? | | ? | | | | | | | | ? | | | | | | | | | | ? | | | | | | | | | | | | |
| *Carcharodus stauderi* | | | | | | | | | | | | | | | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | | -1 | | | |
| *Spialia phlomidis* | | 0 | | | | 0 | | | | | | | | | | | | | | ? | | 0 | | | | | | | | | | | | | | | | | | | | | 0 | + | | ? |
| *Spialia osthelderi* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | -3 | | | |
| *Spialia sertorius* | -2 | 0 | ? | | -3 | | ? | | | 0 | | -2 | -1 | | 0 | | 0 | | ? | | | | 0 | ? | ? | | 0 | | | | | | | + | | -4 | ? | | | | | -1 | 0 | | | + | |
| *Spialia orbifer* | | 0 | | | | 0 | ? | | | | | | | | | | | | | ? | | 0 | 0 | ? | ? | | | | | | | | | | | | ? | ? | ? | | | ? | | 0 | -1 | 0 | ? |
| *Spialia therapne* | | | | | | | | | | | | | | | | | ? | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | | |
| *Muschampia proto* | | | | | | | | | | | | | | | 0 | | ? | | | ? | | 0 | | ? | ? | | | | | | | | | | ? | | | ? | | ? | | | | | ? | | 0 | ? |
| *Muschampia proteides* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | -2 | | | |
| *Muschampia poggei* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 | | | |
| *Muschampia plurimacula* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Muschampia tessellum* | | | | | | 0 | | | | | | | | | | | | | | ? | | ? | | | | | | | | | | | | | | 0 | 0 | ? | 0 | | | | | -1 | + | +1 | |
| *Muschampia cribrellum* | | | | | | | | | | | | | | | | | | | | ? | | | | | | | | | | | | | | | | 0 | ? | | 0 | | | | | | | ? | |
| *Pyrgus carthami* | -3 | 0 | ? | | + | 0 | ? | ? | | -1 | | -1 | -3 | | ? | | 0 | | | ? | | 0 | 0 | ? | ? | | | ? | | | | -2 | | | 0 | 0 | ? | ? | 0 | | | -2 | -1 | + | ? | 0 | ? |
| *Pyrgus sidae* | | 0 | | | | 0 | ? | | | | | | | | ? | | ? | | | ? | | 0 | + | ? | ? | | | | | | | -1 | | | | -1 | 0 | | -1 | | | | + | 0 | -2 | 0 | ? |
| *Pyrgus andromedae* | 0 | | | | | | ? | | | 0 | | | 0 | | ? | | 0 | 0 | ? | ? | | | | | ? | | | | | | | | ? | | | | | ? | 0 | | | 0 | | -1 | | | ? | ? |
| *Pyrgus cacaliae* | 0 | | ? | | | 0 | | | | 0 | | | 0 | | ? | | 0 | | ? | | | | | | ? | | | | | | | | | | | | -1 | | | | | | | | | | | |
| *Pyrgus centaureae* | | | | | | | | | | | | | | | | | | -2 | | | | | | | | | | | | | | | ? | | | | ? | 0 | | | | 0 | | | | | | |
| *Pyrgus malvae* | 0 | 0 | | | -2 | 0 | ? | 0 | | 0 | | -1 | -1 | -1 | 0 | 0 | 0 | -1 | ? | ? | -2 | 0 | 0 | -2 | ? | | -1 | 0 | 0 | | | 0 | ? | -3 | ? | 0 | -1 | 0 | 0 | 0 | 0 | -1 | -1 | 0 | -1 | -3 | 0 | ? |
| *Pyrgus melotis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 | | | | |
| *Pyrgus malvoides* | 0 | | ? | | | | | | | 0 | | | | | | | 0 | | ? | ? | | | | | ? | | | | | | | | | | | | | | | | | | +1 | | | | | |
| *Pyrgus serratulae* | -3 | 0 | ? | | -4 | 0 | ? | 0 | | 0 | | -1 | -3 | | ? | 0 | ? | | ? | ? | | 0 | -1 | ? | ? | | -3 | -3 | ? | | | | | | 0 | -2 | 0 | 0 | 0 | | | ? | ? | 0 | -3 | ? | ? |
| *Pyrgus onopordi* | | | | | | | | | | -1 | | | + | | ? | | 0 | | | | | | | | ? | | | | | | | | | ? | | | | | | | | | + | | | | | |
| *Pyrgus carlinae* | | | | | | | | | | 0 | | | | | | | ? | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | | |
| *Pyrgus cirsii* | ? | | ? | | | | | | | -1 | | | -4 | | ? | | ? | | | | | | | | ? | | | | | | | | | | ? | | | | | | | | + | 0 | | | | |
| *Pyrgus cinarae* | | | | | | 0 | | | | | | | | | ? | | | | | ? | | 0 | | | | | | | | | | | | | | | ? | | -1 | | | | -1 | + | 0 | | | |
| *Pyrgus armoricanus* | -4 | 0 | | | + | 0 | ? | | | -1 | | ? | -4 | -3 | ? | | ? | | | ? | | 0 | -1 | ? | ? | | | | | | | | | | -4 | -2 | 0 | | ? | | | -1 | ? | 0 | 0 | -3 | -4 | ? |
| *Pyrgus alveus* | 0 | 0 | | | | 0 | ? | 0 | | 0 | | -1 | -3 | | ? | 0 | ? | 0 | ? | ? | | 0 | -1 | ? | ? | | ? | 0 | -2 | | | | ? | | ? | 0 | 0 | ? | 0 | 0 | | -2 | ? | 0 | ? | | 0 | ? |
| *Pyrgus bellieri* | | 0 | | | | | | | | | | | | | ? | | ? | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | | |
| *Pyrgus warrenensis* | ? | | | | | | | | | 0 | | | 0 | | | | | | | | | | | | ? | | | | | | | | | | | | | | | | | | ? | | | | | |
| *Pyrgus jupei* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | | |
| *Pyrgus bolkariensis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | | |
| *Pyrgus aladaghensis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | | |
| *Heteropterus morpheus* | -3 | | | | -1 | 0 | ? | 0 | | -1 | | +1 | -1 | | ? | 0 | ? | | | | | | -2 | ? | ? | | | -1 | -3 | | | | | -1 | | +1 | -3 | 0 | 0 | 0 | -1 | | -2 | +2 | + | ? | -2 | ? |
| *Carterocephalus palaemon* | -3 | | | | -2 | 0 | ? | 0 | | 0 | | 0 | -1 | | ? | 0 | 0 | 0 | ? | | -2 | ? | +1 | ? | +1 | | -3 | -2 | -1 | | | ? | -1 | | 0 | -3 | 0 | 0 | -1 | 0 | -1 | 0 | 0 | ? | | 0 | ? |
| *Carterocephalus silvicola* | | | | | | | | 0 | | | | | -3 | -1 | | 0 | | 0 | | | | | | | | | | 0 | -1 | | | ? | | | 0 | | 0 | 0 | -1 | 0 | -1 | + | | | -1 | |
| *Eogenes alcides* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | | |
| *Eogenes lesliei* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | | |
| *Thymelicus lineola* | -3 | 0 | ? | | 0 | 0 | ~ | 0 | | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | +2 | ? | ~ | 0 | 0 | 0 | ? | ? | | -1 | 0 | +1 | | | +1 | +2 | ? | 0 | -3 | 0 | +1 | +1 | 0 | +1 | 0 | 0 | 0 | ? | 0 | ~ |
| *Thymelicus sylvestris* | -3 | 0 | ? | | 0 | 0 | ~ | ~ | | 0 | | 0 | 0 | 0 | 0 | 0 | ? | | ? | ~ | 0 | 0 | 0 | ? | ? | | -1 | 0 | 0 | | | | -1 | ? | 0 | -1 | 0 | 0 | 0 | ? | | -1 | 0 | 0 | ? | 0 | ~ |

Appendix 5: Trend in distribution over the last 25 years of butterflies in the European countries. The abbrevations of the countries are given in part I, section 2.1. * migratory species, no trend.
-4: decrease 75-100%; -3: decr. 50-75%; -2: decr. 25-50%; -1: decr. 15-25%; 0: stable; +1: increase 125-200%; +2: incr. >200%; +: extinct; ~: unknown; ?: unknown

| Species | A | AL | AND | AZO | B | BG | BIH | BY | CAN | CH | CY | CZ | D | DK | E | EST | F | FIN | FL | FYROM | GB | GR | H | HR | I | IRL | L | LT | LV | M | MAD | MD | N | NL | P | PL | RO | RUS | RUSNE | RUSSE | RUSYA | S | SK | SLO | TRA | TRE | UA | YU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Thymelicus novus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 | | | |
| *Thymelicus acteon* | -3 | 0 | ? | | -3 | 0 | ~ | | 0 | -1 | ? | -2 | -2 | | ? | | ? | | | ~ | 0 | 0 | +1 | ? | ? | | -2 | | | | | | | + | ? | -3 | -3 | ? | | | | | -2 | -1 | -1 | ? | ? | ~ |
| *Thymelicus hyrax* | | | | | | | | | | | | | | | | | | | | | | ~ | | | | | | | | | | | | | | | | | | | | | | | ? | | | | |
| *Hesperia comma* | 0 | 0 | ? | | -3 | 0 | ? | 0 | | 0 | | 0 | -2 | -2 | 0 | 0 | 0 | -3 | ? | ? | -3 | 0 | 0 | ? | ? | | -4 | -1 | -3 | | | -1 | ? | -2 | ? | 0 | -2 | ? | 0 | 0 | 0 | -2 | -1 | 0 | ? | | 0 | ? |
| *Ochlodes venata* | 0 | 0 | ? | | 0 | 0 | ? | 0 | | 0 | | 0 | ? | 0 | 0 | 0 | 0 | 0 | ? | ? | 0 | 0 | 0 | ? | ? | | 0 | 0 | 0 | | | | ? | +1 | ? | 0 | -1 | | 0 | 0 | -1 | 0 | 0 | 0 | 0 | ? | 0 | ? |
| *Gegenes pumilio* | | 0 | | | | | | | | | ? | | | | ? | | + | | | | | 0 | | ? | ? | | | | | 0 | | | | | | | | | | | | | | | -1 | | | ? |
| *Gegenes nostrodamus* | | 0 | | | | 0 | ? | | | | | | | | ? | | | | | ? | | 0 | | ? | ? | | | | | | | | | | ? | | | | | | | | | -2 | + | | ? |
| *Borbo borbonica* | | | | | | | | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Pelopidas thrax* | | | | | | | | | | | ? | | | | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | | 0 | | | |
| *Zerynthia rumina* | | | + | | | | | | | | | | | | 0 | | 0 | | | | | | | | | | | | | | | | | | ? | | | | | | | | | | | | | |
| *Zerynthia polyxena* | -4 | -1 | | | | 0 | ? | | | + | | +1 | + | | | | 0 | | | ~ | | 0 | -1 | ? | +1 | | | | | | | 0 | | | | -4 | ? | | -1 | | | -1 | -1 | -1 | -1 | 0 | ? |
| *Zerynthia cerisy* | | -1 | | | | 0 | +1 | | | | ? | | | | | | | | | +1 | | 0 | | ? | | | | | | | | | | | | -3 | | | | | | | | -1 | -1 | | +1 |
| *Zerynthia deyrollei* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Zerynthia caucasica* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | -1 | | | |
| *Zerynthia cretica* | | | | | | | | | | | | | | | | | | | | | | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Archon apollinus* | | | | | | | | | | | | | | | | | | | | | | 0 | | | | | | | | | | | | | | | | | | | | | | | -2 | -3 | | |
| *Archon apollinaris* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | -1 | | | |
| *Parnassius mnemosyne* | -4 | -1 | ? | | | 0 | ? | -1 | | -1 | | 0 | -4 | | 0 | +2 | 0 | 0 | | ? | | 0 | -1 | ? | ? | | | 0 | -3 | | | 0 | ? | | | 0 | -2 | ~ | 0 | -1 | 0 | -2 | -1 | -2 | -1 | ? | 0 | ? |
| *Parnassius nordmanni* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 | | | |
| *Parnassius phoebus* | 0 | | | | | | | | | 0 | | | -4 | | | | 0 | | ? | | | | | | ? | | | | | | | | | | | | ? | 0 | | | | | | | | | |
| *Parnassius apollo* | -3 | 0 | ? | | | 0 | ? | + | | 0 | | + | -4 | | -1 | | 0 | -1 | ? | ? | | 0 | | ? | ? | | | | + | | | | -2 | | | -4 | -3 | ? | -1 | -1 | + | -1 | -2 | -2 | -1 | | -4 | ? |
| *Iphiclides podalirius* | -2 | 0 | ? | | -3 | 0 | ? | | | 0 | | 0 | -3 | | ? | | 0 | | ? | ? | | 0 | 0 | ? | ? | | + | | | | | 0 | | | ? | -1 | -1 | 0 | ~ | ~ | | | -1 | 0 | 0 | ? | 0 | ? |
| *Papilio machaon* | 0 | 0 | ? | | -1 | 0 | ~ | 0 | | 0 | ? | 0 | ~ | + | ? | 0 | 0 | 0 | ? | ~ | 0 | 0 | 0 | ? | ? | | -2 | ~ | -2 | 0 | | 0 | ? | -2 | ? | 0 | -2 | ? | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ? | 0 | ~ |
| *Papilio hospiton* | | | | | | | | | | | | | | | | | 0 | | | | | ? | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Papilio alexanor* | | 0 | | | | | + | | | | | | | | | | ? | | | + | | 0 | | ? | ? | | | | | | | | | | | | | | | | | | | ? | | | + |
| *Leptidea sinapis complex* | 0 | 0 | ? | | ? | 0 | ? | 0 | | 0 | | 0 | -1 | -4 | ? | 0 | 0 | 0 | ? | ~ | -2 | 0 | 0 | ? | ? | 0 | -2 | 0 | -1 | | | 0 | ? | | ? | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | 0 | ~ |
| *Leptidea duponcheli* | | -1 | | | | 0 | | | | | | | | | | | ? | | | ? | | 0 | | | | | | | | | | | | | | | ? | | | | | | | 0 | ? | 0 | ? |
| *Leptidea morsei* | -4 | | | | | | ? | ? | | | | -4 | | | | | | | | | | | -3 | -3 | ? | | | | | | | -1 | | | | | -2 | ? | ? | ? | | | ? | -1 | | | -1 | + |
| *Anthocharis cardamines* | 0 | 0 | ? | | 0 | 0 | ? | 0 | | 0 | ? | 0 | 0 | +1 | 0 | 0 | 0 | 0 | ? | ? | 0 | 0 | +1 | ? | ? | 0 | -1 | -1 | 0 | | | 0 | ? | 0 | ? | 0 | 0 | 0 | ? | 0 | 0 | -1 | 0 | 0 | 0 | 0 | ? |
| *Anthocharis euphenoides* | | | ? | | | | | | | | | | | | 0 | | 0 | | | | | | | | ? | | | | | | | | | | ? | | | | | | | | | | | | |
| *Anthocharis damone* | | | | | | | | | | | | | | | | | | | | ? | | 0 | | | ? | | | | | | | | | | | | | | | | | | | -1 | + | | |
| *Anthocharis gruneri* | | -1 | | | | 0 | | | | | | | | | | | | | | ? | | 0 | | | | | | | | | | | | | | | | | | | | | | -1 | | | |
| *Zegris eupheme* | | | | | | | | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | 0 | | +1 | | | | | -1 | | -2 | |
| *Zegris pyrothoe* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | ? | | | | | | | | |
| *Euchloe belemia* | | | | | | | | | -1 | | | | | | ? | | | | | | | | | | | | | | | | | | | | ? | | | | | | | | | ~ | | | |
| *Euchloe crameri* | | | ? | | | | | | | | | | | | 0 | | 0 | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | |
| *Euchloe simplonia* | | | | | | | | | -1 | | | | | | | | ? | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | |
| *Euchloe ausonia* | | 0 | ? | | | 0 | ~ | | | | ? | | | | | | 0 | | | ? | | 0 | | ? | ? | | | | | | | -1 | | | ? | | -1 | 0 | 0 | +1 | | | | 0 | 0 | -3 | ? |
| *Euchloe tagis* | | | | | | | | | | | | | | | 0 | | ? | | | | | | | | ? | | | | | | | | | | ? | | | | | | | | | | | | |
| *Euchloe insularis* | | | | | | | | | | | | | | | | | 0 | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | |
| *Euchloe charlonia* | | | | | | | | | 0 | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Euchloe penia* | | -1 | | | | 0 | | | | | | | | | | | | | | ? | | 0 | | | | | | | | | | | | | | | | | | | | | | | ? | ? | | |
| *Aporia crataegi* | -4 | -1 | ? | | -2 | ~ | ~ | ~ | | 0 | | + | -1 | +2 | 0 | 0 | -2 | +1 | ? | ~ | + | 0 | ~ | -3 | ? | | -3 | ~ | -1 | | | | ? | + | | -3 | ~ | 0 | 0 | ~ | 0 | 0 | -4 | 0 | 0 | 0 | ~ | ? |
| *Pieris brassicae* | 0 | -1 | ? | ? | 0 | 0 | ~ | 0 | | 0 | ? | 0 | ~ | 0 | 0 | 0 | 0 | -1 | ? | ~ | 0 | 0 | 0 | ? | ? | 0 | -1 | ~ | +1 | -1 | | 0 | ? | +1 | ? | | -2 | 0 | +1 | ~ | 0 | -3 | 0 | 0 | 0 | ~ | ~ | ? |
| *Pieris wollastoni* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | -4 | | | | | | | | | | | | | | | | |
| *Pieris cheiranthi* | | | | | | | | | -1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Appendix 5: Trend in distribution over the last 25 years of butterflies in the European countries. The abbrevations of the countries are given in part I, section 2.1. * migratory species, no trend.
-4: decrease 75-100%; -3: decr. 50-75%; -2: decr. 25-50%; -1: decr. 15-25%; 0: stable; +1: increase 125-200%; +2: incr. >200%; +: extinct; ~: unknown; ?: unknown

| Species | A | AL | AND | AZO | B | BG | BIH | BY | CAN | CH | CY | CZ | D | DK | E | EST | F | FIN | FL | FYROM | GB | GR | H | HR | I | IRL | L | LT | LV | M | MAD | MD | N | NL | P | PL | RO | RUS | RUSNE | RUSSE | RUSYA | S | SK | SLO | TRA | TRE | UA | YU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Pieris krueperi* | | 0 | | | | 0 | | | | | | | | | | | | | | ? | | 0 | | | | | | | | | | | | | | | | | | | | | | ? | | | | |
| *Pieris mannii* | -2 | 0 | | | | 0 | ~ | | | -1 | | | | | ? | | -1 | | | ~ | | 0 | -1 | ? | ? | | | | | | | | ? | | -3 | | | | | | ? | 0 | 0 | 0 | | ? |
| *Pieris rapae* | 0 | -1 | ? | | 0 | 0 | ? | 0 | +1 | 0 | ? | 0 | 0 | 0 | 0 | 0 | 0 | -1 | ? | ? | 0 | 0 | 0 | ? | ? | 0 | 0 | ~ | 0 | -1 | +2 | 0 | ? | +1 | ? | 0 | +1 | 0 | +1 | 0 | 0 | -1 | 0 | 0 | 0 | 0 | 0 | ? |
| *Pieris ergane* | ? | -1 | | | | 0 | ? | | | | | | | | ? | | ? | | | ? | | 0 | 0 | ? | +1 | | | | | | | | | | -3 | | | | | | | 0 | 0 | | | | ? |
| *Pieris napi* | 0 | 0 | ? | | 0 | 0 | ? | 0 | | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ? | ? | 0 | 0 | 0 | ? | ? | 0 | 0 | 0 | 0 | | | 0 | ? | +2 | ? | 0 | +1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ? |
| *Pieris bryoniae* | 0 | | | | | | | | | 0 | | ? | 0 | | | | 0 | 0 | ? | | | | -1 | | ? | | | | | | | | | | | 0 | -2 | | | | | 0 | 0 | ? | | 0 | |
| *Pieris bowdeni* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Pieris balcana* | | | | | | +2 | ? | | | | | | | | | | | | | ? | | 0 | | ? | | | | | | | | | | | | | | | | | | | | | | | | ? |
| *Pontia callidice* | 0 | | ? | | | | | | | 0 | | | 0 | | 0 | | ? | | ? | | | | | | ? | | | | | | | | | | | | 0 | 0 | ~ | | | | + | -2 | | | | |
| *Pontia daplidice complex* | | 0 | ~ | | | 0 | ? | ~ | 0 | ? | ? | ~ | ~ | | ? | | 0 | | | ? | | 0 | ~ | ? | ? | | | | | 0 | | 0 | | | ? | +1 | 0 | 0 | +1 | +1 | -2 | -4 | ~ | ~ | 0 | 0 | 0 | ? |
| *Pontia chloridice* | | -1 | | | | 0 | | | | | ? | | | | | | | | | + | | | ? | | | | | | | | | | | | | | | | | | | | | ? | + | ? | | |
| *Colotis evagore* | | | | | | | | | | | | | | | ~ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Catopsilia florella* | | | | | | | | | +1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Colias phicomone* | 0 | | ? | | | | | | | 0 | | | 0 | | 0 | | 0 | | ? | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | -4 | |
| *Colias nastes* | | | | | | | | | | | | | | | | | | 0 | | | | | | | | | | | | | | | ? | | | | | -1 | ? | | | -2 | | | | | | |
| *Colias palaeno* | -3 | | | | + | | | 0 | | 0 | | -2 | -3 | | | 0 | 0 | -1 | ? | | | | | | -2 | | | -1 | -2 | | | | ? | | | -3 | | 0 | 0 | -1 | -1 | 0 | -2 | | | -2 | | |
| *Colias erate* | +2 | | | | | ~ | | | | | | 0 | | | | | | | | +1 | | ~ | +2 | ? | | | | | | | | 0 | | | | | +1 | 0 | | ? | | | | +1 | | +1 | +1 | +1 |
| *Colias croceus** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Colias chlorocoma* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Colias hecla* | | | | | | | | | | | | | | | | | | -1 | | | | | | | | | | | | | | | ? | | | | ? | 0 | | | | -1 | | | | | |
| *Colias myrmidone* | -4 | | | | | + | ? | ? | | | | -3 | -4 | | | | | | | | | | -3 | ? | | | | | | | | | | | | -2 | -1 | ? | 0 | -1 | | | -2 | -1 | | | -2 | ? |
| *Colias chrysotheme* | -4 | | | | | | | | | | | -4 | | | | | | | | | | | -2 | | | | | | | | | -2 | | | | | -1 | ? | ? | -1 | | | -3 | | | | -2 | |
| *Colias aurorina* | | | | | | | | | | | | | | | | | | | | | | 0 | | | | | | | | | | | | | | | ? | | | | | | | ? | | | | ? |
| *Colias caucasica* | | | | | | 0 | + | | | | | | | | | | | | | ? | | 0 | | | | | | | | | | | | | | | | | | | | | | ? | | | | ? |
| *Colias thisoa* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | | |
| *Colias hyale* | 0 | | | | | 0 | ~ | 0 | | 0 | | 0 | ~ | | | 0 | 0 | | ? | | | | ~ | ? | -2 | | -3 | ~ | ~ | | | 0 | | | | 0 | +1 | 0 | 0 | ? | 0 | | 0 | ~ | ? | | 0 | ? |
| *Colias alfacariensis* | 0 | 0 | ? | | -3 | 0 | +1 | | | 0 | | 0 | -1 | | 0 | | 0 | | ? | +1 | | 0 | 0 | ? | ? | | -1 | | | | | | | | | 0 | +1 | | | ? | | | 0 | ~ | 0 | | 0 | +1 |
| *Gonepteryx rhamni* | 0 | 0 | ? | | 0 | 0 | ? | 0 | | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ? | ? | 0 | 0 | 0 | ? | ? | 0 | 0 | 0 | 0 | | | | ? | +1 | ? | 0 | 0 | 0 | 0 | 0 | 0 | -1 | 0 | 0 | 0 | ? | 0 | ? |
| *Gonepteryx farinosa* | | -1 | | | | 0 | | | | | | | | | | | | | | ~ | | 0 | | | | | | | | | | | | | | | | | | | | | | 0 | ? | | | + |
| *Gonepteryx cleopatra* | | 0 | ? | | | | ? | | | | ? | | | | 0 | | 0 | | | | | 0 | | ? | ? | | | | | -1 | | | | | ? | | | | | | | | | +1 | 0 | 0 | | ? |
| *Gonepteryx maderensis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | | | | | | | | | | | | | | | |
| *Gonepteryx cleobule* | | | | | | | | | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Hamearis lucina* | -3 | 0 | ? | | -3 | 0 | ~ | ? | | 0 | | -1 | -2 | | ? | 0 | ? | | ? | ~ | -2 | 0 | 0 | ? | ? | | -3 | + | -4 | | | -1 | | | ? | -2 | 0 | ? | | ? | | -2 | -1 | 0 | | + | 0 | ? |
| *Cigaritis maxima* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | | |
| *Cigaritis cilissa* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | | |
| *Cigaritis acamas* | | | | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | | |
| *Lycaena phlaeas* | 0 | 0 | ? | | 0 | 0 | ? | 0 | 0 | 0 | ? | 0 | 0 | 0 | 0 | 0 | ? | 0 | | ? | 0 | 0 | ~ | ? | ? | 0 | -2 | 0 | 0 | 0 | ? | 0 | ? | 0 | ? | 0 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ? |
| *Lycaena helle* | -4 | | | | -2 | | | ? | | -1 | | + | -4 | | ? | | 0 | -2 | | | | | + | | | | +1 | ? | + | | | | -1 | | | 0 | -2 | ? | 0 | -1 | 0 | -2 | + | | | | -3 | |
| *Lycaena dispar* | -3 | 0 | | | -2 | 0 | ~ | 0 | | ~ | | +1 | -3 | | | +1 | 0 | 0 | | ? | + | -1 | 0 | ? | -2 | | -3 | -1 | +1 | | | 0 | | -4 | | +1 | -3 | ? | 0 | 0 | 0 | | -1 | -2 | -2 | ? | 0 | ? |
| *Lycaena virgaureae* | -3 | 0 | ? | | -3 | 0 | ? | 0 | | 0 | | -3 | -2 | +1 | ? | 0 | 0 | 0 | | ? | | 0 | 0 | ? | ? | | -3 | 0 | -1 | | | | ? | | | 0 | 0 | ? | 0 | 0 | 0 | -1 | -1 | -1 | 0 | | -2 | ? |
| *Lycaena ottomanus* | | 0 | | | | 0 | ? | | | | | | | | | | | | | ? | | 0 | + | | | | | | | | | | | | | | | | | | | | | -2 | | | | ? |
| *Lycaena tityrus* | -3 | 0 | ? | | -4 | 0 | +1 | 0 | | 0 | | 0 | -1 | + | ? | | 0 | | ? | +1 | | 0 | 0 | ? | ? | | -2 | +1 | 0 | | | | | -2 | ? | 0 | -2 | ? | ? | -1 | | | -1 | 0 | 0 | -2 | 0 | +1 |
| *Lycaena alciphron* | -4 | 0 | ? | | | 0 | ? | 0 | | -1 | | -3 | -3 | | 0 | 0 | 0 | | | ? | | 0 | 0 | -3 | ? | | | 0 | -3 | | | | | | ? | 0 | -2 | 0 | ? | 0 | +1 | | -2 | 0 | 0 | -2 | 0 | ? |
| *Lycaena hippothoe* | -3 | 0 | ? | | -2 | | ? | 0 | | 0 | | -2 | -3 | -1 | 0 | 0 | | -2 | ? | ? | | | -1 | ? | ? | | -2 | 0 | -1 | | | | ? | + | | 0 | -3 | 0 | 0 | ? | 0 | -2 | -1 | -1 | | | -2 | ? |
| *Lycaena candens* | | | | | | 0 | ? | | | | | | | | | | | | | ? | | 0 | | ? | | | | | | | | | | | | | | | | | | | | | ? | | | | ? |
| *Lycaena thersamon* | -4 | 0 | | | | 0 | ? | | | | ? | 0 | | | | | | | | ? | | 0 | ~ | ? | ? | | | | | | | | | | | | -3 | ? | ? | 0 | | | -2 | + | 0 | -1 | +1 | ? |

Appendix 5: Trend in distribution over the last 25 years of butterflies in the European countries. The abbrevations of the countries are given in part I, section 2.1. * migratory species, no trend.
-4: decrease 75-100%; -3: decr. 50-75%; -2: decr. 25-50%; -1: decr. 15-25%; 0: stable; +1: increase 125-200%; +2: incr. >200%; +: extinct; ~: unknown; ?: unknown

| Species | A | AL | AND | AZO | B | BG | BIH | BY | CAN | CH | CY | CZ | D | DK | E | EST | F | FIN | FL | FYROM | GB | GR | H | HR | I | IRL | L | LT | LV | M | MAD | MD | N | NL | P | PL | RO | RUS | RUSNE | RUSSE | RUSYA | S | SK | SLO | TRA | TRE | UA | YU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Lycaena lampon* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Lycaena thetis* | | | | | | | | | | | | | | | | | | | | + | | 0 | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Lycaena asabinus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Lycaena ochimus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Lycaena phoenicurus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Lycaena euphratica* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Thecla betulae* | -3 | 0 | ? | | -3 | 0 | ? | ? | | 0 | | 0 | 0 | -1 | ? | 0 | 0 | 0 | ? | ? | -2 | ? | ~ | ? | ? | 0 | -3 | 0 | -1 | | | 0 | ? | -3 | | 0 | -3 | ? | 0 | 0 | 0 | 0 | -2 | -1 | ? | -2 | ~ | ? |
| *Neozephyrus quercus* | -3 | 0 | ? | | -1 | 0 | ? | 0 | | 0 | ? | 0 | 0 | 0 | 0 | 0 | | +1 | ? | ? | 0 | 0 | 0 | ? | ? | 0 | -2 | ? | -2 | | | 0 | ? | 0 | ? | 0 | -3 | ? | | -1 | +1 | 0 | 0 | 0 | 0 | ? | -1 | ? |
| *Laeosopis roboris* | | | ? | | | | | | | | | | | | 0 | | 0 | | | | | | | | | | | | | | | | | ? | | | | | | | | | | | | | | |
| *Tomares ballus* | | | | | | | | | | | | | | | -1 | | -1 | | | | | | | | | | | | | | | | | ? | | | | | | | | | | | | | | |
| *Tomares romanovi* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Tomares nogelii* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | + | | | | + | | | | | | | | -1 | | -2 | |
| *Tomares nesimachus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Tomares callimachus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | | | | | | | ? | | -1 | |
| *Callophrys rubi* | 0 | 0 | ? | | -2 | 0 | ? | 0 | | 0 | | 0 | -1 | 0 | 0 | 0 | 0 | 0 | ? | ? | 0 | 0 | 0 | ? | ? | 0 | 0 | 0 | 0 | | | 0 | ? | -1 | ? | 0 | -1 | 0 | | 0 | 0 | 0 | -1 | 0 | 0 | -2 | 0 | ? |
| *Callophrys mystaphia* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Callophrys suaveola* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Callophrys butleri* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | | ? | | | | | | | | |
| *Callophrys avis* | | | | | | | | | | | | | | | ? | | ? | | | | | | | | | | | | | | | | | | ? | | | | | | | | | | | | | | |
| *Satyrium w-album* | -4 | 0 | ? | | -3 | 0 | ~ | 0 | | 0 | | 0 | -2 | 0 | 0 | 0 | ? | +1 | ? | ~ | -1 | 0 | 0 | ? | ? | | -4 | ? | -2 | | | 0 | ? | -4 | | 0 | -2 | 0 | 0 | 0 | 0 | -1 | -2 | -1 | ? | | ~ | ? |
| *Satyrium pruni* | -3 | 0 | | | -2 | 0 | ? | ? | | -1 | | 0 | -1 | -4 | ? | 0 | 0 | 0 | | ? | 0 | ? | 0 | ? | -1 | | -2 | 0 | -1 | | | 0 | | | | 0 | -2 | 0 | 0 | 0 | 0 | -1 | -2 | 0 | | | ~ | ? |
| *Satyrium spini* | -3 | 0 | ? | | ? | 0 | ? | | | 0 | | 0 | -2 | | ? | | 0 | | | ? | | 0 | 0 | ? | ? | | ? | ? | | | | -1 | | | ? | 0 | -2 | 0 | ? | ? | | | -2 | 0 | 0 | -2 | -1 | ? |
| *Satyrium marcidum* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Satyrium ilicis* | -3 | 0 | ? | | -3 | 0 | ? | 0 | | ? | | -3 | -2 | -4 | 0 | 0 | 0 | | | ? | | 0 | 0 | ? | ? | | -1 | 0 | -2 | | | -1 | | -2 | ? | 0 | ? | ? | ? | -1 | | 0 | -2 | 0 | 0 | 0 | 0 | ? |
| *Satyrium esculi* | | | ? | | | | | | | | | | | | 0 | | ? | | | | | | | | ? | | | | | | | | | | ? | | | | | | | | | | | | | | |
| *Satyrium acaciae* | -4 | 0 | ? | | + | 0 | ? | | | -1 | | -2 | -3 | | +2 | | ? | | | ? | | 0 | 0 | ? | ? | | | | | | | -1 | | | | 0 | -3 | ? | | 0 | | | -2 | -2 | ? | 0 | -1 | ? |
| *Satyrium abdominalis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Satyrium myrtale* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Satyrium ledereri* | | | | | | | | | | | | | | | | | | | | | | 0 | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Satyrium hyrcanicum* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Neolycaena rhymnus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | | -1 | | | | | | | -2 | |
| *Lampides boeticus* | | -1 | | ? | | 0 | ? | | 0 | | ? | | | | 0 | | 0 | | | ? | | 0 | 0 | ? | ? | | | | | 0 | ~ | | | ? | | -1 | ? | ? | ? | | | | ~ | 0 | + | -1 | ? |
| *Cacyreus marshalli* | | | | | | | | | | | | | | | +1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Leptotes pirithous* | | -1 | | | | 0 | ? | | | | ? | | | | 0 | | ? | | | ? | | 0 | 0 | ? | ? | | | | | +1 | | | | ? | | -1 | ? | | | | | | ~ | ? | -2 | -1 | ? |
| *Cyclyrius webbianus* | | | | | | | | | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Tongeia fischeri* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | | | | | | |
| *Tarucus theophrastus* | | | | | | | | | | | | | | | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Tarucus balkanica* | | -1 | | | | 0 | ? | | | | ? | | | | | | | | | ? | | 0 | | ? | | | | | | | | | | | | | | | | | | | | | 0 | -2 | | ? |
| *Zizeeria knysna* | | | | | | | | | 0 | | ? | | | | ~ | | | | | ? | | 0 | | ? | | | | | | | | | | | ? | | | | | | | | | | | | | | |
| *Zizeeria karsandra* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Cupido minimus* | 0 | -1 | ? | | -3 | 0 | ? | 0 | | 0 | | 0 | -1 | 0 | 0 | 0 | 0 | -4 | ? | ? | -2 | 0 | 0 | ? | ? | 0 | -2 | 0 | 0 | | | 0 | ? | + | ? | 0 | +1 | 0 | 0 | 0 | ~ | -1 | -1 | 0 | ? | | 0 | ? |
| *Cupido osiris* | -4 | -1 | | | | 0 | +1 | | | -1 | | | + | | 0 | | ? | | | +1 | | 0 | 0 | ? | ? | | | | | | | | | | | | +1 | ? | | ? | | | ? | -2 | 0 | ? | -1 | +1 |
| *Cupido lorquinii* | | | | | | | | | | | | | | | 0 | | | | | | | | | | | | | | | | | | | | ? | | | | | | | | | | | | | | |
| *Cupido argiades* | 0 | 0 | ? | | + | 0 | ? | 0 | | -1 | ? | -3 | 0 | | 0 | ? | ? | | | ? | | ? | ~ | ? | -1 | | | 0 | ~ | | | -1 | | | | -3 | 0 | 0 | 0 | 0 | +2 | | 0 | 0 | 0 | + | 0 | ? |
| *Cupido decolorata* | ? | 0 | | | | 0 | ? | | | | | -2 | | | | | | | | ? | | -1 | 0 | -2 | | | | | | | | | | | | 0 | ? | | | | | 0 | -2 | ? | | 0 | ? |
| *Cupido alcetas* | ? | | ? | | | 0 | ? | | | -1 | | -2 | | | ? | | ? | | | ? | | -1 | 0 | ? | ? | | | | | | | | | | ? | | ? | 0 | ? | | | 0 | ? | | ? | | 0 | ? |

Appendix 5: Trend in distribution over the last 25 years of butterflies in the European countries. The abbrevations of the countries are given in part I, section 2.1. * migratory species, no trend.
-4: decrease 75-100%; -3: decr. 50-75%; -2: decr. 25-50%; -1: decr. 15-25%; 0: stable; +1: increase 125-200%; +2: incr. >200%; +: extinct; ~: unknown; ?: unknown

| Species | A | AL | AND | AZO | B | BG | BIH | BY | CAN | CH | CY | CZ | D | DK | E | EST | F | FIN | FL | FYROM | GB | GR | H | HR | I | IRL | L | LT | LV | M | MAD | MD | N | NL | P | PL | RO | RUS | RUSNE | RUSSE | RUSYA | S | SK | SLO | TRA | TRE | UA | YU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Celastrina argiolus* | 0 | 0 | ? | | 0 | ? | ? | 0 | | 0 | | 0 | +1 | ~ | 0 | 0 | 0 | 0 | ? | ? | 0 | 0 | 0 | ? | ? | 0 | -1 | 0 | 0 | +1 | | 0 | ? | ~ | ? | 0 | +1 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | ~ | ? |
| *Pseudophilotes baton* | -4 | | ? | | + | | ? | | | 0 | | ? | -3 | | 0 | | 0 | | | ? | | | | | ? | | | | | | | | | ? | + | | | | | | | | | | | | ? |
| *Pseudophilotes vicrama* | -4 | 0 | | | | 0 | | ? | | | ? | -3 | -4 | | | 0 | | -4 | | | | 0 | 0 | -3 | ? | | | ? | -4 | | | | | | -2 | -2 | ? | | -1 | | | -2 | -1 | 0 | -1 | 0 | |
| *Pseudophilotes abencerragus* | | | | | | | | | | | | | | | 0 | | | | | | | | | | | | | | | | | | | ? | | | | | | | | | | | | | |
| *Pseudophilotes barbagiae* | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | |
| *Pseudophilotes bavius* | | | | | | | | | | | | | | | | | | | | ? | | 0 | | | | | | | | | | | | | | -3 | | | ? | | | | | -1 | -3 | -1 | ? |
| *Scolitantides orion* | -4 | 0 | | | | 0 | ? | ? | | -1 | | -1 | -4 | | 0 | ? | 0 | -1 | | ? | | 0 | 0 | ? | ? | | | | | | | -1 | | -3 | -3 | -1 | ? | 0 | | -2 | -2 | 0 | -2 | + | 0 | ? |
| *Glaucopsyche alexis* | -3 | 0 | ? | | -4 | 0 | ? | 0 | | 0 | | 0 | -2 | | 0 | ? | ? | -3 | ? | ? | | 0 | 0 | ? | ? | | -1 | -1 | -4 | | | 0 | ? | | ? | -3 | +1 | ? | 0 | 0 | ~ | -1 | -2 | 0 | 0 | -2 | 0 | ? |
| *Glaucopsyche paphos* | | | | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Glaucopsyche astraea* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Glaucopsyche melanops* | | | | | | | | | | | | | | | 0 | | ? | | | | | | | | ? | | | | | | | | | | ? | | | | | | | | | | | | |
| *Iolana iolas* | | 0 | | | | 0 | ? | | | -1 | | | | | 0 | | 0 | | | ? | | 0 | -2 | ? | ? | | | | | | | | | | | -1 | | | | | | | | ? | ? | | | ? |
| *Maculinea arion* | -1 | 0 | ? | | -4 | 0 | ? | 0 | | 0 | | -3 | -3 | -3 | -1 | 0 | 0 | -4 | ? | ~ | -4 | 0 | -2 | ? | ? | | -3 | -1 | -4 | | | -1 | | + | | -4 | -3 | ? | 0 | 0 | 0 | -2 | -2 | -1 | ? | -2 | -2 | ? |
| *Maculinea teleius* | -4 | | | | + | | | ? | | -1 | | -2 | -3 | | | | -1 | | ? | | | | -1 | -3 | ? | | | -1 | ? | | | | | -4 | | 0 | -3 | ? | 0 | -1 | | | -3 | -2 | | | -3 | |
| *Maculinea nausithous* | -4 | | | | | 0 | | ? | | -1 | | -1 | -2 | | 0 | | -1 | | ? | | | | -1 | -3 | | | | | | | | | | -4 | | 0 | -3 | ? | 0 | -1 | | | -3 | -3 | ? | | -3 | |
| *Maculinea alcon* | -4 | 0 | | | -3 | | ? | 0 | | -1 | | 0 | -3 | -1 | -1 | | -1 | | ? | ~ | | ? | -3 | | -1 | | | ? | | | | | | -4 | | -3 | -3 | -1 | ? | -1 | | -1 | ? | 0 | ? | | -4 | ? |
| *Maculinea rebeli* | ? | | ? | | + | 0 | | | | 0 | | ? | -3 | | 0 | | -2 | | ? | | | | +1 | ? | ? | | | | | | | | | | ? | | ? | | | | | -2 | ? | | | | | |
| *Lachides galba* | | | | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Turanana endymion* | | | | | | | | | | | | | | | | | | | | | | 0 | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Turanana cytis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Chilades trochylus* | | | | | | | | | | | ? | | | | | | | | | | | 0 | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Plebeius pylaon* | | | | | | 0 | | | | | | | | | | | | | | ? | | 0 | +1 | | | | | | | | | | | | | -1 | ? | | 0 | | | | | 0 | -1 | -2 | ? |
| *Plebeius trappi* | | | | | | | | | | ? | | | | | | | | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | | |
| *Plebeius hesperica* | | | | | | | | | | | | | | | -1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Plebeius argus* | 0 | 0 | ? | | -3 | 0 | +1 | 0 | | 0 | | -1 | -2 | -1 | 0 | 0 | 0 | 0 | ? | +1 | -2 | 0 | 0 | ? | ? | | -2 | 0 | 0 | | | 0 | ? | -2 | ? | 0 | +1 | 0 | +1 | +1 | 0 | -1 | -1 | 0 | 0 | -1 | ~ | +1 |
| *Plebeius idas* | -3 | 0 | ? | | + | 0 | +1 | 0 | | 0 | | -2 | -2 | 0 | 0 | 0 | 0 | 0 | ? | +1 | | 0 | -1 | ? | ? | | | 0 | 0 | | | ? | ? | + | | 0 | +1 | ? | ? | 0 | ? | 0 | ? | -1 | ? | | 0 | +1 |
| *Plebeius argyrognomon* | -4 | 0 | | | -4 | 0 | ~ | 0 | | -1 | | ? | -2 | | | | 0 | | | ~ | | 0 | 0 | ? | ? | | | ? | -2 | | | -1 | -3 | | ? | 0 | 0 | 0 | +1 | +1 | | -1 | -1 | -1 | ? | | ~ | ~ |
| *Plebeius christophi* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Plebeius alcedo* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Plebeius rosei* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Plebeius morgianus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Plebeius optilete* | -4 | | | | | | | 0 | | 0 | | -1 | -3 | -1 | | 0 | -3 | 0 | | ? | | | | | ? | | | 0 | -2 | | | | ? | -2 | | -2 | | 0 | | -1 | ~ | 0 | -2 | -1 | | | -1 | ? |
| *Plebeius loewii* | | | | | | | | | | | | | | | | | | | | | | 0 | | | | | | | | | | | | | | | | | | | | | | | 0 | | | |
| *Plebeius eurypilus* | | | | | | | | | | | | | | | | | | | | | | 0 | | | | | | | | | | | | | | | | | | | | | | | 0 | | | |
| *Plebeius psylorita* | | | | | | | | | | | | | | | | | | | | | | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Plebeius pyrenaica* | | | | | | 0 | ? | | | | | | | | 0 | | ? | | | ? | | ? | | | | | | | | | | | | | | | | | | | | | | | ? | | -1 | |
| *Plebeius glandon* | 0 | | ? | | | | | | | 0 | | | 0 | | 0 | | 0 | 0 | ? | | | | | | ? | | | | | | | | ? | | | | ? | 0 | | | | 0 | | | | | |
| *Plebeius orbitulus* | 0 | | | | | | | | | 0 | | | 0 | | | | ? | | ? | | | | | | ? | | | | | | | | ? | | | | | | +2 | | 0 | | +1 | | | | | |
| *Aricia eumedon* | -3 | 0 | ? | | | 0 | ? | ? | | 0 | | -3 | -3 | | 0 | 0 | ? | 0 | ? | ? | | 0 | +1 | ? | ? | | | -1 | -2 | | | | ? | | | 0 | | 0 | 0 | 0 | ? | 0 | ? | -2 | +2 | ? | | -1 | ? |
| *Aricia cramera* | | | ? | | | | | | 0 | | | | | | 0 | | ? | | | | | | | | ? | | | | | | | | | | ? | | | | | | | | | | | | |
| *Aricia agestis* | -3 | 0 | ? | | -2 | 0 | ? | ? | | -1 | ? | -1 | -1 | 0 | 0 | | 0 | | | ~ | 0 | 0 | 0 | ? | ? | | -2 | 0 | | 0 | | 0 | | 0 | ? | 0 | -1 | 0 | | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | ? |
| *Aricia artaxerxes* | 0 | | | | | 0 | ? | 0 | | 0 | | ? | -1 | -2 | | 0 | -1 | 0 | ? | ~ | -1 | 0 | 0 | ? | ? | | | 0 | -2 | | | | ? | | | -4 | | 0 | 0 | 0 | ~ | -1 | ? | 0 | ? | | -1 | ? |
| *Aricia morronensis* | | | | | | | | | | | | | | | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Aricia teberdinus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | | | | | ? | | | |
| *Aricia hyacinthus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Aricia torulensis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |

Appendix 5: Trend in distribution over the last 25 years of butterflies in the European countries. The abbrevations of the countries are given in part I, section 2.1. * migratory species, no trend.
-4: decrease 75-100%; -3: decr. 50-75%; -2: decr. 25-50%; -1: decr. 15-25%; 0: stable; +1: increase 125-200%; +2: incr. >200%; +: extinct; ~: unknown; ?: unknown

| Species | A | AL | AND | AZO | B | BG | BIH | BY | CAN | CH | CY | CZ | D | DK | E | EST | F | FIN | FL | FYROM | GB | GR | H | HR | I | IRL | L | LT | LV | M | MAD | MD | N | NL | P | PL | RO | RUS | RUSNE | RUSSE | RUSYA | S | SK | SLO | TRA | TRE | UA | YU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Aricia isaurica* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Aricia anteros* | | 0 | | | | 0 | ? | | | | | | | | | | | | | ? | | 0 | | ? | | | | | | | | | | | | | | | | | | | | 0 | -1 | -4 | ? |
| *Aricia nicias* | | | ? | | | | | | | 0 | | | | | 0 | | ? | 0 | | | | | | | ? | | | | | | | | | | | | | ? | 0 | -1 | | -2 | | | | | | | |
| *Polyommatus semiargus* | 0 | 0 | ? | | -4 | 0 | +1 | 0 | | 0 | | -1 | -1 | -1 | 0 | 0 | 0 | 0 | ? | +1 | + | 0 | 0 | ? | ? | | -2 | 0 | -1 | | | -1 | ? | -4 | ? | 0 | 0 | 0 | +1 | +1 | 0 | -1 | -1 | 0 | 0 | -1 | -1 | +1 |
| *Polyommatus coelestina* | | | | | | | | | | | | | | | | | | | | | | 0 | | | | | | | | | | | | | | | | ? | | -1 | | | | | 0 | | ? | |
| *Polyommatus diana* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Polyommatus fatima* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Polyommatus escheri* | | 0 | ? | | | 0 | ~ | | | 0 | | | | | 0 | | ? | | | ? | | 0 | | ? | ? | | | | | | | | | | | | | | | | | | | | -1 | | + | | ? |
| *Polyommatus dorylas* | -3 | 0 | ? | | + | 0 | ? | 0 | | 0 | | -3 | -3 | | 0 | | ? | | | ? | | 0 | 0 | ? | ? | | + | -1 | + | | | | | | | 0 | 0 | ? | | ? | | -1 | -1 | 0 | ? | | 0 | ? |
| *Polyommatus golgus* | | | | | | | | | | | | | | | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Polyommatus nivescens* | | | | | | | | | | | | | | | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Polyommatus amandus* | -4 | 0 | ? | | | 0 | ~ | 0 | | -1 | | +1 | -1 | -1 | 0 | 0 | ? | 0 | | ? | | 0 | ~ | ? | ? | | | 0 | 0 | | | -1 | ? | | | 0 | 0 | 0 | | 0 | 0 | 0 | -4 | +1 | 0 | -1 | 0 | ? |
| *Polyommatus cyane* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | ? | | | | | | | | | |
| *Polyommatus thersites* | 0 | 0 | ? | | + | 0 | | | | 0 | | +1 | -2 | | 0 | | 0 | | | ? | | 0 | 0 | ? | ? | | | | | | | | | | | 0 | 0 | ? | ? | 0 | | | ? | 0 | 0 | -1 | 0 | ? |
| *Polyommatus myrrha* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Polyommatus aedon* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Polyommatus cornelia* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Polyommatus ciloicus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Polyommatus buzulmavi* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Polyommatus icarus* | 0 | 0 | ? | | 0 | 0 | ? | 0 | -2 | 0 | ? | 0 | 0 | 0 | 0 | 0 | 0 | -1 | ? | ? | 0 | 0 | 0 | ? | ? | 0 | -1 | 0 | 0 | +1 | | 0 | ? | -1 | ? | 0 | 0 | 0 | +1 | +1 | 0 | 0 | 0 | 0 | 0 | 0 | ~ | ? |
| *Polyommatus andronicus* | | | | | | | | | | | | | | | | | | | | | | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Polyommatus eroides* | | 0 | | | | 0 | | 0 | | | | + | | | | | | | | ? | | 0 | | | | | | | | | | | | | | -4 | | ? | ? | ? | | | ? | | -3 | | -4 | ? |
| *Polyommatus eros* | 0 | | | | | | ? | | | 0 | | | 0 | | 0 | | ? | | ? | ? | | | | ? | ? | | | | | | | | | | | | | | | | | | | | ? | | | ? |
| *Polyommatus menelaos* | | | | | | | | | | | | | | | | | | | | | | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Polyommatus kamtschadalus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 | | | | | | | | | |
| *Polyommatus daphnis* | -3 | 0 | ? | | | 0 | ? | ? | | -1 | | -2 | -3 | | ? | | ? | | | ? | | 0 | 0 | ? | ? | | | | | | | 0 | | | | +1 | -1 | ? | ? | 0 | | | -2 | -1 | 0 | ? | 0 | ? |
| *Polyommatus bellargus* | -1 | 0 | ? | | -4 | 0 | ? | ? | | 0 | | -3 | -2 | | 0 | | 0 | | ? | ? | -2 | 0 | ~ | ? | ? | | -3 | ? | | | | 0 | | | ? | -3 | 0 | 0 | | ? | | | -2 | 0 | 0 | ? | ~ | ? |
| *Polyommatus syriacus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Polyommatus dezinus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Polyommatus coridon* | -1 | 0 | ? | | -2 | 0 | ? | 0 | | 0 | | -1 | -1 | | 0 | | 0 | | ? | ? | -1 | 0 | 0 | ? | ? | | -1 | -1 | | | | 0 | | | | 0 | ~ | ~ | ? | ? | | | -1 | 0 | | ? | 0 | ~ |
| *Polyommatus caelestissima* | | | | | | | | | | | | | | | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Polyommatus philippi* | | | | | | | | | | | | | | | | | | | | | | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Polyommatus ossmar* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Polyommatus corydonius* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 | | 0 | |
| *Polyommatus hispana* | | | | | | | | | | | | | | | ? | | ? | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | | | |
| *Polyommatus albicans* | | | | | | | | | | | | | | | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Polyommatus alcestis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Polyommatus demavendi* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Polyommatus admetus* | | 0 | | | | 0 | ? | | | | | | | | | | | | | ? | | 0 | -3 | ? | | | | | | | | | | | | | ? | | | | | | | -4 | | 0 | -2 | ? | ? |
| *Polyommatus fabressei* | | | | | | | | | | | | | | | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Polyommatus humedasae* | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | | |
| *Polyommatus ripartii* | | | | | | 0 | ~ | | | | | | | | 0 | | -1 | | | ~ | | 0 | + | | ? | | | | | | | | | | | -4 | | ? | | ? | | | | | 0 | + | | ? |
| *Polyommatus budashkini* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | | | | | | | | | |
| *Polyommatus galloi* | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | | |
| *Polyommatus aroaniensis* | | | | | | ? | | | | | | | | | | | | | | | | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Polyommatus nephohiptamenos* | | | | | | ? | | | | | | | | | | | | | | | | ~ | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Appendix 5: Trend in distribution over the last 25 years of butterflies in the European countries. The abbrevations of the countries are given in part I, section 2.1. * migratory species, no trend.
-4: decrease 75-100%; -3: decr. 50-75%; -2: decr. 25-50%; -1: decr. 15-25%; 0: stable; +1: increase 125-200%; +2: incr. >200%; +: extinct; ~: unknown; ?: unknown

| Species | A | AL | AND | AZO | B | BG | BIH | BY | CAN | CH | CY | CZ | D | DK | E | EST | F | FIN | FL | FYROM | GB | GR | H | HR | I | IRL | L | LT | LV | M | MAD | MD | N | NL | P | PL | RO | RUS | RUSNE | RUSSE | RUSYA | S | SK | SLO | TRA | TRE | UA | YU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Polyommatus eriwanensis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Polyommatus mithridates* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Polyommatus antidolus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Polyommatus kurdistanicus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Polyommatus virgilia* | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | | |
| *Polyommatus dolus* | | | | | | | | | | | | | | | 0 | | ? | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | | |
| *Polyommatus fulgens* | | | | | | | | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Polyommatus menalcas* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Polyommatus poseidon* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | -1 | | -2 | |
| *Polyommatus hopfferi* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Polyommatus dama* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | -3 | | | |
| *Polyommatus caeruleus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | + | | | |
| *Polyommatus lycius* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Polyommatus wagneri* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Polyommatus sertavulensis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Polyommatus altivagans* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Polyommatus firdussii* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Polyommatus theresiae* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Polyommatus elbursicus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Polyommatus ninae* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Polyommatus iphigenia* | | | | | | | | | | | | | | | | | | | | | | 0 | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Polyom. aserbeidschanus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Polyommatus actis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Polyommatus merhaba* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Polyommatus cyaneus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Polyommatus turcicus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Polyommatus huberti* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Polyommatus carmon* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Polyommatus charmeuxi* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Polyommatus tankeri* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Polyommatus damon* | -4 | 0 | | | | | ? | ? | | 0 | | -2 | -4 | | 0 | | ? | | ? | ? | | ? | -3 | | | | | -1 | | | | | | | | + | 0 | ? | ? | -1 | | | -4 | | ? | | | ? |
| *Polyommatus baytopi* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Polyommatus phyllis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Polyommatus damone* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | ? | | | | | | -2 | |
| *Polyommatus damocles* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | ? | | | | | | | |
| *Libythea celtis* | | 0 | ? | | | 0 | ~ | | | ? | | | | | ~ | | ? | | | ? | | 0 | ~ | ? | ? | | | | | | | | ? | | -3 | ? | | | | | ~ | 0 | -4 | ~ | ? |
| *Argynnis paphia* | -3 | 0 | ? | | -2 | 0 | ~ | 0 | | 0 | | -1 | -1 | -2 | ? | 0 | 0 | +2 | ? | ? | -1 | 0 | ~ | ? | ? | 0 | -1 | 0 | -2 | | | 0 | ? | + | ? | 0 | ~ | 0 | 0 | 0 | 0 | +1 | 0 | 0 | ? | -1 | ~ | ~ |
| *Argynnis pandora* | -3 | 0 | | | | 0 | ~ | | 0 | | ? | ? | | | ? | | ? | | | ~ | | 0 | ~ | ? | ? | | | | | | | 0 | | | ? | | 0 | 0 | | ? | | | -4 | -1 | 0 | -1 | ~ | ? |
| *Argynnis aglaja* | -3 | 0 | ? | | -3 | 0 | ? | 0 | | 0 | | -1 | -1 | -2 | ? | 0 | ? | 0 | ? | ? | -1 | 0 | 0 | ? | ? | 0 | -1 | 0 | -1 | | | -1 | ? | -3 | ? | 0 | 0 | 0 | 0 | 0 | 0 | -1 | -1 | 0 | ? | -1 | ~ | ~ |
| *Argynnis adippe* | -3 | 0 | ? | | -3 | 0 | ? | 0 | | 0 | | -1 | -2 | -2 | ? | 0 | ? | 0 | ? | ? | -4 | 0 | 0 | ? | ? | | -2 | 0 | -1 | | | | ? | | ? | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | 0 | ? | ? | ~ | ? |
| *Argynnis niobe* | -3 | 0 | ? | | -4 | 0 | ? | 0 | | 0 | | -2 | -3 | -1 | ? | 0 | ? | -1 | ? | ? | | 0 | 0 | ? | ? | | | 0 | -2 | | | | -1 | -3 | ? | -3 | 0 | 0 | 0 | 0 | 0 | -2 | -1 | 0 | 0 | ? | ~ | ? |
| *Argynnis elisa* | | | | | | | | | | | | | | | | | 0 | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | | |
| *Argynnis laodice* | | | | | | | | 0 | | | | | -4 | | | 0 | | ~ | | | | | ~ | | | | | ? | -2 | | | | | | | 0 | -1 | 0 | ? | ? | ~ | | -2 | | | | -1 | |
| *Issoria lathonia* | | 0 | ? | | -4 | 0 | ? | 0 | -1 | ? | | ~ | ~ | ~ | 0 | 0 | 0 | +1 | | ? | | 0 | ~ | ? | ? | | -3 | ~ | ~ | | ~ | 0 | -1 | -3 | | 0 | +1 | 0 | ~ | +1 | 0 | 0 | ~ | ~ | ~ | 0 | +1 | ? |
| *Issoria eugenia* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | 0 | | | | | | | | | |
| *Brenthis ino* | -4 | 0 | ? | | -1 | 0 | ? | 0 | | 0 | | +1 | -1 | -1 | 0 | 0 | ? | 0 | ? | ~ | | | +1 | ? | ? | | +1 | 0 | 0 | | | | ? | + | | 0 | -1 | ? | 0 | 0 | 0 | -1 | -2 | +1 | 0 | | 0 | ? |

Appendix 5: Trend in distribution over the last 25 years of butterflies in the European countries. The abbrevations of the countries are given in part I, section 2.1. * migratory species, no trend.
-4: decrease 75-100%; -3: decr. 50-75%; -2: decr. 25-50%; -1: decr. 15-25%; 0: stable; +1: increase 125-200%; +2: incr. >200%; +: extinct; ~: unknown; ?: unknown

| Species | A | AL | AND | AZO | B | BG | BIH | BY | CAN | CH | CY | CZ | D | DK | E | EST | F | FIN | FL | FYROM | GB | GR | H | HR | I | IRL | L | LT | LV | M | MAD | MD | N | NL | P | PL | RO | RUS | RUSNE | RUSSE | RUSYA | S | SK | SLO | TRA | TRE | UA | YU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Brenthis daphne* | -3 | 0 | ? | | | 0 | ? | ? | | +2 | | ? | -4 | | 0 | | ? | | | ? | | 0 | 0 | ? | ? | | | 0 | | | | | | | 0 | 0 | ? | ? | ? | | | | -2 | -1 | ? | -1 | -1 | ? |
| *Brenthis hecate* | -4 | 0 | | | | 0 | ? | | | | | 0 | | | 0 | | 0 | | | ? | | 0 | 0 | ? | ? | | | -3 | | | | | | | 0 | ? | | -1 | | | | -2 | -1 | ? | ? | -3 | ? |
| *Brenthis mofidii* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Boloria eunomia* | -4 | | ? | | -2 | 0 | | 0 | | | | 0 | -3 | | ? | 0 | 0 | 0 | | | | | | | ? | | +1 | -1 | -2 | | | | ? | | | -3 | | ? | 0 | ? | 0 | 0 | + | | | | -1 | |
| *Boloria euphrosyne* | 0 | 0 | ? | | -3 | 0 | ? | 0 | | 0 | | -1 | -2 | -3 | ? | 0 | ? | 0 | ? | ? | -3 | 0 | -1 | ? | ? | -2 | -2 | -2 | -1 | | | | ? | + | ? | -1 | 0 | 0 | 0 | 0 | 0 | -1 | -1 | 0 | ? | | 0 | ? |
| *Boloria titania* | 0 | | | | | | ? | ? | | 0 | | | -2 | | | 0 | ? | 0 | ? | | | | | ? | ? | | | | -3 | | | | | | + | -3 | ? | 0 | -1 | 0 | | + | -1 | | | | -4 | ? |
| *Boloria selene* | 0 | | ? | | -3 | 0 | ~ | 0 | | 0 | | -1 | -1 | 0 | 0 | 0 | ? | 0 | ? | | -2 | | -1 | ? | ? | | -3 | 0 | -1 | | | | ? | -4 | ? | 0 | | 0 | 0 | 0 | 0 | 0 | -1 | -1 | | | 0 | ? |
| *Boloria selenis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 | ? | ? | ? | | | | | | | | | | | | |
| *Boloria angarensis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | 0 | | | | | | | | | | | | | | |
| *Boloria oscarus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | | | | | | | | | | | | | |
| *Boloria chariclea* | | | | | | | | | | | | | | | | | | 0 | | | | | | | | | | | | | | | ? | | | | | ? | 0 | | | 0 | | | | | | |
| *Boloria freija* | | | | | | | | 0 | | | | | | | | + | | -1 | | | | | | | | | | | -4 | | | | ? | | | | | ? | 0 | ? | | 0 | | | | | | |
| *Boloria dia* | -3 | 0 | ? | | -3 | 0 | ? | 0 | | -1 | | 0 | -2 | | 0 | +1 | 0 | | ? | ? | | 0 | 0 | ? | ? | | 0 | 0 | 0 | | | 0 | | | | +1 | -2 | 0 | 0 | 0 | 0 | | -1 | 0 | -1 | ? | 0 | ? |
| *Boloria polaris* | | | | | | | | | | | | | | | | | | 0 | | | | | | | | | | | | | | ? | 0 | | | | ? | 0 | | | | -2 | | | | | | |
| *Boloria thore* | -4 | | | | | | | ? | | 0 | | | -2 | | | | | +1 | ? | | | | | | ? | | | ? | | | | ? | | | | | ? | 0 | -1 | | | -1 | | + | | | | | |
| *Boloria frigga* | | | | | | | | 0 | | | | | | | | -2 | | -2 | | | | | | | | | | ? | -4 | | | | ? | | | | | ? | -1 | | | -1 | | | | | | |
| *Boloria improba* | | | | | | | | | | | | | | | | | | 0 | | | | | | | | | | | | | | | ? | | | | | ? | 0 | | | -1 | | | | | | |
| *Boloria distincta* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | | | | | | | | |
| *Boloria pales* | 0 | 0 | ? | | | 0 | ? | | | 0 | | | 0 | | 0 | | 0 | | ? | ? | | | | | ? | | | | | | | | | | | 0 | -2 | | | | | -1 | 0 | | | | ? |
| *Boloria caucasica* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | | |
| *Boloria napaea* | 0 | | ? | | | | | | | 0 | | | 0 | | ? | | 0 | 0 | ? | | | | | | ? | | | | | | | | ? | | | | | | | | | 0 | | | | | | |
| *Boloria aquilonaris* | -4 | | | | -3 | | | 0 | | -1 | | -1 | -3 | -1 | | 0 | 0 | 0 | | | | | | | | | | -1 | -2 | | | | ? | -2 | | 0 | -3 | ? | 0 | ? | ? | 0 | ? | | | | -2 | |
| *Boloria graeca* | | 0 | | | | 0 | ? | | | | | | | | | | 0 | | | ? | | 0 | | | ? | | | | | | | | | | | | | | | | | ? | | | | | ? |
| *Boloria alaskensis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | 0 | | | | | | | | | |
| *Vanessa atalanta** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Vanessa indica* | | | | | | | | | 0 | | | | | | | | | | | | | | | | | | | | | | ? | | | | | | | | | | | | | | | | | |
| *Vanessa cardui** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Vanessa virginiensis* | | | | | | | | | -4 | | | | | | | | | | | | | | | | | | | | | | ? | | | | | | | | | | | | | | | | | |
| *Inachis io* | 0 | 0 | ? | | 0 | 0 | ? | 0 | | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | +2 | ? | ? | 0 | 0 | 0 | ? | ? | 0 | -1 | +1 | +1 | | | 0 | ? | +1 | ? | 0 | 0 | 0 | 0 | 0 | 0 | -1 | +1 | +1 | 0 | ? | 0 | ? |
| *Aglais urticae* | 0 | 0 | ? | | 0 | 0 | ? | 0 | | 0 | | ~ | ~ | 0 | 0 | 0 | 0 | 0 | ? | ? | 0 | 0 | 0 | ? | ? | 0 | 0 | 0 | 0 | | | 0 | ? | +1 | ? | 0 | 0 | 0 | +1 | 0 | 0 | +1 | -1 | +1 | 0 | ? | 0 | ? |
| *Polygonia c-album* | 0 | 0 | ? | | 0 | 0 | ? | 0 | | 0 | | -1 | 0 | +1 | 0 | 0 | ? | 0 | ? | ? | 0 | 0 | 0 | ? | ? | | 0 | 0 | 0 | | | +1 | ? | +2 | ? | 0 | -1 | 0 | +1 | 0 | 0 | 0 | +1 | 0 | 0 | -1 | ~ | ? |
| *Polygonia egea* | | 0 | | | | ? | ? | | | | | | | | | | ? | | | ? | | 0 | | ? | ? | | | | | | | | | | | | | ? | | | | | | -1 | 0 | -3 | | | ? |
| *Araschnia levana* | -3 | | | | 0 | 0 | ? | 0 | | +1 | | ~ | 0 | +2 | +2 | +1 | +1 | +2 | | | | ? | 0 | ? | + | | -1 | 0 | +1 | | | | | +1 | ? | 0 | 0 | 0 | +1 | +1 | -1 | | | | 0 | ? |
| *Nymphalis antiopa* | -3 | 0 | ? | | -4 | ? | ? | ? | | 0 | | ~ | -1 | ~ | 0 | 0 | ? | 0 | ? | ? | | 0 | ~ | ? | ? | | -4 | 0 | -1 | | | | ? | + | ? | 0 | -4 | 0 | 0 | 0 | 0 | +1 | -1 | -2 | ~ | -3 | ~ | ? |
| *Nymphalis polychloros* | -4 | 0 | ? | | -3 | ? | ? | -1 | | 0 | | -2 | -2 | -4 | ? | ~ | ? | ~ | ? | ? | -4 | 0 | ~ | ? | ? | | -1 | ~ | -1 | | | -1 | ? | -4 | ? | 0 | -3 | 0 | | ~ | 0 | +1 | -2 | -1 | ? | -1 | 0 | ? |
| *Nymphalis xanthomelas* | | 0 | | | | + | ? | ? | | | | + | + | | | 0 | | | | ? | | ? | ~ | ? | | | | | ? | | | -1 | | | | 0 | -3 | ? | 0 | ~ | +1 | | ? | -2 | -2 | | -1 | ? |
| *Nymphalis vaualbum* | + | 0 | | | | | ? | ~ | | | | + | | | | | | 0 | | | | | ~ | ? | | | | | | | | | | | | -3 | ? | 0 | ~ | ~ | | + | -3 | ? | | -4 | ? |
| *Euphydryas iduna* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | | ? | ? | | | -1 | | | ? | | | |
| *Euphydryas cynthia* | 0 | | | | | 0 | | | | 0 | | | 0 | | | | 0 | | ? | | | | | | ? | | | | | | | | | | | | | | | | | | | | + | |
| *Euphydryas intermedia* | -3 | | | | | | | | | 0 | | | 0 | | | | ? | | | | | | | | -1 | | | | | | | | | | | | | ? | 0 | ? | | | | 0 | | | | |
| *Euphydryas maturna* | -4 | | | | + | 0 | | 0 | | | | -4 | -4 | | | 0 | -4 | 0 | | ? | | | -1 | ? | | | + | 0 | -2 | | | | -1 | | | | -1 | -3 | ? | +1 | 0 | 0 | -4 | -2 | 0 | | | -1 | ? |
| *Euphydryas desfontainii* | | | | | | | | | | | | | | | 0 | | -4 | | | | | | | | | | | | | | | | | | ? | | | | | | | | | | | | | |
| *Euphydryas aurinia* | -2 | 0 | ? | | -4 | 0 | ? | 0 | | -1 | | -1 | -3 | -3 | 0 | 0 | -1 | -2 | ? | ~ | -3 | 0 | +1 | ? | ? | -3 | -2 | -1 | -3 | | | | | + | ? | -3 | ? | ? | | -1 | 0 | -2 | ? | 0 | -1 | ? | -1 | ? |
| *Euphydryas orientalis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | -4 | | | | |
| *Melitaea cinxia* | -3 | 0 | ? | | -4 | 0 | ~ | 0 | | 0 | | -2 | -3 | -1 | 0 | 0 | ? | -2 | | ~ | 0 | ~ | 0 | ? | ? | | -3 | 0 | -3 | | | 0 | -2 | -4 | ? | -1 | 0 | 0 | -1 | 0 | 0 | -1 | ~ | 0 | 0 | -1 | 0 | ? |
| *Melitaea phoebe* | -3 | 0 | ? | | + | 0 | ~ | ? | | 0 | | -4 | -3 | | 0 | 0 | -1 | | + | ~ | | 0 | 0 | ? | ? | | ? | +2 | -1 | | | 0 | | | ? | ? | 0 | ? | 0 | 0 | | | -2 | 0 | 0 | -1 | ~ | ~ |

Appendix 5: Trend in distribution over the last 25 years of butterflies in the European countries. The abbrevations of the countries are given in part I, section 2.1. * migratory species, no trend.
-4: decrease 75-100%; -3: decr. 50-75%; -2: decr. 25-50%; -1: decr. 15-25%; 0: stable; +1: increase 125-200%; +2: incr. >200%; +: extinct; ~: unknown; ?: unknown

| Species | A | AL | AND | AZO | B | BG | BIH | BY | CAN | CH | CY | CZ | D | DK | E | EST | F | FIN | FL | FYROM | GB | GR | H | HR | I | IRL | L | LT | LV | M | MAD | MD | N | NL | P | PL | RO | RUS | RUSNE | RUSSE | RUSYA | S | SK | SLO | TRA | TRE | UA | YU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Melitaea punica* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 | | | |
| *Melitaea collina* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Melitaea aetherie* | | | | | | | | | | | | | | | ? | | | | | | | | | | -2 | | | | | | | | | | ? | | | | | | | | | | | | | |
| *Melitaea arduinna* | | | | | | 0 | | | | | | | | | | | | | | ? | | 0 | | | | | | | | | | | | | | | -2 | ? | | -1 | | | | | 0 | | ? | |
| *Melitaea trivia* | -4 | 0 | | | | 0 | ~ | | | | | + | | | ? | | | | | ~ | | 0 | 0 | ? | ? | | | | | | | | | | ? | | -2 | ? | | ? | | | -2 | -1 | 0 | -1 | 0 | ? |
| *Melitaea didyma* | -3 | 0 | ? | | | 0 | ~ | 0 | | -1 | | -3 | -3 | | 0 | | 0 | | + | ~ | | 0 | 0 | ? | ? | | ? | -2 | -1 | | | | | | ? | -3 | +1 | 0 | ? | -1 | 0 | | -1 | 0 | 0 | -1 | 0 | ~ |
| *Melitaea persea* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Melitaea interrupta* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Melitaea diamina* | -3 | | ? | | -3 | 0 | ? | 0 | | 0 | | -3 | -2 | + | 0 | 0 | 0 | -2 | ? | ? | | | -1 | ? | ? | | -3 | ? | -2 | | | -1 | ? | + | | -1 | -1 | 0 | 0 | 0 | 0 | -1 | -2 | 0 | ? | | -1 | ? |
| *Melitaea deione* | | | ? | | | | | | | -1 | | | | | ? | | 0 | | | | | | | | ? | | | | | | | | | | ? | | | | | | | | | | | | | |
| *Melitaea varia* | +1 | | | | | | | | | 0 | | | | | | | 0 | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | | |
| *Melitaea parthenoides* | | | ? | | | | | | | 0 | | | -2 | | 0 | | 0 | | | | | | | | ? | | | | | | | | | | ? | | | | | | | | | | | | | |
| *Melitaea aurelia* | -3 | | | | -2 | 0 | ? | ? | | -1 | | -4 | -2 | | | 0 | ? | | | | | ? | 0 | ? | ? | | -1 | -1 | -2 | | | | | | -4 | 0 | ? | ? | ? | 0 | | -2 | 0 | -1 | | -1 | ? |
| *Melitaea britomartis* | -4 | | | | | 0 | | ? | | -1 | | -4 | -2 | | | | | | | | | | 0 | ? | -2 | | | | | | | | | | 0 | 0 | ? | ? | 0 | | -4 | -2 | 0 | | | -1 | |
| *Melitaea asteria* | +1 | | | | | | | | | 0 | | | | | | | | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | | |
| *Melitaea athalia* | -1 | 0 | ? | | -4 | 0 | ~ | 0 | | 0 | | 0 | -2 | -2 | 0 | 0 | -1 | 0 | ? | ~ | -3 | 0 | 0 | ? | ? | | -3 | 0 | -1 | | | -1 | ? | -3 | ? | 0 | 0 | 0 | 0 | 0 | 0 | -1 | -1 | 0 | ? | ? | 0 | ~ |
| *Melitaea caucasogenita* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Limenitis populi* | -3 | | | | -4 | 0 | ? | -2 | | ? | | 0 | -3 | | | 0 | -2 | +2 | | ? | | 0 | -2 | -3 | +1 | | -4 | 0 | -1 | | | | ? | ? | | 0 | -1 | 0 | 0 | ~ | 0 | 0 | -2 | -1 | | | -1 | ? |
| *Limenitis camilla* | -3 | | ? | | -2 | 0 | ? | 0 | | 0 | | ~ | -2 | 0 | ? | 0 | 0 | | ? | ? | +1 | ? | -1 | ? | ? | | -2 | 0 | -2 | | | | | | ? | 0 | -1 | 0 | 0 | 0 | 0 | | -1 | 0 | ? | + | +1 | ? |
| *Limenitis reducta* | -3 | 0 | ? | | | 0 | ? | | | -1 | ? | | -3 | | 0 | | 0 | | | ? | | 0 | ~ | ? | ? | | + | | | | | | | | ? | | -1 | ? | | ? | | | ? | 0 | 0 | ? | + | ? |
| *Hypolimnas misippus* | | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | ? | | | | | | | | | | | | | | | | |
| *Neptis sappho* | -4 | | | | | 0 | ? | ? | | | | + | | | | | | | | ? | | 0 | 0 | ? | ? | | | | | | | -1 | | | + | -1 | ? | 0 | 0 | | | -4 | 0 | | | -1 | +1 |
| *Neptis rivularis* | -3 | | | | | 0 | ? | ? | | 0 | | -1 | | | | | | | | ? | | ? | +1 | ? | ? | | | | | | | | | | -1 | +1 | ? | 0 | 0 | | | -2 | 0 | 0 | | +1 | ? |
| *Charaxes jasius* | | 0 | | | | | ? | | | | ? | | | | 0 | | 0 | | | | | 0 | | ? | ? | | | | | | | | | | ? | | | | | | | | | -1 | | | ? |
| *Euapartura mirza* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Apatura metis* | + | | | | | 0 | ? | | | | | | | | | | | | | | | 0 | 0 | ? | | | | | | | | -1 | | | | | ~ | ? | | ? | | | | 0 | ? | 0 | ? |
| *Apatura ilia* | -4 | 0 | ? | | -2 | 0 | ? | 0 | | 0 | | 0 | -2 | | ? | 0 | 0 | | ? | ? | | 0 | 0 | -3 | ? | | -1 | 0 | -2 | | | -1 | | | ? | 0 | -1 | 0 | ~ | ~ | +1 | | -1 | -1 | | | 0 | ? |
| *Apatura iris* | -3 | | | | -2 | 0 | ? | 0 | | 0 | | -1 | -1 | +1 | 0 | 0 | 0 | +2 | ? | ? | -2 | 0 | 0 | -3 | +1 | | -2 | 0 | -1 | | | | | -3 | ? | 0 | -1 | 0 | ~ | ~ | +2 | +1 | -1 | -2 | | | 0 | ? |
| *Thaleropis ionia* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Kirinia roxelana* | | 0 | | | | 0 | ? | | | | ? | | | | | | | | | ? | | 0 | | ? | | | | | | | | | | | -3 | | | | | | | | 0 | -1 | | ? |
| *Esperarge climene* | | 0 | | | | ? | | | | | | | | | | | | | | ? | | 0 | | | | | | | | | | | | | | ? | | -1 | | | | | 0 | | +1 | ? |
| *Pararge aegeria* | 0 | 0 | ? | | 0 | 0 | ? | 0 | | 0 | ? | 0 | 0 | +1 | 0 | 0 | 0 | 0 | ? | ? | +1 | 0 | 0 | ? | ? | 0 | 0 | 0 | -1 | +1 | +2 | -1 | ? | +1 | ? | +1 | ~ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | 0 | ? |
| *Pararge xiphioides* | | | | | | | | | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Pararge xiphia* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | -1 | | | | | | | | | | | | | | | | | |
| *Lasiommata megera* | -1 | 0 | ? | | 0 | 0 | ? | 0 | | 0 | ? | -1 | -1 | 0 | 0 | | 0 | | ? | ? | 0 | 0 | 0 | ? | ? | 0 | -1 | ~ | ? | +1 | | | -1 | 0 | ? | +1 | ~ | 0 | | 0 | | 0 | -1 | 0 | 0 | -1 | 0 | ? |
| *Lasiommata paramegaera* | | | | | | | | | | | | | | | | | ? | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | | |
| *Lasiommata petropolitana* | 0 | 0 | | | | ? | ? | ? | | 0 | | 0 | 0 | | ? | 0 | 0 | 0 | ? | ? | | 0 | | | ? | | | ? | -1 | | | | ? | | | 0 | | ? | 0 | ? | 0 | -1 | -1 | 0 | ? | | -4 | ? |
| *Lasiommata maera* | -1 | | ? | | -2 | ? | ? | 0 | | 0 | ? | -1 | -1 | | 0 | 0 | 0 | 0 | ? | ? | | 0 | | ? | ? | | -3 | 0 | 0 | | | 0 | ? | | ? | 0 | ~ | 0 | 0 | 0 | 0 | -1 | 0 | 0 | 0 | -2 | 0 | ? |
| *Lasiommata menava* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Lasiommata deidamia* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | 0 | ? | | | | | | | | |
| *Lopinga achine* | -3 | | | | + | + | ? | ? | | -1 | | -4 | -4 | | ? | 0 | -1 | +1 | | | | | -2 | ? | -1 | | + | 0 | -2 | | | | | | | -3 | -1 | ? | 0 | 0 | 0 | -1 | -4 | 0 | | | 0 | ? |
| *Ypthima asterope* | | | | | | | | | | | ? | | | | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | -2 | | | |
| *Coenonympha tullia* | -4 | 0 | | | -4 | | ? | 0 | | 0 | | -4 | -3 | -2 | | 0 | -1 | -1 | | | -1 | | + | + | ? | -2 | | 0 | -2 | | | | ? | -4 | | 0 | -3 | ? | -1 | -1 | 0 | -1 | -1 | -2 | | | 0 | |
| *Coenonympha oedippus* | -4 | | | | | + | | ? | | 0 | | | + | | | | -1 | | ? | | | | -3 | | ? | | | | | | | | | | | -4 | | ? | | ? | | | + | -1 | | | -4 | |
| *Coenonympha amaryllis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | ? | | | | | | | | |
| *Coenonympha rhodopensis* | | | | | | 0 | ? | | | | | | | | | | | | | ? | | 0 | | ? | ? | | | | | | | | | | | | | | | | | | | | | | ? |

Appendix 5: Trend in distribution over the last 25 years of butterflies in the European countries. The abbrevations of the countries are given in part I, section 2.1. * migratory species, no trend.
-4: decrease 75-100%; -3: decr. 50-75%; -2: decr. 25-50%; -1: decr. 15-25%; 0: stable; +1: increase 125-200%; +2: incr. >200%; +: extinct; ~: unknown; ?: unknown

| Species | A | AL | AND | AZO | B | BG | BIH | BY | CAN | CH | CY | CZ | D | DK | E | EST | F | FIN | FL | FYROM | GB | GR | H | HR | I | IRL | L | LT | LV | M | MAD | MD | N | NL | P | PL | RO | RUS | RUSNE | RUSSE | RUSYA | S | SK | SLO | TRA | TRE | UA | YU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Coenonympha arcania* | 0 | 0 | ? | | -3 | 0 | ~ | 0 | | 0 | | 0 | -1 | -4 | 0 | 0 | 0 | | | ~ | | 0 | 0 | ? | ? | | -1 | 0 | -1 | | | 0 | +1 | + | ? | 0 | -1 | 0 | 0 | 0 | | -1 | -1 | 0 | ? | -1 | 0 | ~ |
| *Coenonympha glycerion* | -3 | | | | -3 | 0 | ? | 0 | | -1 | | 0 | -2 | | 0 | 0 | ? | 0 | | ~ | | ? | 0 | ? | ? | | | 0 | 0 | | | 0 | | | ? | 0 | 0 | 0 | +1 | +1 | 0 | | -1 | 0 | ? | | 0 | ? |
| *Coenonympha gardetta* | 0 | 0 | | | | | ? | | | 0 | | | 0 | | | | ? | | ? | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | ? |
| *Coenonympha darwiniana* | | | | | | | | | | ? | | | | | | | ? | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | |
| *Coenonympha corinna* | | | | | | | | | | | | | | | | | ? | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | |
| *Coenonympha elbana* | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | |
| *Coenonympha dorus* | | | ? | | | | | | | | | | | | 0 | | 0 | | | | | | | | ? | | | | | | | | | | ? | | | | | | | | | | | | | |
| *Coenonympha hero* | -4 | | | | -4 | | | 0 | | -2 | | + | -4 | + | | 0 | -1 | | | | | | | | | | + | -1 | -1 | | | | | -2 | + | | -2 | | ? | 0 | -1 | | -2 | -2 | | | | -1 | |
| *Coenonympha leander* | | 0 | | | | 0 | | | | | | | | | | | | | | ? | | 0 | | | | | | | | | | | -3 | ? | | -1 | | | | | | | | | ? | | | ? |
| *Coenonympha saadi* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Coenonympha symphyta* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Coenonympha pamphilus* | 0 | | ? | | 0 | 0 | ? | 0 | | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | -1 | ? | ? | 0 | 0 | 0 | ? | ? | 0 | 0 | 0 | 0 | -1 | | 0 | ? | -3 | ? | 0 | +1 | 0 | 0 | +1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ? |
| *Coenonympha thyrsis* | | | | | | | | | | | | | | | | | | | | | | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Triphysa phryne* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | + | | -4 | |
| *Pyronia tithonus* | | 0 | ? | | 0 | 0 | ? | | | -1 | | | -2 | | 0 | | 0 | | | ? | 0 | 0 | +1 | ? | ? | 0 | -1 | | | | | | | +1 | ? | + | -4 | | | | | | + | -1 | 0 | -3 | -4 | ? |
| *Pyronia cecilia* | | 0 | | | | | | | | | | | | | 0 | | 0 | | | | | 0 | | ? | ? | | | | | | | | | | ? | | | | | | | | | + | -4 | | |
| *Pyronia bathseba* | | | | | | | | | | | | | | | 0 | | 0 | | | | | | | | | | | | | | | | | | ? | | | | | | | | | | | | |
| *Aphantopus hyperantus* | 0 | 0 | | | 0 | 0 | ? | 0 | | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ? | ? | 0 | 0 | 0 | ? | ? | 0 | -1 | 0 | 0 | | | -1 | ? | +1 | | 0 | +1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | ? |
| *Maniola telmessia* | | | | | | | | | | | | | | | | | | | | | | 0 | | | | | | | | | | | | | | | | | | | | | | | 0 | | | | |
| *Maniola cypricola* | | | | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Maniola halicarnassus* | | | | | | | | | | | | | | | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Maniola nurag* | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | |
| *Maniola chia* | | | | | | | | | | | | | | | | | | | | | | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Maniola jurtina* | 0 | 0 | ? | | 0 | 0 | ? | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | -3 | ? | ? | 0 | 0 | 0 | ? | ? | 0 | -1 | 0 | 0 | -2 | | | ? | +1 | ? | 0 | +1 | 0 | 0 | -1 | 0 | -1 | 0 | 0 | 0 | 0 | 0 | ? |
| *Maniola megala* | | | | | | | | | | | | | | | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | | ? | | | | |
| *Hyponephele wagneri* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Hyponephele urartua* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Hyponephele naricina* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Hyponephele cadusia* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Hyponephele kocaki* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Hyponephele lycaon* | -2 | 0 | ? | | | 0 | ? | 0 | | 0 | | -3 | -3 | | 0 | 0 | ? | + | | ? | | 0 | 0 | ? | ? | | | -1 | -2 | | | -1 | | | ? | 0 | -1 | ? | 0 | 0 | 0 | | -1 | -1 | 0 | | 0 | ? |
| *Hyponephele lupinus* | | 0 | | | | 0 | ? | | | | ? | ? | | | 0 | | -1 | | | ? | | 0 | 0 | ? | ? | | | | | | | | | ? | | 0 | ? | | ? | | | ? | | 0 | -1 | 0 | ? |
| *Hyponephele huebneri* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | | |
| *Proterebia afra* | | | | | | | | | | | | | | | | | | | | | | 0 | | ? | | | | | | | | | | | | | ? | | ? | | | | | ? | | -1 | |
| *Erebia ligea* | 0 | 0 | | | -3 | 0 | ? | 0 | | 0 | | -1 | -1 | | | 0 | ? | 0 | ? | ? | | 0 | | ? | ? | | | 0 | -1 | | | | ? | | | 0 | 0 | 0 | 0 | 0 | 0 | -1 | 0 | 0 | | | 0 | ? |
| *Erebia euryale* | 0 | 0 | ? | | | 0 | ? | | | 0 | | 0 | -1 | | ? | | 0 | | ? | ? | | 0 | | ? | ? | | | | | | | | | | 0 | 0 | ? | 0 | 0 | | | 0 | 0 | | | 0 | ? |
| *Erebia eriphyle* | 0 | | | | | | | | | 0 | | | 0 | | | | | | ? | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | |
| *Erebia manto* | 0 | | | | | | ? | | | 0 | | | 0 | | ? | | 0 | | ? | | | | | | ? | | | | | | | | | | | 0 | -1 | | | | | | -1 | 0 | | | 0 | ? |
| *Erebia claudina* | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Erebia flavofasciata* | 0 | | | | | | | | | -1 | | | | | | | | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | | |
| *Erebia epiphron* | | 0 | ? | | | | ? | | | 0 | | 0 | 0 | | 0 | | 0 | | ? | ? | 0 | ? | | ? | ? | + | | | | | | | | | | 0 | 0 | | | | | -1 | 0 | | | + | ? |
| *Erebia orientalis* | | | | | | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? |
| *Erebia christi* | | | | | | | | | | -1 | | | | | | | | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | | |
| *Erebia pharte* | 0 | | | | | | | | | 0 | | | 0 | | | | 0 | | ? | | | | | | ? | | | | | | | | | | | 0 | 0 | | | | | -1 | -1 | | | | |
| *Erebia melampus* | 0 | | | | | | | | | 0 | | | 0 | | | | 0 | | ? | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | + | |
| *Erebia sudetica* | | | | | | | | | | 0 | | 0 | | | | | 0 | | | | | | | | | | | | | | | | | | | + | -3 | | | | | | | | | | | |

Appendix 5: Trend in distribution over the last 25 years of butterflies in the European countries. The abbrevations of the countries are given in part I, section 2.1. * migratory species, no trend.
-4: decrease 75-100%; -3: decr. 50-75%; -2: decr. 25-50%; -1: decr. 15-25%; 0: stable; +1: increase 125-200%; +2: incr. >200%; +: extinct; ~: unknown; ?: unknown

| Species | A | AL | AND | AZO | B | BG | BIH | BY | CAN | CH | CY | CZ | D | DK | E | EST | F | FIN | FL | FYROM | GB | GR | H | HR | I | IRL | L | LT | LV | M | MAD | MD | N | NL | P | PL | RO | RUS | RUSNE | RUSSE | RUSYA | S | SK | SLO | TRA | TRE | UA | YU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Erebia aethiops* | 0 | 0 | | | -3 | 0 | ? | ? | | 0 | | -2 | -2 | | | | -2 | | ? | ? | 0 | 0 | 0 | ? | ? | | + | + | 0 | | | | | | | 0 | -1 | ? | 0 | 0 | | | | 0 | 0 | 0 | | -2 | ? |
| *Erebia triaria* | | 0 | | | | | ? | | | -1 | | | | | 0 | | ? | | | | | | | ? | ? | | | | | | | | | ? | | | | | | | | | | | | | + | ? |
| *Erebia rossii* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | 0 | | | | | | | | | | | |
| *Erebia embla* | | | | | | | | | | | | | | | | ? | | -2 | | | | | | | | | | | -4 | | | | ? | | | | ? | 0 | ? | | | 0 | | | | | | | |
| *Erebia disa* | | | | | | | | | | | | | | | | | | 0 | | | | | | | | | | | | | | | ? | | | | ? | 0 | | | | 0 | | | | | | | |
| *Erebia cyclopius* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | 0 | -1 | | | | | | | | | | |
| *Erebia fasciata* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | 0 | | | | | | | | | | | |
| *Erebia medusa* | -4 | 0 | | | -3 | 0 | ? | + | | 0 | | 0 | -1 | | | | -1 | | ? | ? | | 0 | +1 | ? | +1 | | -2 | | | | | | ? | | | 0 | ~ | ? | | 0 | | | -1 | -1 | 0 | + | -1 | ? |
| *Erebia hewitsonii* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | | |
| *Erebia polaris* | | | | | | | | | | | | | | | | | | 0 | | | | | | | | | | | | | | | ? | | | | ? | 0 | 0 | | | | | | | | | | |
| *Erebia edda* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | ? | | | | | | | | | | | |
| *Erebia alberganus* | 0 | | | | | 0 | | | | 0 | | | | | | | 0 | | | + | | | | | ? | | | | | | | | | | | | | | | | | | | | | | | | ? |
| *Erebia pluto* | 0 | | | | | | | | | 0 | | | 0 | | | | 0 | | ? | | | | | | ? | | | | | | | | | | | | | | | | | | | | -1 | | | | |
| *Erebia gorge* | 0 | 0 | ? | | | 0 | ? | | | 0 | | | 0 | | ? | | 0 | | ? | | | | | ? | ? | | | | | | | | | | | 0 | -2 | | | | | | -1 | 0 | | | + | ? |
| *Erebia rhodopensis* | | | | | | 0 | | | | | | | | | | | | | | ? | | ? | | | | | | | | | | | | | | | | | | | | | | | | | | ? |
| *Erebia aethiopella* | | | | | | | | | | | | | | | | | 0 | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | | | |
| *Erebia mnestra* | 0 | | | | | | | | | 0 | | | | | | | 0 | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | | | |
| *Erebia gorgone* | | | ? | | | | | | | | | | | | ? | | ? | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Erebia epistygne* | | | | | | | | | | | | | | | ? | | -1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Erebia ottomana* | | 0 | | | | 0 | ? | | | | | | | | | | 0 | | | ? | | 0 | | ? | ? | | | | | | | | | | | | | | | | | | | ? | | | ? |
| *Erebia graucasica* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | | | | | | ? | | | | |
| *Erebia iranica* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | | | | | | ? | | | | |
| *Erebia melancholica* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | | | | | | ? | | | | |
| *Erebia tyndarus* | 0 | | | | | | | | | 0 | | | 0 | | | | | | ? | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | + | | |
| *Erebia nivalis* | 0 | | | | | | | | | 0 | | | | | | | | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | | | |
| *Erebia calcaria* | ? | | | | | | | | | | | | | | | | | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | 0 | | | | |
| *Erebia cassioides* | 0 | 0 | ? | | | 0 | ? | | | 0 | | | | | 0 | | 0 | | | ? | | ? | | | ? | | | | | | | | | | | -4 | | | | | | | | | | | ? |
| *Erebia hispania* | | | ? | | | | | | | | | | | | 0 | | ? | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Erebia pronoe* | 0 | 0 | | | | 0 | ? | | | 0 | | | 0 | | ? | | ? | | ? | ? | | | | ? | ? | | | | | | | | | | | 0 | -3 | | | | | | -1 | 0 | | | + | ? |
| *Erebia lefebvrei* | | | ? | | | | | | | | | | | | 0 | | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Erebia scipio* | | | | | | | | | | | | | | | | | ? | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | | | |
| *Erebia stirius* | 0 | | | | | | | | | | | | | | | | | | | | | | | ? | ? | | | | | | | | | | | | | | | | | | | 0 | | | + | |
| *Erebia styx* | 0 | | | | | | | | | 0 | | | 0 | | | | | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | -1 | | | | |
| *Erebia montana* | 0 | | | | | | | | | 0 | | | | | | | 0 | | ? | | | | | | ? | | | | | | | | | | | | ? | | | | | | | | | | | | |
| *Erebia zapateri* | | | | | | | | | | | | | | | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Erebia neoridas* | | | ? | | | | | | | | | | | | 0 | | 0 | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Erebia melas* | | 0 | | | | 0 | ? | | | | | | | | | | | | | ? | | 0 | | ? | | | | | | | | | | | | -2 | | | | | | | 0 | | | + | ? |
| *Erebia oeme* | 0 | 0 | ? | | | 0 | ? | | | 0 | | | -1 | | ? | | ? | | ? | ? | | 0 | | ? | ? | | | | | | | | | | | | | | | | | | | 0 | | | | ? |
| *Erebia meolans* | 0 | | ? | | | | | | | 0 | | | -1 | | 0 | | 0 | | ? | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | + | | |
| *Erebia palarica* | | | | | | | | | | | | | | | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Erebia discoidalis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | 0 | | | | | | | | | | | |
| *Erebia dabanensis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 | | | | | | | | | | | |
| *Erebia pandrose* | 0 | 0 | ? | | | 0 | ? | | | 0 | | | 0 | | ? | | 0 | 0 | ? | ? | | | | | ? | | | | | | | | ? | | | 0 | -2 | ? | | | | 0 | -1 | 0 | | | + | ? |
| *Erebia sthennyo* | | | | | | | | | | | | | | | ? | | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Melanargia russiae* | | -1 | ? | | | | | | | | | | | | 0 | | ? | | | ? | | 0 | + | | ? | | | | | | | | | | ? | | | 0 | ? | 0 | | | | | ? | | -3 | |
| *Melanargia galathea* | -2 | 0 | | | -1 | 0 | ? | ? | | 0 | | 0 | -1 | | 0 | | 0 | | ? | ? | 0 | 0 | 0 | ? | ? | | -1 | | | | | | 0 | | | 0 | 0 | 0 | | 0 | | | 0 | 0 | 0 | 0 | 0 | ? |

Appendix 5: Trend in distribution over the last 25 years of butterflies in the European countries. The abbrevations of the countries are given in part I, section 2.1. * migratory species, no trend.
-4: decrease 75-100%; -3: decr. 50-75%; -2: decr. 25-50%; -1: decr. 15-25%; 0: stable; +1: increase 125-200%; +2: incr. >200%; +: extinct; ~: unknown; ?: unknown

| Species | A | AL | AND | AZO | B | BG | BIH | BY | CAN | CH | CY | CZ | D | DK | E | EST | F | FIN | FL | FYROM | GB | GR | H | HR | I | IRL | L | LT | LV | M | MAD | MD | N | NL | P | PL | RO | RUS | RUSNE | RUSSE | RUSYA | S | SK | SLO | TRA | TRE | UA | YU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Melanargia lachesis* | | | ? | | | 0 | | | | | | | | | 0 | | ? | | | | | | | | | | | | | | | | | | ? | | | | | | | | | | | | | | ? |
| *Melanargia syriaca* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 | | | |
| *Melanargia hylata* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 | | | |
| *Melanargia grumi* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Melanargia titea* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | -1 | | | |
| *Melanargia larissa* | | -1 | | | | | ? | | | | | | | | | | | | | ? | | 0 | | ? | | | | | | | | | | | | | | | | | | | | | 0 | -1 | | ? |
| *Melanargia arge* | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | | | |
| *Melanargia occitanica* | | | | | | | | | | | | | | | 0 | | ? | | | | | | | | ? | | | | | | | | | | ? | | | | | | | | | | | | | |
| *Melanargia pherusia* | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | | | |
| *Melanargia ines* | | | | | | | | | | | | | | | 0 | | | | | | | | | | | | | | | | | | | | ? | | | | | | | | | | | | | |
| *Satyrus favonius* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Satyrus parthicus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Satyrus ferula* | ? | 0 | | | | 0 | ? | | | 0 | | | | | ? | | ? | | | ? | | 0 | | ? | ? | | | | | | | | | | | | ? | | 0 | | | | ? | | 0 | ? |
| *Satyrus amasinus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Satyrus actaea* | | 0 | ? | | | | | | | | | | | | 0 | | 0 | | | | | | | | ? | | | | | | | | | | ? | | | | | | | | | | | | |
| *Minois dryas* | -2 | -1 | | | | ? | ? | ? | | -1 | | -2 | -3 | | ? | | ? | | ? | ? | | ? | -1 | ? | ? | | + | | | | | -1 | | | | -4 | 0 | ? | 0 | 0 | | | 0 | 0 | ? | ? | 0 | ? |
| *Hipparchia fagi* | -1 | 0 | ? | | | 0 | ? | | | -1 | | -1 | -4 | | 0 | | 0 | | | ? | | 0 | 0 | ? | ? | | + | | | | | | | | ? | | -1 | ? | | -1 | | | 0 | 0 | | | -1 | ? |
| *Hipparchia alcyone* | -4 | 0 | ? | | | | | 0 | | 0 | | -2 | -4 | | 0 | | ? | | | | | | | | ? | | + | -1 | -1 | | | | | 0 | | ? | -2 | -1 | ? | | ? | | | -1 | | | 0 | |
| *Hipparchia syriaca* | | | | | | 0 | ? | | | | ? | | | | | | | | | ? | | -1 | | ? | | | | | | | | | | | | | ? | | | | | | | 0 | -3 | | ? |
| *Hipparchia autonoe* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | -1 | | | | | | | | |
| *Hipparchia neomiris* | | | | | | | | | | | | | | | | | 0 | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | | |
| *Hipparchia aristaeus* | | | | | | 0 | | | | | | | | | | | | | | ? | | 0 | | | ? | | | | | | | | | | | | | | | | | | | | -3 | | |
| *Hipparchia cretica* | | | | | | | | | | | | | | | | | | | | | | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Hipparchia semele* | -3 | 0 | ? | | -3 | 0 | ? | 0 | | 0 | | 0 | -2 | 0 | 0 | 0 | ~ | 0 | | | -1 | | 0 | ? | ? | 0 | -3 | 0 | -2 | | | | ? | -2 | ? | 0 | -1 | ? | | | | 0 | -2 | 0 | | | 0 | ? |
| *Hipparchia mersina* | | | | | | | | | | | | | | | | | | | | | | 0 | | | | | | | | | | | | | | | | | | | | | | | -1 | | | |
| *Hipparchia volgensis* | | | | | | 0 | | | | | | | | | | | | | | ? | | 0 | | | | | | | | | | | | | | | ? | | ? | | | | | | ? | | ? |
| *Hipparchia christenseni* | | | | | | | | | | | | | | | | | | | | | | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Hipparchia pellucida* | | | | | | | | | | | ? | | | | | | | | | | | 0 | | | | | | | | | | | | | | | | ? | | | | | | | ~ | | 0 | |
| *Hipparchia statilinus* | -3 | 0 | ? | | + | 0 | ? | | | -1 | | -4 | -4 | | 0 | | 0 | | | ? | | 0 | 0 | ? | ? | | | ? | | | | | | -3 | ? | -1 | ? | ? | | ? | | | -3 | 0 | ? | -3 | 0 | ? |
| *Hipparchia fatua* | | | | | | 0 | ? | | | | | | | | | | | | | ? | | 0 | | | | | | | | | | | | | | | | | | | | | | ? | -2 | | ? |
| *Hipparchia parisatis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Hipparchia fidia* | | | | | | | | | | | | | | | 0 | | 0 | | | | | | | | ? | | | | | | | | | | ? | | | | | | | | | | | | | |
| *Hipparchia maderensis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | -1 | | | | | | | | | | | | | | | | |
| *Hipparchia azorina* | | | | -2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Hipparchia occidentalis* | | | | -2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Hipparchia miguelensis* | | | | -2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Hipparchia wyssii* | | | | | | | | | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Hipparchia bacchus* | | | | | | | | | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Hipparchia gomera* | | | | | | | | | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Hipparchia tilosi* | | | | | | | | | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Hipparchia senthes* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Arethusana arethusa* | -2 | 0 | | | | 0 | | | | ? | | -2 | + | | 0 | | 0 | | | ? | | 0 | 0 | ? | ? | | | | | | | | | | ? | | -1 | ? | | 0 | | | -1 | 0 | 0 | ? | -2 | ~ |
| *Brintesia circe* | -1 | 0 | ? | | | 0 | ~ | | | 0 | ? | +1 | -3 | | 0 | | 0 | | | ? | | 0 | 0 | ? | ? | | + | | | | | | | | ? | | -3 | ? | | ? | | | -1 | 0 | 0 | -2 | -1 | ~ |
| *Chazara briseis* | -4 | 0 | ? | | + | 0 | ~ | | | -1 | | -3 | -3 | | 0 | | -1 | | | ? | | 0 | 0 | ? | ? | | + | | | | | | | | | -4 | -3 | ? | ? | 0 | | | -2 | 0 | 0 | -4 | -2 | ~ |
| *Chazara persephone* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | -1 | | | | | | ? | | | |
| *Chazara egina* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |

Appendix 5: Trend in distribution over the last 25 years of butterflies in the European countries. The abbrevations of the countries are given in part I, section 2.1. * migratory species, no trend.
-4: decrease 75-100%; -3: decr. 50-75%; -2: decr. 25-50%; -1: decr. 15-25%; 0: stable; +1: increase 125-200%; +2: incr. >200%; +: extinct; ~: unknown; ?: unknown

| Species | A | AL | AND | AZO | B | BG | BIH | BY | CAN | CH | CY | CZ | D | DK | E | EST | F | FIN | FL | FYROM | GB | GR | H | HR | I | IRL | L | LT | LV | M | MAD | MD | N | NL | P | PL | RO | RUS | RUSNE | RUSSE | RUSYA | S | SK | SLO | TRA | TRE | UA | YU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Chazara bischoffii* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | |
| *Chazara prieuri* | | | | | | | | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Pseudochazara geyeri* | | 0 | | | | | | | | | | | | | | | | | | ? | | ? | | | | | | | | | | | | | | | ? | | | | | | | ? | | | | | |
| *Pseudochazara beroe* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | | | |
| *Pseudochazara graeca* | | | | | | | | | | | | | | | | | | | | ? | | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Pseudochazara amymone* | | | | | | | | | | | | | | | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Pseudochazara orestes* | | | | | | ? | | | | | | | | | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Pseudochazara euxina* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | | | | | | | | | -1 | | |
| *Pseudochazara hippolyte* | | | | | | | | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | ? | | -1 | | | | | | | | | | |
| *Pseudochazara quirensis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | | | | | | | | | | | |
| *Pseudochazara lydia* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | | | |
| *Pseudochazara mamurra* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | | | |
| *Pseudochazara schakuhensis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | | | |
| *Pseudochazara pelopea* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | | | |
| *Pseudochazara alpina* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | | | | | | | | | | | |
| *Pseudochazara mniszechii* | | | | | | | | | | | | | | | | | | | | | | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Pseudochazara cingovskii* | | 0 | | | | | | | | | | | | | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Pseudochazara anthelea* | | 0 | | | | 0 | ? | | | | | | | | | | | | | ? | | ? | | ? | | | | | | | | | | | | | | | | | | | | | | | 0 | | | | |
| *Pseudochazara thelephassa* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ~ | | | | | |
| *Oeneis norna* | | | | | | | | | | | | | | | | | | 0 | | | | | | | | | | | | | | | | | | | ? | | | | | ? | 0 | | | 0 | | | | | | |
| *Oeneis bore* | | | | | | | | | | | | | | | | | | 0 | | | | | | | | | | | | | | | | | | | ? | | | | | ? | 0 | | | 0 | | | | | | |
| *Oeneis glacialis* | 0 | | | | | | | | | 0 | | | 0 | | | | 0 | | ? | | | | | | ? | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Oeneis jutta* | | | | | | | | 0 | | | | | | | | -1 | | -1 | | | | | | | | | | -1 | -2 | | | | | ? | | | -1 | | ? | 0 | ? | | -1 | | | | | | | |
| *Oeneis melissa* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | 0 | | | | | | | | | |
| *Oeneis patrushevae* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | 0 | | | | | | | | | |
| *Oeneis polixenes* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | | | | | | | | | | |
| *Oeneis tarpeia* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? | ? | -1 | | | | | | | | |
| *Danaus plexippus* | | | | ? | | | | | -1 | | | | | | ~ | | | | | | | | | | | | | | | | ~ | | | | | | | | | | | | | | | | | | |
| *Danaus chrysippus* | | ? | | | | | | | -2 | | | | | | | | ? | | | | | ~ | | | +2 | | | | | | ? | | | | | | | | | | | | | | ~ | | | | +1 |

Appendix 6: Old IUCN-status for butterflies in the European countries as supplied by the compilers. The abbrevations for the countries are given in part I, section 2.1.
Ex = Extinct; E = Endangered; V = Vulnerable; R = Rare; I = Intermediate; K = Insufficiently known; - = not threatened.

| Species | A | AL | AND | AZO | B | BG | BIH | BY | CH | CY | CZ | D | DK | E | F | FIN | FL | FYROM | GB | GR | H | HR | IRL | L | LT | LV | M | MAD | MD | N | NL | P | PL | RO | RUS | RUSNE | RUSSE | RUSYA | S | SK | SLO | TRA | TRE | UA | YU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Erynnis tages* | - | - | - | | V | - | - | - | - | | - | - | - | - | - | | - | - | - | - | - | - | - | - | K | Ex | | | - | - | E | - | - | - | - | I | - | | - | - | - | I | - | - |
| *Erynnis marloyi* | | - | | | | R | | | | | | | | | | | | E | | R | | | | | | | | | | | | | | | | | | | | | | - | Ex | R | |
| *Carcharodus alceae* | V | - | - | | V | - | - | I | V | - | - | V | | - | K | | | - | | - | - | - | | R | | | | | - | | - | K | - | - | - | | | V | I | - | - | - | - |
| *Carcharodus lavatherae* | V | - | - | | | - | - | | V | | | E | | - | K | | | - | | - | V | - | | | | | | | R | | | V | - | | V | | | Ex | R | - | Ex | V | - |
| *Carcharodus floccifera* | E | - | - | | | - | - | I | E | | | E | | - | K | | | - | | R | - | - | | | - | R | | | R | | - | R | - | - | K | R | R | | E | I | K | | R | - |
| *Carcharodus orientalis* | | - | | | | - | | | | | | | | | | | | R | | - | | - | | | | | | | | | | | K | - | | | | | | | - | - | V | |
| *Carcharodus baeticus* | | - | | | | | | | Ex | | | | | - | K | | | | | | | | | | | | | | | | - | | | | | | | | | | | | | |
| *Carcharodus stauderi* | | | | | | | | | | | | | | | | | | | | R | | | | | | | | | | | | | | | | | | | | | K | | | | |
| *Spialia phlomidis* | | - | | | | R | | | | | | | | | | | | R | | - | | | | | | | | | | | | | | | | | | | | | K | Ex | | R |
| *Spialia osthelderi* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | V | | | |
| *Spialia sertorius* | V | - | K | | V | | - | | - | | V | - | | - | - | | R | | | | R | - | | V | | | | | | Ex | | E | K | | | | | | - | R | | Ex | |
| *Spialia orbifer* | | - | | | | - | - | | | | | | | | | | | - | | - | - | - | | | | | | | | | | | - | I | R | | | | I | | - | - | - | - |
| *Spialia therapne* | | | | | | | | | | | | | | | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Muschampia proto* | | | | | | | | | | | | | | - | - | | | V | | - | | - | | | | | | | | | - | | | K | | R | | | | K | | - | V |
| *Muschampia proteides* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | | | |
| *Muschampia poggei* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | | | |
| *Muschampia plurimacula* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Muschampia tessellum* | | | | | | R | | | | | | | | | | | | R | | R | | | | | | | | | | | | | | E | - | I | - | | | | K | Ex | - | |
| *Muschampia cribrellum* | | | | | | | | | | | | | | | | | | R | | | | | | | | | | | | | | | | E | - | | - | | | | | R | | |
| *Pyrgus carthami* | V | - | - | | Ex | - | R | I | - | | V | V | | - | - | | | R | | - | - | - | | | I | | | | E | | | | R | - | - | I | - | | | V | R | Ex | R | - | R |
| *Pyrgus sidae* | | - | | | | - | V | | | | | | | R | I | | | V | | - | Ex | - | | | | | | | R | | | | | R | - | | V | | | | Ex | - | - | R | V |
| *Pyrgus andromedae* | - | | | | | | E | | - | | | R | | - | - | R | - | E | | | | | | | | | | | | - | | | | | - | R | | | - | | K | | | R | E |
| *Pyrgus cacaliae* | - | | - | | | R | | | - | | | R | | I | - | | R | | | | | | | | | | | | | | | | R | | | | | | | | | | | |
| *Pyrgus centaureae* | | | | | | | | | | | | | | | | V | | | | | | | | | | | | | | - | | | | - | R | | | - | | | | | | |
| *Pyrgus malvae* | - | - | | | V | - | - | - | - | | V | - | - | - | - | - | V | - | - | - | - | - | | - | - | - | | | - | - | E | - | - | - | - | - | - | - | - | I | K | R | - | - |
| *Pyrgus melotis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | - | | | |
| *Pyrgus malvoides* | - | | - | | | | | | - | | | | | | - | | V | - | | | | | | | | | | | | | | | | | | | | | | | R | | | | |
| *Pyrgus serratulae* | V | - | - | | E | - | R | I | - | | V | V | | - | I | | R | R | | - | - | - | | E | V | - | | | | | R | R | - | - | - | | | R | R | - | I | R | R |
| *Pyrgus onopordi* | | | | | | | | | E | | | Ex | | - | - | | | | | | | | | | | | | | | | - | | | | | | | | | Ex | | | | |
| *Pyrgus carlinae* | | | | | | | | | - | | | | | | I | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Pyrgus cirsii* | - | | - | | | | | | R | | | E | | - | I | | | | | | | | | | | | | | | | - | | | | | | | | | Ex | K | | | | |
| *Pyrgus cinarae* | | | | | | R | | | | | | | | R | | | | R | | - | | | | | | | | | | | | | | K | | V | | | | K | Ex | - | | | |
| *Pyrgus armoricanus* | E | - | | | Ex | - | R | | E | | R | E | E | - | K | | | R | | - | - | - | | | E | V | - | | | | | | E | V | - | | K | | E | R | I | - | - | E | R |
| *Pyrgus alveus* | - | - | | | | - | V | V | - | | V | V | | - | K | R | R | V | | - | - | - | | - | - | - | | | | - | | - | - | - | - | - | | I | - | - | K | | - | V |
| *Pyrgus bellieri* | | - | | | | | | | | | | | | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Pyrgus warrenensis* | - | | | | | | | | R | | | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Pyrgus jupei* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Pyrgus bolkariensis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Pyrgus aladaghensis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Heteropterus morpheus* | V | | | | V | R | - | - | V | | - | - | | - | V | | | | | | - | - | | | R | R | | | | | R | | V | E | - | - | I | - | | V | K | R | R | V | - |
| *Carterocephalus palaemon* | V | | | | V | - | - | - | - | | I | - | | V | V | - | - | | - | R | - | - | | V | R | - | | | | - | V | | - | - | - | - | - | - | - | - | R | | - | - |
| *Carterocephalus silvicola* | | | | | | | | - | | | | V | V | | | - | | | | | | | | | - | - | | | | V | | | - | | - | - | I | - | - | Ex | | | | V | |
| *Eogenes alcides* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Eogenes lesliei* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Thymelicus lineola* | V | - | - | | - | - | - | - | - | | - | - | - | - | - | - | - | - | - | - | - | - | | - | - | - | | | | R | - | - | - | - | - | - | - | | - | - | - | - | - | - | - |
| *Thymelicus sylvestris* | V | - | - | | - | - | - | - | - | | - | - | - | - | I | | - | - | - | - | - | - | | - | - | - | | | | | - | - | - | - | - | - | - | K | | - | I | - | - | - | - |

Appendix 6: Old IUCN-status for butterflies in the European countries as supplied by the compilers. The abbrevations for the countries are given in part I, section 2.1.
Ex = Extinct; E = Endangered; V = Vulnerable; R = Rare; I = Intermediate; K = Insufficiently known; - = not threatened.

| Species | A | AL | AND | AZO | B | BG | BIH | BY | CH | CY | CZ | D | DK | E | F | FIN | FL | FYROM | GB | GR | H | HR | IRL | L | LT | LV | M | MAD | MD | N | NL | P | PL | RO | RUS | RUSNE | RUSSE | RUSYA | S | SK | SLO | TRA | TRE | UA | YU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Thymelicus novus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | - | | | |
| *Thymelicus acteon* | V | - | R | | E | - | - | | V | - | E | V | | - | | | | - | R | - | - | - | | V | | | | | | | Ex | - | R | R | I | | | | | V | R | K | R | V | - |
| *Thymelicus hyrax* | | | | | | | | | | | | | | | | | | | | R | | | | | | | | | | | | | | | | | | | | | | K | | | |
| *Hesperia comma* | - | - | - | | E | - | - | - | - | | - | V | V | - | - | E | - | - | R | - | - | - | | E | K | - | | | R | - | V | - | - | I | - | - | - | - | I | - | I | K | | R | - |
| *Ochlodes venata* | - | - | - | | - | - | - | | - | | - | - | - | - | - | - | - | - | - | - | - | - | | - | - | - | | | | - | - | - | - | - | | - | - | - | - | I | - | - | - | - |
| *Gegenes pumilio* | | - | | | | | | | | - | | | | I | Ex | | | | | - | | - | | | | | R | | | | | | | | | | | | | | K | | | V |
| *Gegenes nostrodamus* | | - | | | | R | R | | | | | | | - | | | | V | | - | | - | | | | | | | | | | - | | | | | | | | | K | Ex | | V |
| *Borbo borbonica* | | | | | | | | | | | | | | V | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Pelopidas thrax* | | | | | | | | | | - | | | | | | | | | | V | | | | | | | | | | | | | | | | | | | | | K | | | |
| *Zerynthia rumina* | | | Ex | | | | | | | | | | | | V | | | | | | | | | | | | | | | | | - | | | | | | | | | | | | |
| *Zerynthia polyxena* | E | - | | | | - | R | | Ex | | - | Ex | | | V | | | V | | - | - | - | | | | | | | | | | | | E | V | | V | | | V | I | V | V | R | V |
| *Zerynthia cerisy* | | - | | | | - | V | | | - | | | | | | | | V | | - | | - | | | | | | | | | | | | E | | | | | | | V | V | | V |
| *Zerynthia deyrollei* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | | | |
| *Zerynthia caucasica* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | V | | | |
| *Zerynthia cretica* | | | | | | | | | | | | | | | | | | | | - | | | | | | | | | | | | | | | | | | | | | | | | |
| *Archon apollinus* | | | | | | | | | | | | | | | | | | | | - | | | | | | | | | | | | | | | | | | | | | V | E | | |
| *Archon apollinaris* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | V | | | |
| *Parnassius mnemosyne* | E | - | E | | | - | - | V | V | | V | E | | R | I | E | | - | | - | - | - | | | - | V | | | - | V | | | V | V | R | R | I | I | V | V | I | - | I | - | - |
| *Parnassius nordmanni* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | | | |
| *Parnassius phoebus* | - | | | | | | | | - | | | E | | | V | | - | | | | | | | | | | | | | | | | | | K | R | | | | | | | | |
| *Parnassius apollo* | V | - | - | | | - | - | Ex | - | | Ex | E | | R | I | V | - | V | | - | | E | | | | Ex | | | | V | | | E | E | V | V | V | Ex | I | E | R | K | | E | V |
| *Iphiclides podalirius* | V | - | - | | E | - | R | | - | | - | V | | - | I | | E | V | | - | - | - | | Ex | | | | | - | | | - | V | - | - | - | - | | | V | I | - | - | - | V |
| *Papilio machaon* | - | - | - | | - | - | R | I | - | - | - | - | Ex | - | - | - | - | E | - | - | - | - | | V | - | - | - | | R | - | - | - | - | - | - | - | - | I | - | - | I | - | - | - | E |
| *Papilio hospiton* | | | | | | | | | | | | | | | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Papilio alexanor* | | - | | | | | Ex | | | | | | | | - | | | Ex | | - | | - | | | | | | | | | | | | | | | | | | | | K | | | Ex |
| *Leptidea sinapis complex* | - | - | - | | - | - | - | - | - | | - | - | E | - | - | - | - | - | - | - | - | - | - | V | - | - | | | - | - | | - | - | - | - | - | - | - | - | I | - | - | - | - |
| *Leptidea duponcheli* | | - | | | | - | | | | | | | | | K | | | - | | - | | | | | | | | | | | | | | | - | | | | | | - | - | - | V |
| *Leptidea morsei* | E | | | | | | R | K | | | I | | | | | | | | | | V | V | | | | | | | R | | | | K | - | - | - | | | I | R | | | R | Ex |
| *Anthocharis cardamines* | - | - | - | | - | - | - | - | - | - | V | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | - | - | - | - | - | - | - | - | - | - | - | I | - | - | - | - |
| *Anthocharis euphenoides* | | | - | | | | | | | | | | | - | K | | | | | | | | | | | | | | | | | - | | | | | | | | | | | | |
| *Anthocharis damone* | | | | | | | | | | | | | | | | | | V | | - | | | | | | | | | | | | | | | | | | | | | K | Ex | | |
| *Anthocharis gruneri* | | - | | | | R | | | | | | | | | | | | V | | - | | | | | | | | | | | | | | | | | | | | | K | | | |
| *Zegris eupheme* | | | | | | | | | | | | | | - | | | | | | | | | | | | | | | | | | | | | V | | - | | | | K | | R | |
| *Zegris pyrothoe* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | | R | | | | | | | | |
| *Euchloe belemia* | | | | | | | | | | | | | | - | | | | | | | | | | | | | | | | | | - | | | | | | | | | K | | | |
| *Euchloe crameri* | | | - | | | | | | | | | | | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Euchloe simplonia* | | | | | | | | | - | | | | | | I | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Euchloe ausonia* | | - | - | | | - | E | | | - | | | | | I | | | E | | - | | - | | | | | | | R | | | - | | V | K | - | - | | | | | - | - | I | E |
| *Euchloe tagis* | | | | | | | | | | | | | | - | I | | | | | | | | | | | | | | | | | - | | | | | | | | | | | | |
| *Euchloe insularis* | | | | | | | | | | | | | | | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Euchloe charlonia* | | | | | | | | | | | | | | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Euchloe penia* | | - | | | | R | | | | | | | | | | | | E | | - | | | | | | | | | | | | | | | | | | | | | R | - | | | |
| *Aporia crataegi* | E | - | - | | V | - | - | - | - | | Ex | - | - | - | V | - | - | - | Ex | - | - | - | | V | - | - | | | | - | Ex | | V | - | - | - | - | - | - | V | I | - | - | - | V |
| *Pieris brassicae* | - | - | - | I | - | - | - | - | - | - | - | - | - | - | - | | - | - | - | - | - | - | - | - | - | - | - | | - | - | - | - | - | - | - | - | - | - | - | I | - | - | - | V |
| *Pieris wollastoni* | | | | | | | | | | | | | | | | | | | | | | | | | | | | E | | | | | | | | | | | | | | | | |
| *Pieris cheiranthi* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Appendix 6: Old IUCN-status for butterflies in the European countries as supplied by the compilers. The abbrevations for the countries are given in part I, section 2.1.
Ex = Extinct; E = Endangered; V = Vulnerable; R = Rare; I = Intermediate; K = Insufficiently known; - = not threatened.

| Species | A | AL | AND | AZO | B | BG | BIH | BY | CH | CY | CZ | D | DK | E | F | FIN | FL | FYROM | GB | GR | H | HR | IRL | L | LT | LV | M | MAD | MD | N | NL | P | PL | RO | RUS | RUSNE | RUSSE | RUSYA | S | SK | SLO | TRA | TRE | UA | YU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Pieris krueperi* | | - | | | | - | | | | | | | | | | | | - | | - | | | | | | | | | | | | | | | | | | | | | - | | | |
| *Pieris mannii* | - | - | | | | - | - | | V | | | | | - | V | | | - | | - | V | - | | | | | | | | | | - | E | | | | | | I | I | K | - | | R |
| *Pieris rapae* | - | - | - | | - | - | - | - | - | - | - | - | - | - | - | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | I | - | - | | - |
| *Pieris ergane* | - | - | | | | - | - | | | | | | | R | K | | | - | | - | R | - | | | | | | | | | | | E | | | | | | | R | - | | | R |
| *Pieris napi* | - | - | - | | - | - | - | - | - | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | - | - | - | - | - | - | - | - | - | - | I | - | - | - | - |
| *Pieris bryoniae* | - | | | | | | | | - | | - | - | | | - | R | - | | | | R | | | | | | | | | | | V | I | | | | | - | I | K | | - | |
| *Pieris bowdeni* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | | | |
| *Pieris balcana* | | | | | | - | - | | | | | | | | | | | - | | - | | - | | | | | | | | | | | | | | | | | | | | | | | R |
| *Pontia callidice* | - | | | - | | | | | - | | | R | | R | K | | - | | | | | | | | | | | | | | | | | | K | - | - | | | | Ex | K | | | |
| *Pontia daplidice complex* | | - | - | | | - | - | - | I | - | - | - | | - | - | | | - | | - | - | - | | | | | - | | | | | - | - | - | - | - | - | V | - | I | - | - | - | - |
| *Pontia chloridice* | | - | | | | R | | | | - | | | | | | | | Ex | | V | | | | | | | | | R | | | | | | - | K | - | | | | | K | Ex | I | |
| *Colotis evagore* | | | | | | | | | | | | | | I | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Catopsilia florella* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Colias phicomone* | - | | | - | | | | | - | | | R | | - | I | | - | | | | | | | | | | | | | | | | | | | | | | | | | | E | |
| *Colias nastes* | | | | | | | | | | | | | | | | R | | | | | | | | | | | | | | - | | | | R | K | | | | - | | | | | |
| *Colias palaeno* | V | | | | Ex | | | - | - | | E | V | | | V | - | R | | | | | | | | V | R | | | | - | | | V | | - | - | V | V | - | E | | | R | |
| *Colias erate* | - | | | | | - | | | | | - | | | | | | | R | | R | - | - | | | | | | | - | | | | - | - | | - | | | | K | | - | - | - |
| *Colias croceus* | | - | - | - | | - | - | | - | - | | | | - | K | | | - | | - | | - | | | | | - | - | - | | | - | | - | - | - | | | | I | - | - | - | - |
| *Colias chlorocoma* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | | | | |
| *Colias hecla* | | | | | | | | | | | | | | | | R | | | | | | | | | | | | | | - | | | | V | K | | | | - | | | | | |
| *Colias myrmidone* | E | | | | | Ex | R | - | | | E | E | | | | | | | | | V | - | | | | | | | | | | | V | - | - | - | - | | | E | V | | R | V |
| *Colias chrysotheme* | E | | | | | | | | | | E | | | | | | | | | | R | | | | | | | | E | | | | | - | - | K | R | | | E | | | | I | |
| *Colias aurorina* | | | | | | | | | | | | | | | | | | | | - | | | | | | | | | | | | | | R | | | | | | | K | | | E |
| *Colias caucasica* | | | | | | R | Ex | | | | | | | | | | | E | | R | | | | | | | | | | | | | | | | | | | | | K | | | E |
| *Colias thisoa* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Colias hyale* | - | | | | | R | R | - | - | | - | - | | | - | | - | | | | - | - | | E | - | - | | | - | | | - | - | - | - | - | - | | - | I | K | | - | K |
| *Colias alfacariensis* | - | - | - | | E | - | K | | - | | - | - | | - | K | | - | - | | - | - | - | | V | | | | | | | | K | - | | | - | | | - | I | - | | - | K |
| *Gonepteryx rhamni* | - | - | - | | - | - | V | - | - | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | - | - | - | - | - | - | - | - | - | - | I | - | - | - | V |
| *Gonepteryx farinosa* | | - | | | | R | | | | | | | | | | | | E | | - | | | | | | | | | | | | | | | | | | | | | - | - | | Ex |
| *Gonepteryx cleopatra* | | - | R | | | | R | | | - | | | | - | - | | | | | - | | - | | | | | - | | | | | - | | | | | | | | V | - | - | | E |
| *Gonepteryx maderensis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | | | | | | | | | | | | | | |
| *Gonepteryx cleobule* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Hamearis lucina* | V | - | R | | V | - | - | I | - | | - | V | | - | I | | - | R | - | - | - | - | | E | Ex | E | | | R | | | - | V | - | R | | E | | I | - | I | | Ex | - | - |
| *Cigaritis maxima* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | | | |
| *Cigaritis cilissa* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Cigaritis acamas* | | | | | | | | | | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | | | |
| *Lycaena phlaeas* | - | - | - | | - | - | - | - | - | - | - | - | - | - | K | K | | - | - | - | - | - | - | V | - | - | - | I | R | - | - | - | - | R | - | - | - | - | - | - | I | - | - | - | - |
| *Lycaena helle* | E | | | | V | | | K | V | | Ex | E | | V | V | V | | | | | Ex | | | V | V | Ex | | | | V | | | V | R | - | - | - | R | I | Ex | | | | V | |
| *Lycaena dispar* | V | - | | | V | - | V | - | I | | I | V | | | V | E | | V | Ex | E | - | - | | E | R | - | | | | - | E | | - | V | - | - | - | - | | V | V | E | E | - | V |
| *Lycaena virgaureae* | V | - | - | | E | - | - | - | - | | - | V | - | - | R | - | | - | | - | - | - | | V | - | - | | | | - | | | - | - | - | - | - | - | - | I | - | | R | - |
| *Lycaena ottomanus* | | - | | | | R | E | | | | | | | | | | | E | | - | Ex | | | | | | | | | | | | | | | | | | | | V | | | E |
| *Lycaena tityrus* | V | - | - | | V | - | - | - | - | | - | - | Ex | - | K | | - | - | | - | - | - | | V | - | R | | | | | V | - | - | V | - | - | R | | | - | I | - | - | - | - |
| *Lycaena alciphron* | E | - | - | | | - | - | - | - | | V | V | | - | K | | | - | | - | - | V | | | | - | V | | | | | | - | - | R | - | K | - | K | | V | I | - | - | R | - |
| *Lycaena hippothoe* | V | - | - | | V | | - | - | - | | V | V | - | - | | - | R | - | | - | - | - | | V | - | - | | | | | - | Ex | | - | R | - | - | I | - | - | - | V | | R | - |
| *Lycaena candens* | | | | | | - | - | | | | | | | | | | | - | | - | | - | | | | | | | | | | | | | | | | | | | K | | | I |
| *Lycaena thersamon* | V | - | | | | - | R | | | - | V | | | | | | | - | | - | - | - | | | | | | | | | | | V | - | K | - | | | V | Ex | - | - | - | R |

Appendix 6: Old IUCN-status for butterflies in the European countries as supplied by the compilers. The abbrevations for the countries are given in part I, section 2.1.
Ex = Extinct; E = Endangered; V = Vulnerable; R = Rare; I = Intermediate; K = Insufficiently known; - = not threatened.

| Species | A | AL | AND | AZO | B | BG | BIH | BY | CH | CY | CZ | D | DK | E | F | FIN | FL | FYROM | GB | GR | H | HR | IRL | L | LT | LV | M | MAD | MD | N | NL | P | PL | RO | RUS | RUSNE | RUSSE | RUSYA | S | SK | SLO | TRA | TRE | UA | YU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Lycaena lampon* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | | | |
| *Lycaena thetis* | | | | | | | | | | | | | | | | | | Ex | | R | | | | | | | | | | | | | | | | | | | | | | | K | | | |
| *Lycaena asabinus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | | | |
| *Lycaena ochimus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | | | |
| *Lycaena phoenicurus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Lycaena euphratica* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | | | |
| *Thecla betulae* | V | - | R | | - | - | V | I | - | | - | - | - | - | I | - | - | R | - | I | - | - | - | V | - | - | | | R | R | - | | - | R | - | - | - | - | - | V | I | K | R | - | V |
| *Neozephyrus quercus* | V | - | - | | - | - | R | - | - | - | - | - | - | - | | - | - | R | - | - | - | - | - | I | K | - | | | R | - | - | - | - | R | - | | R | R | - | - | I | - | R | R | R |
| *Laeosopis roboris* | | | - | | | | | | | | | | | - | R | | | | | | | | | | | | | | | | | - | | | | | | | | | | | | |
| *Tomares ballus* | | | | | | | | | | | | | | - | R | | | | | | | | | | | | | | | | | - | | | | | | | | | | | | |
| *Tomares romanovi* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | | | |
| *Tomares nogelii* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Ex | | | | Ex | | | E | | | | | K | | R | |
| *Tomares nesimachus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | | | |
| *Tomares callimachus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | - | | E | | | | | K | | R | |
| *Callophrys rubi* | - | - | - | | - | - | - | - | - | | - | - | - | - | K | - | - | R | - | - | - | - | - | - | - | - | | | - | - | - | - | - | - | | - | - | - | - | I | - | - | - | - |
| *Callophrys mystaphia* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | | | |
| *Callophrys suaveola* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Callophrys butleri* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | R | | | | | | | | |
| *Callophrys avis* | | | | | | | | | | | | | | R | R | | | | | | | | | | | | | | | | | - | | | | | | | | | | | | |
| *Satyrium w-album* | V | - | - | | K | - | E | - | - | | V | V | - | - | I | R | - | E | - | - | - | - | | E | R | - | | | R | V | R | | - | R | - | - | - | - | - | V | R | R | | - | E |
| *Satyrium pruni* | V | - | | | V | - | R | R | E | | V | - | E | E | V | - | | R | - | R | - | - | | V | - | - | | | R | | | | - | R | - | - | - | - | I | V | R | | | - | R |
| *Satyrium spini* | V | - | - | | E | - | R | | - | | V | V | | | V | | | R | | - | - | - | | R | R | | | | R | | | - | - | R | - | K | - | | | V | I | - | I | R | R |
| *Satyrium marcidum* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Satyrium ilicis* | V | - | - | | - | - | R | - | I | | V | V | E | - | I | | | R | | - | - | - | | I | - | R | | | R | | V | - | - | - | - | R | R | | I | V | I | - | - | - | R |
| *Satyrium esculi* | | | R | | | | | | | | | | | - | K | | | | | | | | | | | | | | | | | - | | | | | | | | | | | | |
| *Satyrium acaciae* | E | - | - | | Ex | - | V | | E | | V | V | | - | I | | | V | | - | - | - | | | | | | | R | | | | R | R | - | | R | | | V | R | - | - | - | V |
| *Satyrium abdominalis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | - | | | |
| *Satyrium myrtale* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Satyrium ledereri* | | | | | | | | | | | | | | | | | | | | V | | | | | | | | | | | | | | | | | | | | | | - | | | |
| *Satyrium hyrcanicum* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | | | |
| *Neolycaena rhymnus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | E | | R | | | | | | R | |
| *Lampides boeticus* | | - | | - | | - | V | | | - | | | | - | I | | | - | | - | - | - | | | | | - | - | | | - | | R | K | - | - | | | | K | - | Ex | R | V |
| *Cacyreus marshalli* | | | | | | | | | | | | | | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Leptotes pirithous* | | - | | | | - | - | | | - | | | | - | I | | | - | | - | - | - | | | | | - | | | | | - | | I | R | | | | | | K | K | - | R | V |
| *Cyclyrius webbianus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Tongeia fischeri* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | | | | | | | |
| *Tarucus theophrastus* | | | | | | | | | | | | | | V | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Tarucus balkanica* | | - | | | | R | E | | | - | | | | | | | | E | | - | | - | | | | | | | | | | | | | | | | | | | | - | I | | E |
| *Zizeeria knysna* | | | | | | | | | | - | | | | - | | | | | | | | | | | | | | | | | | - | | | | | | | | | | | | |
| *Zizeeria karsandra* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | | | |
| *Cupido minimus* | - | - | - | | V | - | V | - | - | | - | - | - | - | I | E | - | V | - | - | - | - | - | V | - | - | | | - | - | Ex | - | - | - | - | - | - | R | I | - | I | - | | - | V |
| *Cupido osiris* | E | - | | | | - | I | | V | | | Ex | | - | R | | | I | | - | R | V | | | | | | | | | | | - | K | | I | | | I | K | - | - | R | I |
| *Cupido lorquinii* | | | | | | | | | | | | | | R | | | | | | | | | | | | | | | | | - | | | | | | | | | | | | | |
| *Cupido argiades* | - | - | - | | Ex | - | V | - | E | - | V | V | | - | I | | | V | | R | - | - | | | - | - | | | R | | | | V | - | - | - | - | - | | - | I | K | Ex | - | V |
| *Cupido decolorata* | - | - | | | | - | V | | | | V | | | | | | | V | | - | - | R | | | | | | | | | | | R | K | | | | | | - | R | K | | - | V |
| *Cupido alcetas* | - | | - | | | - | V | | - | | V | | | - | K | | | V | | - | - | - | | | | | | | | | | K | | I | - | I | | | | I | R | K | | R | V |

Appendix 6: Old IUCN-status for butterflies in the European countries as supplied by the compilers. The abbrevations for the countries are given in part I, section 2.1.
Ex = Extinct; E = Endangered; V = Vulnerable; R = Rare; I = Intermediate; K = Insufficiently known; - = not threatened.

| Species | A | AL | AND | AZO | B | BG | BIH | BY | CH | CY | CZ | D | DK | E | F | FIN | FL | FYROM | GB | GR | H | HR | IRL | L | LT | LV | M | MAD | MD | N | NL | P | PL | RO | RUS | RUSNE | RUSSE | RUSYA | S | SK | SLO | TRA | TRE | UA | YU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Celastrina argiolus* | - | - | - | | - | - | - | - | - | | - | - | - | - | I | - | - | - | - | - | - | - | - | V | - | - | - | | - | - | - | - | - | - | - | | - | - | - | - | I | - | - | - | - |
| *Pseudophilotes baton* | E | | - | | Ex | | E | | - | | - | V | | - | I | | | E | | | | | | | | | | | | | | - | Ex | | | | | | | | | | | E |
| *Pseudophilotes vicrama* | E | - | | | | - | | I | | - | E | E | | | | E | | | | - | - | - | | | I | E | | | | | | E | V | - | | R | | | V | R | - | - | - | |
| *Pseudophilotes abencerragus* | | | | | | | | | | | | | | - | | | | | | | | | | | | | | | | | - | | | | | | | | | | | | | |
| *Pseudophilotes barbagiae* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Pseudophilotes bavius* | | | | | | | | | | | | | | | | | | E | | R | | | | | | | | | | | | | E | | | E | | | | | - | I | R | E |
| *Scolitantides orion* | E | - | | | | - | R | I | V | | V | E | | - | K | V | | R | | R | - | - | | | | | | | | V | | Ex | | K | I | - | | V | V | I | V | Ex | - | R |
| *Glaucopsyche alexis* | V | - | - | | E | - | R | R | - | | - | V | | - | I | I | R | R | | - | - | - | | V | I | E | | | - | - | | - | E | - | - | - | - | K | I | V | I | - | - | - | R |
| *Glaucopsyche paphos* | | | | | | | | | | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Glaucopsyche astraea* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | | | |
| *Glaucopsyche melanops* | | | | | | | | | | | | | | - | R | | | | | | | | | | | | | | | | | - | | | | | | | | | | | | |
| *Iolana iolas* | | - | | | | - | E | | E | | | | | | R | | | E | | - | R | - | | | | | | | | | | | R | | | | | | Ex | K | - | | | E |
| *Maculinea arion* | - | - | R | | E | - | V | - | - | | E | V | E | | V | E | - | V | E | - | R | - | | E | R | E | | | R | | Ex | | V | V | R | - | - | R | I | V | R | I | R | R | V |
| *Maculinea teleius* | E | | | | Ex | | | K | V | | E | V | | | V | | E | | | | - | V | | | | E | | | | | | | - | V | R | - | I | | | E | V | | | E | |
| *Maculinea nausithous* | E | | | | | R | | R | V | | E | V | | E | R | | E | | | | R | V | | | | | | | | | | R | - | V | R | - | I | | | E | E | I | | V | |
| *Maculinea alcon* | E | - | | | E | | V | R | E | | E | V | V | V | V | | E | V | | R | - | | | | E | | | | | | | E | E | V | - | - | I | | V | I | I | I | | E | V |
| *Maculinea rebeli* | - | | R | | Ex | - | | | V | | E | V | | V | R | | - | | | | - | - | | | | | | | | | | | E | | R | | | | | V | K | | | | |
| *Lachides galba* | | | | | | | | | | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Turanana endymion* | | | | | | | | | | | | | | | | | | | | V | | | | | | | | | | | | | | | | | | | | | | K | | | |
| *Turanana cytis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Chilades trochylus* | | | | | | | | | | - | | | | | | | | | | - | | | | | | | | | | | | | | | | | | | | | | K | | | |
| *Plebeius pylaon* | | | | | | - | | | | | | | | | | | | E | | - | R | | | | | | | | | | | | R | R | | R | | | | | - | I | R | E |
| *Plebeius trappi* | | | | | | | | | V | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Plebeius hesperica* | | | | | | | | | | | | | | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Plebeius argus* | - | - | - | | V | - | - | - | - | | - | V | - | - | I | - | V | - | - | - | - | - | | V | - | - | | | - | - | V | - | - | - | - | - | - | - | - | I | - | - | - | - |
| *Plebeius idas* | V | - | - | | Ex | - | - | - | - | | - | V | - | - | I | - | V | - | | - | V | - | | | - | - | | | R | - | Ex | | - | - | I | - | - | K | - | K | R | K | | - | - |
| *Plebeius argyrognomon* | E | - | | | E | - | R | - | E | | - | V | | | I | | | V | | - | - | - | | | R | R | | | R | V | | - | - | - | - | - | - | | V | - | R | K | | - | V |
| *Plebeius christophi* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Plebeius alcedo* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | | | |
| *Plebeius rosei* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Plebeius morgianus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Plebeius optilete* | E | | | | | | | - | - | | E | V | V | | E | - | | R | | | | | | | - | - | | | | - | R | | V | | - | | V | R | - | E | R | | | R | R |
| *Plebeius loewii* | | | | | | | | | | | | | | | | | | | | - | | | | | | | | | | | | | | | | | | | | | | - | | | |
| *Plebeius eurypilus* | | | | | | | | | | | | | | | | | | | | V | | | | | | | | | | | | | | | | | | | | | | - | | | |
| *Plebeius psylorita* | | | | | | | | | | | | | | | | | | | | R | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Plebeius pyrenaica* | | | | | | R | R | | | | | | | V | E | | | R | | V | | | | | | | | | | | | | | | | | | | | | | R | | E | |
| *Plebeius glandon* | - | | - | | | | | | - | | | R | | R | V | R | - | | | | | | | | | | | | | R | | | | | R | K | | | - | | | | | |
| *Plebeius orbitulus* | - | | | | | | | | - | | | R | | | K | | - | | | | | | | | | | | | | - | | | | | | E | | | - | | R | | | | |
| *Aricia eumedon* | V | - | R | | | - | V | R | - | | E | V | | R | K | - | - | V | | - | R | - | | | R | - | | | | | - | | | V | | - | - | - | - | V | R | K | | R | V |
| *Aricia cramera* | | | - | | | | | | | | | | | - | K | | | | | | | | | | | | | | | | | - | | | | | | | | | | | | |
| *Aricia agestis* | V | - | - | | - | - | - | R | - | - | V | - | - | - | K | | | - | - | - | - | - | | E | - | | R | | R | | - | - | - | - | - | | - | | I | - | I | - | - | - | - |
| *Aricia artaxerxes* | - | | | | | - | - | - | - | | - | - | V | | I | - | - | - | - | - | R | - | | | - | - | | | | - | | | E | | - | - | - | K | - | I | R | K | | R | - |
| *Aricia morronensis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Aricia teberdinus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | V | | | | | | | R | | | |
| *Aricia hyacinthus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Aricia torulensis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | |

Appendix 6: Old IUCN-status for butterflies in the European countries as supplied by the compilers. The abbrevations for the countries are given in part I, section 2.1.
Ex = Extinct; E = Endangered; V = Vulnerable; R = Rare; I = Intermediate; K = Insufficiently known; - = not threatened.

| Species | A | AL | AND | AZO | B | BG | BIH | BY | CH | CY | CZ | D | DK | E | F | FIN | FL | FYROM | GB | GR | H | HR | IRL | L | LT | LV | M | MAD | MD | N | NL | P | PL | RO | RUS | RUSNE | RUSSE | RUSYA | S | SK | SLO | TRA | TRE | UA | YU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Aricia isaurica* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | | | |
| *Aricia anteros* | | - | | | | - | E | | | | | | | | | | | E | | - | | - | | | | | | | | | | | | | | | | | | | K | K | E | E |
| *Aricia nicias* | | | R | | | | | | R | | | | | V | K | I | | | | | | | | | | | | | | | | | | - | I | V | | I | | | | | | |
| *Polyommatus semiargus* | - | - | - | | V | - | - | - | - | | - | - | - | - | I | - | - | - | Ex | - | - | - | | V | - | - | | | R | - | R | - | - | - | - | - | - | - | - | - | I | - | K | - | - |
| *Polyommatus coelestina* | | | | | | | | | | | | | | | | | | | | R | | | | | | | | | | | | | | | R | | R | | | | | - | | I | |
| *Polyommatus diana* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Polyommatus fatima* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Polyommatus escheri* | | - | - | | | - | V | | - | | | | | - | I | | | V | | - | | - | | | | | | | R | | | | | | | | | | | V | | Ex | | V |
| *Polyommatus dorylas* | V | - | - | | Ex | - | R | V | - | | I | V | | - | I | | | R | | - | - | - | | Ex | R | Ex | | | | | | | V | R | R | | E | | - | - | I | K | | R | R |
| *Polyommatus golgus* | | | | | | | | | | | | | | E | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Polyommatus nivescens* | | | | | | | | | | | | | | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Polyommatus amandus* | E | - | - | | | - | R | - | - | | - | - | - | - | I | - | | R | | - | - | - | | | - | - | | | R | - | | | - | K | - | | - | - | - | E | R | - | K | - | R |
| *Polyommatus cyane* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | E | | | | | | | | |
| *Polyommatus thersites* | - | - | - | | Ex | - | | | I | | - | V | | - | I | | | - | | - | - | - | | | | | | | | | | | R | - | K | I | - | | | | K | R | - | K | - | K |
| *Polyommatus myrrha* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | | | |
| *Polyommatus aedon* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | - | | | |
| *Polyommatus cornelia* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | - | | | |
| *Polyommatus ciloicus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Polyommatus buzulmavi* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Polyommatus icarus* | - | - | - | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | - | - | - | - | - | - | - | - | - | - | - | I | - | - | - | - |
| *Polyommatus andronicus* | | | | | | | | | | | | | | | | | | | | R | | | | | | | | | | | | | | | | | | | | | | | | |
| *Polyommatus eroides* | | - | | | | - | | R | | | Ex | | | | | | | R | | - | | | | | | | | | | | | | E | | V | I | I | | | E | | R | | E | R |
| *Polyommatus eros* | - | | | | | | R | | - | | | R | | R | R | | - | R | | | | - | | | | | | | | | | | | | | | | | | | K | | | R |
| *Polyommatus menelaos* | | | | | | | | | | | | | | | | | | | | R | | | | | | | | | | | | | | | | | | | | | | | | |
| *Polyommatus kamtschadalus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | | | | | | | | | | |
| *Polyommatus daphnis* | V | - | V | | | - | V | R | - | | - | V | | - | R | | | V | | - | - | - | | | | | | | R | | | | - | I | - | K | - | | | V | R | - | K | - | V |
| *Polyommatus bellargus* | - | - | - | | E | - | V | - | - | | V | V | | - | I | | - | V | - | - | - | - | | E | I | | | | - | | | - | V | I | - | | I | | | V | I | - | K | - | V |
| *Polyommatus syriacus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Polyommatus dezinus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Polyommatus coridon* | - | - | - | | V | - | - | - | - | | - | - | | - | I | | - | - | - | - | - | - | | V | - | | | | R | | | | - | I | - | I | K | | | - | I | | K | - | - |
| *Polyommatus caelestissima* | | | | | | | | | | | | | | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Polyommatus philippi* | | | | | | | | | | | | | | | | | | | | - | | | | | | | | | | | | | | | | | | | | | | | | |
| *Polyommatus ossmar* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | | | |
| *Polyommatus corydonius* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | - | | R | |
| *Polyommatus hispana* | | | | | | | | | | | | | | - | I | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Polyommatus albicans* | | | | | | | | | | | | | | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Polyommatus alcestis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | | | |
| *Polyommatus demavendi* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | | | |
| *Polyommatus admetus* | | - | | | | - | R | | | | | | | | | | | R | | - | R | R | | | | | | | | | | | | I | | | | | | E | | - | K | I | - |
| *Polyommatus fabressei* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Polyommatus humedasae* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Polyommatus exuberans* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Polyommatus ripartii* | | | | | | - | R | | | | | | | - | K | | | R | | - | Ex | | | | | | | | | | | | E | | - | | K | | | | | - | Ex | | - |
| *Polyommatus budashkini* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | - | | | | | | | | | | |
| *Polyommatus galloi* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Polyommatus aroaniensis* | | | | | | - | | | | | | | | | | | | | | - | | | | | | | | | | | | | | | | | | | | | | | | |

Appendix 6: Old IUCN-status for butterflies in the European countries as supplied by the compilers. The abbrevations for the countries are given in part I, section 2.1.
Ex = Extinct; E = Endangered; V = Vulnerable; R = Rare; I = Intermediate; K = Insufficiently known; - = not threatened.

| Species | A | AL | AND | AZO | B | BG | BIH | BY | CH | CY | CZ | D | DK | E | F | FIN | FL | FYROM | GB | GR | H | HR | IRL | L | LT | LV | M | MAD | MD | N | NL | P | PL | RO | RUS | RUSNE | RUSSE | RUSYA | S | SK | SLO | TRA | TRE | UA | YU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Polyommatus nephohiptamenos* | | | | | | - | | | | | | | | | | | | | | - | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Polyommatus eriwanensis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Polyommatus mithridates* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Polyommatus antidolus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Polyommatus kurdistanicus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Polyommatus virgilia* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Polyommatus dolus* | | | | | | | | | | | | | | - | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Polyommatus fulgens* | | | | | | | | | | | | | | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Polyommatus menalcas* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | - | | | |
| *Polyommatus poseidon* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | | E | |
| *Polyommatus hopfferi* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | - | | | |
| *Polyommatus dama* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | E | | | |
| *Polyommatus caeruleus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Ex | | | |
| *Polyommatus lycius* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Polyommatus wagneri* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | | | |
| *Polyommatus sertavulensis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Polyommatus altivagans* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Polyommatus firdussii* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | | | |
| *Polyommatus theresiae* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Polyommatus elbursicus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Polyommatus ninae* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | | | |
| *Polyommatus iphigenia* | | | | | | | | | | | | | | | | | | | | V | | | | | | | | | | | | | | | | | | | | | | | K | | | |
| *Polyom. aserbeidschanus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Polyommatus actis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Polyommatus merhaba* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Polyommatus cyaneus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Polyommatus turcicus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | | | |
| *Polyommatus huberti* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | | | |
| *Polyommatus carmon* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | | | |
| *Polyommatus charmeuxi* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Polyommatus tankeri* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Polyommatus damon* | E | - | | | | | V | I | - | | E | E | | - | V | | R | V | | R | E | | | | | R | | | | | | | Ex | R | R | I | R | | | E | | K | | | - |
| *Polyommatus baytopi* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Polyommatus phyllis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | | | |
| *Polyommatus damone* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | R | | | | | | R | |
| *Polyommatus damocles* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | K | | | | | | | |
| *Libythea celtis* | | - | - | | | - | E | | R | | | | | - | I | | | E | | - | - | - | | | | | | | | | | E | R | | | | | | R | - | R | - | E |
| *Argynnis paphia* | - | - | - | | V | - | V | - | - | | - | - | - | - | I | - | - | V | - | - | - | - | - | - | - | - | | | R | - | Ex | - | - | - | - | - | - | - | - | I | K | - | - | - |
| *Argynnis pandora* | - | - | | | | - | E | | | - | - | | | - | I | | | E | | - | - | - | | | | | | | R | | | - | | - | - | | | | R | R | - | - | - | E |
| *Argynnis aglaja* | - | - | - | | V | - | V | - | - | | - | - | - | - | - | - | - | V | - | - | - | - | - | V | - | - | | | R | - | E | - | - | - | - | - | - | - | - | - | I | K | - | - | - |
| *Argynnis adippe* | - | - | - | | V | - | V | - | - | | - | V | - | - | I | - | - | V | V | - | - | - | | V | - | - | | | | - | | - | - | - | - | - | - | - | - | - | I | K | - | - | - |
| *Argynnis niobe* | - | - | - | | E | - | V | - | - | | V | V | - | - | I | - | - | V | | - | - | - | | | - | - | | | | I | V | - | R | - | - | - | - | - | I | - | I | - | - | - | - |
| *Argynnis elisa* | | | | | | | | | | | | | | | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Argynnis laodice* | | | | | | | | - | | | | E | | | | K | | | | | R | | | | - | - | | | | | | | - | V | - | R | R | R | | V | | | R | |
| *Issoria lathonia* | | - | - | | E | - | - | - | - | | - | - | - | - | - | R | | - | | - | - | - | | V | - | - | | V | - | V | V | | - | - | - | - | - | - | - | I | - | - | - | - |
| *Issoria eugenia* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | K | | | | | | | | | |

Appendix 6: Old IUCN-status for butterflies in the European countries as supplied by the compilers. The abbrevations for the countries are given in part I, section 2.1.
Ex = Extinct; E = Endangered; V = Vulnerable; R = Rare; I = Intermediate; K = Insufficiently known; - = not threatened.

| Species | A | AL | AND | AZO | B | BG | BIH | BY | CH | CY | CZ | D | DK | E | F | FIN | FL | FYROM | GB | GR | H | HR | IRL | L | LT | LV | M | MAD | MD | N | NL | P | PL | RO | RUS | RUSNE | RUSSE | RUSYA | S | SK | SLO | TRA | TRE | UA | YU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Brenthis ino* | E | - | - | | - | R | E | - | - | | - | - | V | - | I | - | E | E | | | - | R | | - | - | - | | | | - | Ex | | - | R | - | - | - | - | - | V | V | R | | - | E |
| *Brenthis daphne* | V | - | - | | | - | R | I | - | | - | E | | - | I | | | R | | - | - | - | | | R | | | | | - | | V | - | R | I | - | | | V | I | K | - | - | - |
| *Brenthis hecate* | E | - | | | | - | R | | | | V | | | - | I | | | R | | - | - | - | | | E | | | | | | | | - | - | | - | | | E | I | K | - | - | - |
| *Brenthis mofidii* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | | |
| *Boloria eunomia* | E | | R | | V | R | | - | | | V | V | | E | I | - | | | | | | | | V | R | R | | | | - | | E | | V | - | I | V | - | Ex | | | | R | |
| *Boloria euphrosyne* | - | - | - | | E | - | - | - | - | | - | V | V | - | I | - | - | - | - | - | - | - | - | V | I | - | | | | - | Ex | - | - | - | - | - | - | R | - | - | I | K | | - | - | - |
| *Boloria titania* | - | | | | | | R | I | - | | | V | | | I | R | - | | | | | - | | | | E | | | | | | Ex | V | R | - | K | R | | Ex | V | | | E | - |
| *Boloria selene* | - | | - | | V | - | V | - | - | | - | - | - | - | I | - | - | | - | | - | - | | V | - | - | | | | - | E | - | - | | - | - | - | - | - | - | V | | | - | - |
| *Boloria selenis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | - | - | K | K | | | | | | | | |
| *Boloria angarensis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | - | | | | | | | | | |
| *Boloria oscarus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | | | | | | | | | | |
| *Boloria chariclea* | | | | | | | | | | | | | | | | R | | | | | | | | | | | | | | - | | | | | V | I | | | - | | | | | | |
| *Boloria freija* | | | | | | | | R | | | | | | | | - | | | | | | | | | | E | | | | - | | | | | - | - | V | | - | | | | | | |
| *Boloria dia* | V | - | - | | E | - | - | - | V | | - | V | | - | I | | - | - | | - | - | | | V | - | - | | | - | | | - | - | - | - | - | - | | - | I | V | R | - | - |
| *Boloria polaris* | | | | | | | | | | | | | | | | R | | | | | | | | | | | | | | - | | | | | - | - | | | - | | | | | | |
| *Boloria thore* | E | | | | | | | R | - | | | V | | | | R | - | | | | | | | | I | | | | | - | | | | | K | - | R | | - | | Ex | | | | |
| *Boloria frigga* | | | | | | | | R | | | | | | | | I | | | | | | | | | R | E | | | | - | | | | | - | R | | | - | | | | | | |
| *Boloria improba* | | | | | | | | | | | | | | | | R | | | | | | | | | | | | | | R | | | | | - | I | | | - | | | | | | |
| *Boloria distincta* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | I | | | | | | | | | | |
| *Boloria pales* | - | - | - | | | R | R | | - | | | R | | - | I | | - | R | | | | | | | | | | | | | | | - | E | | | | | V | I | | | | R |
| *Boloria caucasica* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | | | | |
| *Boloria napaea* | - | | - | | | | | | - | | | R | | I | I | R | - | | | | | | | | | | | | | - | | | | | | | | | - | | | | | | |
| *Boloria aquilonaris* | E | | | | E | | | - | V | | V | V | V | | I | - | | | | | | | | | R | R | | | | - | R | | V | E | - | K | R | R | - | E | | | | E | |
| *Boloria graeca* | | - | | | | R | R | | | | | | | | I | | | R | | - | | | | | | | | | | | | | | | - | | | | | | V | | | | R |
| *Boloria alaskensis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | - | | | | | | | | | |
| *Vanessa atalanta* | | - | - | - | | - | - | | | - | | - | | - | | | | V | | - | | - | | | | | - | - | - | | | | - | | - | - | | | I | - | - | - | V |
| *Vanessa indica* | | | | | | | | | | | | | | | | | | | | | | | | | | | | V | | | | | | | | | | | | | | | | |
| *Vanessa cardui* | | | | - | | - | - | | | | | - | | - | | | | - | | - | | | | | | | | - | - | | | | | | - | - | | | I | - | - | - | - |
| *Vanessa virginiensis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | - | | | | | | | | | | | | | | | | |
| *Inachis io* | - | - | - | | - | - | - | - | - | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | R | - | - | - | - | - | - | - | - | - | - | I | - | - | - | - |
| *Aglais urticae* | - | - | - | | - | - | - | - | - | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | R | - | - | - | - | - | - | - | - | - | - | I | - | - | - | - |
| *Polygonia c-album* | - | - | - | | - | - | - | - | - | | - | - | - | - | - | - | - | - | - | - | - | - | | - | - | - | | | - | - | - | - | - | - | - | - | - | - | - | I | K | - | - | - |
| *Polygonia egea* | | - | | | | - | - | | | | | | | | I | | | - | | - | | - | | | | | | | | | | | | K | | | | | | R | - | - | | V |
| *Araschnia levana* | V | | | | - | - | R | - | - | | - | - | - | - | - | R | | | | R | - | - | | - | - | - | | | | - | | - | - | - | - | - | - | - | - | R | | - | - |
| *Nymphalis antiopa* | V | - | - | | E | - | R | - | - | | - | - | - | - | E | - | - | E | | - | - | - | | E | - | - | | | | - | Ex | - | - | R | - | - | - | - | - | - | V | K | - | - | E |
| *Nymphalis polychloros* | V | - | R | | V | - | - | - | - | | - | V | E | - | E | K | R | V | E | - | - | - | | V | - | - | | | R | K | E | - | - | I | - | | - | - | I | - | V | K | - | - | V |
| *Nymphalis xanthomelas* | | - | | | | Ex | R | - | | | Ex | Ex | | | | | | E | | E | - | - | | | | K | | | R | | | | R | I | - | - | - | K | | R | R | K | | R | E |
| *Nymphalis vaualbum* | Ex | - | | | | | R | | | | Ex | | | | | | | | | | - | - | | | | | | | | | | | | I | - | - | - | R | | Ex | E | R | | E | E |
| *Euphydryas iduna* | | | | | | | | | | | | | | | | - | | | | | | | | | | | | | | R | | | | | K | E | | | - | | | R | | | |
| *Euphydryas cynthia* | - | | | | | R | | | - | | | R | | | V | | - | | | | | | | | | | | | | | | | | | | | | | | | | | | Ex | |
| *Euphydryas intermedia* | - | | | | | | | | R | | | - | | | V | | | | | | | | | | | | | | | | | | | | K | - | I | | | | R | | | | |
| *Euphydryas maturna* | E | | | | Ex | R | | - | | | E | E | | | E | - | | V | | | R | - | | Ex | R | R | | | R | | | | V | V | R | - | - | R | E | E | R | | | R | V |
| *Euphydryas desfontainii* | | | | | | | | | | | | | | - | Ex | | | | | | | | | | | | | | | | | - | | | | | | | | | | | | |
| *Euphydryas aurinia* | E | - | - | | E | - | E | R | V | | V | V | E | - | R | V | - | V | - | R | R | - | - | E | R | V | | | | | Ex | - | E | R | - | | R | R | V | E | I | - | K | R | V |
| *Euphydryas orientalis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | E | | | |
| *Melitaea cinxia* | - | - | - | | E | - | - | | - | | V | V | - | - | I | V | | R | R | - | - | - | | V | R | R | | | R | V | E | - | - | - | - | I | - | R | - | - | I | - | - | - | R |

Appendix 6: Old IUCN-status for butterflies in the European countries as supplied by the compilers. The abbrevations for the countries are given in part I, section 2.1.
Ex = Extinct; E = Endangered; V = Vulnerable; R = Rare; I = Intermediate; K = Insufficiently known; - = not threatened.

| Species | A | AL | AND | AZO | B | BG | BIH | BY | CH | CY | CZ | D | DK | E | F | FIN | FL | FYROM | GB | GR | H | HR | IRL | L | LT | LV | M | MAD | MD | N | NL | P | PL | RO | RUS | RUSNE | RUSSE | RUSYA | S | SK | SLO | TRA | TRE | UA | YU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Melitaea phoebe* | - | - | - | | Ex | - | - | I | - | | E | V | | - | - | | Ex | R | | - | - | - | | R | - | R | | | - | | | - | K | - | - | I | - | | | V | I | - | - | - | R |
| *Melitaea punica* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | - | | | |
| *Melitaea collina* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | | | |
| *Melitaea aetherie* | | | | | | | | | | | | | | R | | | | | | | | | | | | | | | | | | - | | | | | | | | | | | | |
| *Melitaea arduinna* | | | | | | R | | | | | | | | | | | | E | | - | | | | | | | | | | | | | R | - | | V | | | | | | I | |
| *Melitaea trivia* | V | - | | | | - | - | | | | Ex | | | - | | | | - | | - | - | - | | | | | | | | | | - | | - | | I | | | V | R | - | - | - | R |
| *Melitaea didyma* | - | - | - | | | - | - | - | - | | V | V | | - | I | | Ex | - | | - | - | - | | R | V | R | | | | | | - | V | - | - | I | - | K | | - | I | - | - | - | R |
| *Melitaea persea* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | - | | | |
| *Melitaea interrupta* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | - | | | |
| *Melitaea diamina* | - | | - | | V | R | V | R | - | | E | V | Ex | | - | E | R | R | | | - | R | | E | V | R | | | R | - | Ex | | V | K | - | - | - | - | I | V | V | R | | R | V |
| *Melitaea deione* | | | - | | | | | | E | | | | | - | I | | | | | | | | | | | | | | | | | - | | | | | | | | | | | |
| *Melitaea varia* | - | | | | | | | | - | | | | | | V | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Melitaea parthenoides* | | | - | | | | | | V | | | V | | - | I | | | | | | | | | | | | | | | | | - | | | | | | | | | | | |
| *Melitaea aurelia* | V | | | | E | - | V | R | - | | V | V | | | I | | | | | I | - | - | | V | R | R | | | | | | | E | - | - | - | - | K | | V | I | R | | R | V |
| *Melitaea britomartis* | E | | | | | - | | - | E | | V | V | | | | | | | | | - | - | | | | | | | | | | | V | - | - | - | - | | V | V | I | | | R | |
| *Melitaea asteria* | - | | | | | | | | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Melitaea athalia* | - | - | - | | E | - | - | - | - | | - | V | V | - | V | - | - | - | V | - | - | - | | V | - | - | | | R | - | E | - | - | - | - | - | - | - | - | I | K | - | - | R |
| *Melitaea caucasogenita* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Limenitis populi* | V | | | | E | - | E | - | - | | I | V | | | V | - | | E | | R | R | V | | E | - | - | | | | | R | | - | V | - | - | - | - | - | V | R | | R | E |
| *Limenitis camilla* | V | | - | | - | - | E | - | - | | I | V | - | - | - | | - | R | - | R | - | - | | V | - | R | | | R | | V | - | - | V | R | R | - | R | | - | I | R | Ex | R | R |
| *Limenitis reducta* | V | - | - | | | - | - | | V | - | | V | | - | - | | | - | | - | - | - | | Ex | | | | | | | | E | - | | R | | | I | I | - | - | Ex | R |
| *Hypolimnas misippus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | - | | | | | | | | | | | | | | | | |
| *Neptis sappho* | E | | | | | - | E | K | | | Ex | | | | | | | R | | R | - | - | | | | | | | R | | | | Ex | R | R | - | - | | | E | R | | | R | - |
| *Neptis rivularis* | V | | | | | - | E | K | - | | V | | | | | | | R | | R | - | - | | | | | | | | | | | V | - | - | - | - | | | V | I | R | | - | R |
| *Charaxes jasius* | | - | | | | R | | | | - | | | | - | - | | | | | - | | - | | | | | | | | | | - | | | | | | | | | I | | | V |
| *Euapartura mirza* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | I | | | |
| *Apatura metis* | Ex | | | | | - | - | | | | | | | | | | | | | - | R | - | | | | | | | R | | | | | V | V | | I | | | | R | - | R | V |
| *Apatura ilia* | E | - | R | | V | - | E | - | - | | V | V | | I | - | | E | V | | - | - | V | | V | - | R | | | R | | | - | - | I | - | - | - | R | | | R | | - | V |
| *Apatura iris* | V | | | | - | - | E | - | - | | V | - | - | - | - | R | R | E | - | - | - | V | | E | - | - | | | | | E | - | - | I | R | - | - | R | I | - | R | | | - | E |
| *Thaleropis ionia* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | | | |
| *Kirinia roxelana* | | - | | | | - | R | | | - | | | | | | | | - | | - | | - | | | | | | | | | | | | I | | | | | | | - | - | | R |
| *Esperarge climene* | | - | | | | - | | | | | | | | | | | | R | | - | | | | | | | | | | | | | | K | | R | | | | | - | | E | R |
| *Pararge aegeria* | - | - | - | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | R | - | - | - | - | - | - | - | - | - | - | I | - | - | - | - |
| *Pararge xiphioides* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Pararge xiphia* | | | | | | | | | | | | | | | | | | | | | | | | | | | | V | | | | | | | | | | | | | | | | |
| *Lasiommata megera* | - | - | - | | - | - | - | - | - | - | - | - | - | - | - | | - | - | - | - | - | - | - | - | - | V | - | | | V | - | - | - | - | | - | | - | - | - | - | - | - | - |
| *Lasiommata paramegaera* | | | | | | | | | | | | | | | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Lasiommata petropolitana* | - | - | | | | - | - | E | - | | R | R | | R | I | - | - | R | | - | | | | | I | R | | | | - | | | V | | - | - | I | - | - | - | I | R | | E | R |
| *Lasiommata maera* | - | | - | | V | - | - | - | - | - | - | - | | - | I | - | - | - | | - | | - | | E | - | - | | | | - | | - | V | | - | - | I | - | - | - | I | - | - | - | - |
| *Lasiommata menava* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Lasiommata deidamia* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | R | R | | | | | | | |
| *Lopinga achine* | V | | | | Ex | Ex | - | V | V | | E | E | | V | E | R | | | | | - | - | | Ex | - | R | | | | | | | E | K | - | - | - | R | V | E | I | | - | R |
| *Ypthima asterope* | | | | | | | | | | - | | | | | | | | | | R | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Coenonympha tullia* | V | - | | | E | | R | - | V | | E | V | V | | E | - | | | - | | Ex | Ex | - | | - | - | | | | - | E | | - | E | R | - | R | K | - | V | E | | | I | |
| *Coenonympha oedippus* | E | | | | | Ex | | E | E | | | Ex | | | E | | E | | | | E | | | E | | | | | | | | E | | I | | E | | | Ex | E | | | E | |
| *Coenonympha amaryllis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | | R | | | | | | | | |

Appendix 6: Old IUCN-status for butterflies in the European countries as supplied by the compilers. The abbrevations for the countries are given in part I, section 2.1.
Ex = Extinct; E = Endangered; V = Vulnerable; R = Rare; I = Intermediate; K = Insufficiently known; - = not threatened.

| Species | A | AL | AND | AZO | B | BG | BIH | BY | CH | CY | CZ | D | DK | E | F | FIN | FL | FYROM | GB | GR | H | HR | IRL | L | LT | LV | M | MAD | MD | N | NL | P | PL | RO | RUS | RUSNE | RUSSE | RUSYA | S | SK | SLO | TRA | TRE | UA | YU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Coenonympha rhodopensis* | | | | | | - | R | | | | | | | | | | | R | | - | | - | | | | | | | | | | | | | | | | | | | | | | | R |
| *Coenonympha arcania* | - | - | - | | V | - | V | - | K | | - | - | E | - | I | | | V | | - | - | - | | - | - | - | | | - | R | Ex | - | - | - | - | - | - | | - | - | I | - | - | - | V |
| *Coenonympha glycerion* | - | | | | E | - | V | - | V | | - | V | | - | I | - | | V | | R | - | - | | | - | - | | | - | | | - | - | - | - | - | - | | | - | I | K | | - | V |
| *Coenonympha gardetta* | - | - | | | | | R | | - | | | R | | | I | | - | | | | | | | | | | | | | | | | | | | | | | | | | R | | | | R |
| *Coenonympha darwiniana* | | | | | | | | | K | | | | | | I | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Coenonympha corinna* | | | | | | | | | | | | | | | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Coenonympha elbana* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Coenonympha dorus* | | | R | | | | | | | | | | | - | I | | | | | | | | | | | | | | | | | - | | | | | | | | | | | | |
| *Coenonympha hero* | E | | | | E | | | - | E | | Ex | E | Ex | | E | | | | | | | | | Ex | R | - | | | | V | Ex | | V | | R | - | I | | I | E | | | I | |
| *Coenonympha leander* | | - | | | | - | | | | | | | | | | | | - | | - | | | | | | | | | | | | | | E | I | | R | | | | | R | | | V |
| *Coenonympha saadi* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | - | | | |
| *Coenonympha symphyta* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Coenonympha pamphilus* | - | | - | | - | - | - | - | - | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | - | - | - | - | - | - | - | - | - | - | - | - | I | - | - | - | - |
| *Coenonympha thyrsis* | | | | | | | | | | | | | | | | | | | | - | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Triphysa phryne* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | I | | V | | | | | Ex | | E | |
| *Pyronia tithonus* | | - | - | | - | - | - | | V | | | V | | - | I | | | - | - | - | - | - | - | V | | | | | | - | - | Ex | E | | | | | | Ex | R | K | R | E | V |
| *Pyronia cecilia* | | - | | | | | | | | | | | | - | I | | | | | - | | - | | | | | | | | | - | | | | | | | | | | Ex | E | | |
| *Pyronia bathseba* | | | | | | | | | | | | | | - | I | | | | | | | | | | | | | | | | - | | | | | | | | | | | | | |
| *Aphantopus hyperantus* | - | - | | | - | - | - | - | - | | - | - | - | - | I | - | - | R | - | - | - | - | - | - | - | - | | | R | - | - | | - | - | - | - | - | - | - | - | I | | - | R |
| *Maniola telmessia* | | | | | | | | | | | | | | | | | | | | - | | | | | | | | | | | | | | | | | | | | | | | - | | | |
| *Maniola cypricola* | | | | | | | | | | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Maniola halicarnassus* | | | | | | | | | | | | | | | | | | | | - | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Maniola nurag* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Maniola chia* | | | | | | | | | | | | | | | | | | | | - | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Maniola jurtina* | - | - | - | | - | - | - | - | - | | - | - | - | - | - | V | - | - | - | - | - | - | - | - | - | - | - | | | - | - | - | - | - | - | - | - | - | - | - | I | - | - | - | - |
| *Maniola megala* | | | | | | | | | | | | | | | | | | | | V | | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Hyponephele wagneri* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | - | | | |
| *Hyponephele urartua* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Hyponephele naricina* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | | | |
| *Hyponephele cadusia* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Hyponephele kocaki* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Hyponephele lycaon* | E | - | R | | | - | - | - | - | | E | V | | - | I | R | | - | | - | - | - | | | - | - | | | R | | | - | - | I | - | - | - | - | | - | R | - | | - | R |
| *Hyponephele lupinus* | | - | | | | - | - | | | - | R | | | - | K | | | - | | - | - | - | | | | | | | | | - | | R | - | | - | | | E | | - | I | - | R |
| *Hyponephele huebneri* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | E | | | | | | | | |
| *Proterebia afra* | | | | | | | | | | | | | | | | | | | | R | | - | | | | | | | | | | | | | K | | V | | | | | R | | R | |
| *Erebia ligea* | - | - | | | E | - | - | R | - | | V | - | | | I | - | - | - | | - | | - | | | K | - | | | | - | | - | - | - | - | - | - | - | - | I | | | - | - |
| *Erebia euryale* | - | - | - | | | - | - | | - | | V | - | | - | - | | - | - | | - | | - | | | | | | | | | | - | - | R | - | I | | | - | I | | | - | - |
| *Erebia eriphyle* | - | | | | | | | | - | | | R | | | | | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Erebia manto* | - | | | | | | - | | - | | | R | | - | I | | - | | | | | | | | | | | | | | | | - | R | | | | | | V | I | | | R | E |
| *Erebia claudina* | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Erebia flavofasciata* | - | | | | | | | | I | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Erebia epiphron* | | - | - | | | | - | | - | | R | R | | - | I | | - | - | - | V | | - | Ex | | | | | | | | | | - | - | | | | | V | R | | | Ex | - |
| *Erebia orientalis* | | | | | | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | - |
| *Erebia christi* | | | | | | | | | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Erebia pharte* | - | | | | | | | | - | | | R | | | - | | - | | | | | | | | | | | | | | | | R | R | | | | | E | R | | | | |
| *Erebia melampus* | - | | | | | | | | - | | | R | | | - | | - | | | | | | | | | | | | | | | | | | | | | | | | | | | Ex | |

Appendix 6: Old IUCN-status for butterflies in the European countries as supplied by the compilers. The abbrevations for the countries are given in part I, section 2.1.
Ex = Extinct; E = Endangered; V = Vulnerable; R = Rare; I = Intermediate; K = Insufficiently known; - = not threatened.

| Species | A | AL | AND | AZO | B | BG | BIH | BY | CH | CY | CZ | D | DK | E | F | FIN | FL | FYROM | GB | GR | H | HR | IRL | L | LT | LV | M | MAD | MD | N | NL | P | PL | RO | RUS | RUSNE | RUSSE | RUSYA | S | SK | SLO | TRA | TRE | UA | YU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Erebia sudetica* | | | | | | | | | R | | R | | | | - | | | | | | | | | | | | | | | | | | Ex | E | | | | | | | | | | | | |
| *Erebia aethiops* | - | - | | | E | - | - | - | - | | V | V | | | - | | - | - | - | R | - | - | | Ex | Ex | R | | | | | | - | I | - | - | - | | | - | I | - | | R | - |
| *Erebia triaria* | | - | | | | | R | | - | | | | | - | - | | | | | | | - | | | | | | | | | - | | | | | | | | | | | | | Ex | E |
| *Erebia rossii* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | - | | | | | | | | | | |
| *Erebia embla* | | | | | | | | | | | | | | | | - | | | | | | | | | | E | | | | - | | | | K | - | R | | - | | | | | | |
| *Erebia disa* | | | | | | | | | | | | | | | | - | | | | | | | | | | | | | | - | | | | K | - | | | - | | | | | | |
| *Erebia cyclopius* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | I | R | | | | | | | | | |
| *Erebia fasciata* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | I | | | | | | | | | | |
| *Erebia medusa* | - | - | | | V | - | - | Ex | - | | - | - | | | V | | R | - | | - | - | - | | V | | | | | | | | - | - | K | | K | | | - | I | K | Ex | - | - |
| *Erebia hewitsonii* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | | |
| *Erebia polaris* | | | | | | | | | | | | | | | | R | | | | | | | | | | | | | | - | | | | K | - | - | | | | | | | | |
| *Erebia edda* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | E | | | | | | | | | | |
| *Erebia alberganus* | - | | | | | R | | | - | | | | | | - | | | Ex | | | | | | | | | | | | | | | | | | | | | | | | | | | E |
| *Erebia pluto* | - | | | | | | | | - | | | R | | | - | | - | | | | | | | | | | | | | | | | | | | | | | | | | V | | | | |
| *Erebia gorge* | - | - | - | | | R | R | | - | | | R | | - | - | | - | | | | | - | | | | | | | | | | | - | E | | | | | | V | R | | | Ex | E |
| *Erebia rhodopensis* | | | | | | R | | | | | | | | | | | | E | | V | | | | | | | | | | | | | | | | | | | | | R | | | | E |
| *Erebia aethiopella* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Erebia mnestra* | - | | | | | | | | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Erebia gorgone* | | | - | | | | | | | | | | | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Erebia epistygne* | | | | | | | | | | | | | | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Erebia ottomana* | | - | | | | - | R | | | | | | | | | | | - | | - | | - | | | | | | | | | | | | | | | | | | | R | | | | - |
| *Erebia graucasica* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | - | | | | | | | R | | | | |
| *Erebia iranica* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | | | | | I | | | | |
| *Erebia melancholica* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | - | | | | | | | R | | | | |
| *Erebia tyndarus* | - | | | | | | | | - | | | R | | | | | - | | | | | | | | | | | | | | | | | | | | | | | | | | Ex | | |
| *Erebia nivalis* | - | | | | | | | | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Erebia calcaria* | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | I | | | | |
| *Erebia cassioides* | - | - | - | | | - | - | | - | | | | | - | - | | | - | | V | | | | | | | | | | | | | | V | | | | | | | | | | - |
| *Erebia hispania* | | | - | | | | | | | | | | | R | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Erebia pronoe* | - | - | | | | - | R | | - | | | - | | - | - | | - | I | | | | - | | | | | | | | | | | R | V | | | | | | V | I | | | Ex | I |
| *Erebia lefebvrei* | | | - | | | | | | | | | | | - | I | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Erebia scipio* | | | | | | | | | | | | | | | I | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Erebia stirius* | - | | | | | | | | | | | | | | | | | | | | | - | | | | | | | | | | | | | | | | | | | I | | | Ex | |
| *Erebia styx* | - | | | | | | | | R | | | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | V | | | | |
| *Erebia montana* | - | | | | | | | | - | | | | | | - | | R | | | | | | | | | | | | | | | | | - | | | | | | | | | | | |
| *Erebia zapateri* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Erebia neoridas* | | | R | | | | | | | | | | | - | I | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Erebia melas* | | - | | | | - | R | | | | | | | | | | | R | | - | | - | | | | | | | | | | | | V | | | | | | | R | | | Ex | R |
| *Erebia oeme* | - | - | - | | | - | R | | - | | | - | | - | I | | - | R | | R | | - | | | | | | | | | | | | | | | | | | | R | | | | R |
| *Erebia meolans* | - | | - | | | | | | - | | | - | | - | - | | - | | | | | | | | | | | | | | | | | | | | | | | | | | Ex | |
| *Erebia palarica* | | | | | | | | | | | | | | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Erebia discoidalis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | - | | | | | | | | | | |
| *Erebia dabanensis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | I | | | | | | | | | | |
| *Erebia pandrose* | - | - | - | | | R | - | | - | | | R | | - | - | - | - | R | | | | | | | | | | | | - | | | - | V | K | | | | - | V | I | | Ex | R |
| *Erebia sthennyo* | | | | | | | | | | | | | | - | I | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Melanargia russiae* | | - | - | | | | | | | | | | | - | R | | | R | | - | Ex | | | | | | | | | | | - | | | - | - | - | | | | R | | E | |

Appendix 6: Old IUCN-status for butterflies in the European countries as supplied by the compilers. The abbrevations for the countries are given in part I, section 2.1.
Ex = Extinct; E = Endangered; V = Vulnerable; R = Rare; I = Intermediate; K = Insufficiently known; - = not threatened.

| Species | A | AL | AND | AZO | B | BG | BIH | BY | CH | CY | CZ | D | DK | E | F | FIN | FL | FYROM | GB | GR | H | HR | IRL | L | LT | LV | M | MAD | MD | N | NL | P | PL | RO | RUS | RUSNE | RUSSE | RUSYA | S | SK | SLO | TRA | TRE | UA | YU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Melanargia galathea* | - | - | | | - | - | - | - | - | | - | - | | - | - | | - | - | - | - | - | - | | - | | | | | - | | | | - | - | - | | - | | | - | I | - | | - | - | - |
| *Melanargia lachesis* | | | - | | | - | | | | | | | | - | I | | | | | | | | | | | | | | | | | - | | | | | | | | | | | | | V |
| *Melanargia syriaca* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | - | | | |
| *Melanargia hylata* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | | | |
| *Melanargia grumi* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | - | | | |
| *Melanargia titea* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | | | |
| *Melanargia larissa* | | - | | | | | R | | | | | | | | | | | - | | - | | - | | | | | | | | | | | | | | | | | | | - | - | | V |
| *Melanargia arge* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Melanargia occitanica* | | | | | | | | | | | | | | - | I | | | | | | | | | | | | | | | | | - | | | | | | | | | | | | |
| *Melanargia pherusia* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Melanargia ines* | | | | | | | | | | | | | | - | | | | | | | | | | | | | | | | | | - | | | | | | | | | | | | |
| *Satyrus favonius* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | | | |
| *Satyrus parthicus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Satyrus ferula* | - | - | | | | - | V | | - | | | | | - | I | | | R | | - | | - | | | | | | | | | | | | - | | | - | | | K | | - | V |
| *Satyrus amasinus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | - | | | |
| *Satyrus actaea* | | - | - | | | | | | | | | | | - | I | | | | | | | | | | | | | | | | | - | | | | | | | | | | | | |
| *Minois dryas* | V | - | | | | - | - | - | - | | V | V | | - | V | | V | R | | R | - | - | | Ex | | | | | R | | | | E | - | K | - | - | | | - | I | R | K | - | V |
| *Hipparchia fagi* | V | - | - | | | - | R | | - | | - | E | | - | V | | | - | | - | - | - | | Ex | | | | | | | | - | | R | - | | R | | | - | I | | | I | V |
| *Hipparchia alcyone* | E | - | - | | | | | - | - | | E | E | | - | I | | | | | | | | | Ex | R | V | | | | R | | - | V | R | - | | E | | | E | | | | - | |
| *Hipparchia syriaca* | | | | | | - | R | | | - | | | | | | | | - | | - | | - | | | | | | | | | | | | K | | | | | | | - | I | | V |
| *Hipparchia autonoe* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | - | | R | | | | | | | | |
| *Hipparchia neomiris* | | | | | | | | | | | | | | | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Hipparchia aristaeus* | | | | | | - | | | | | | | | | | | | - | | - | | | | | | | | | | | | | | | | | | | | | | I | | | |
| *Hipparchia cretica* | | | | | | | | | | | | | | | | | | | | - | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Hipparchia semele* | V | - | - | | V | - | V | - | - | | - | V | - | - | I | - | | | - | | - | - | - | E | - | - | | | | | - | - | - | - | - | - | | | - | V | I | | - | - | V |
| *Hipparchia mersina* | | | | | | | | | | | | | | | | | | | | R | | | | | | | | | | | | | | | | | | | | | | I | | | | |
| *Hipparchia volgensis* | | | | | | - | | | | | | | | | | | | - | | - | | | | | | | | | | | | | | | - | | - | | | | | I | | | V |
| *Hipparchia christenseni* | | | | | | | | | | | | | | | | | | | | R | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Hipparchia pellucida* | | | | | | | | | | - | | | | | | | | | | R | | | | | | | | | | | | | | | - | | | | | | | - | | - | |
| *Hipparchia statilinus* | E | - | - | | Ex | - | - | | - | | E | E | | - | I | | | - | | - | - | - | | | I | | | | | | V | - | V | I | - | | V | | | E | R | K | - | - | - |
| *Hipparchia fatua* | | | | | | - | E | | | | | | | | | | | R | | - | | | | | | | | | | | | | | | | | | | | | | K | I | | E |
| *Hipparchia parisatis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | | | |
| *Hipparchia fidia* | | | | | | | | | | | | | | - | I | | | | | | | | | | | | | | | | | - | | | | | | | | | | | | |
| *Hipparchia maderensis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | V | | | | | | | | | | | | | | | | | |
| *Hipparchia azorina* | | | | E | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Hipparchia occidentalis* | | | | E | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Hipparchia miguelensis* | | | | V | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Hipparchia wyssii* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Hipparchia bacchus* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Hipparchia gomera* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Hipparchia tilosi* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Hipparchia senthes* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | - | | | |
| *Arethusana arethusa* | V | - | | | | - | | | E | | V | Ex | | - | I | | | - | | - | - | R | | | | | | | | | | - | | K | K | | - | | | - | I | - | I | V | R |
| *Brintesia circe* | V | - | - | | | - | R | | - | - | - | V | | - | I | | | - | | - | - | - | | Ex | | | | | | | | - | | | - | | - | | | - | I | - | - | - | V |
| *Chazara briseis* | E | - | - | | Ex | - | R | | E | | E | V | | - | V | | | - | | - | R | - | | Ex | | | | | | | | | E | - | - | - | - | | | E | I | - | E | R | V |
| *Chazara persephone* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | - | | I | | | | | | | - | | | |

Appendix 6: Old IUCN-status for butterflies in the European countries as supplied by the compilers. The abbrevations for the countries are given in part I, section 2.1.
Ex = Extinct; E = Endangered; V = Vulnerable; R = Rare; I = Intermediate; K = Insufficiently known; - = not threatened.

| Species | A | AL | AND | AZO | B | BG | BIH | BY | CH | CY | CZ | D | DK | E | F | FIN | FL | FYROM | GB | GR | H | HR | IRL | L | LT | LV | M | MAD | MD | N | NL | P | PL | RO | RUS | RUSNE | RUSSE | RUSYA | S | SK | SLO | TRA | TRE | UA | YU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Chazara egina* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Chazara bischoffii* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | - | | | |
| *Chazara prieuri* | | | | | | | | | | | | | | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Pseudochazara geyeri* | | - | | | | | | | | | | | | | | | | E | | V | | | | | | | | | | | | | | | R | | | | | | | K | | | |
| *Pseudochazara beroe* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | | | |
| *Pseudochazara graeca* | | | | | | | | | | | | | | | | | | E | | - | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Pseudochazara amymone* | | | | | | | | | | | | | | | | | | | | V | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Pseudochazara orestes* | | | | | | R | | | | | | | | | | | | | | R | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Pseudochazara euxina* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | I | | | | | | | | | V | |
| *Pseudochazara hippolyte* | | | | | | | | | | | | | | R | | | | | | | | | | | | | | | | | | | | | - | | R | | | | | | | | |
| *Pseudochazara quirensis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | | | | | | | | |
| *Pseudochazara lydia* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | - | | | |
| *Pseudochazara mamurra* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | - | | | |
| *Pseudochazara schakuhensis* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | |
| *Pseudochazara pelopea* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | - | | | |
| *Pseudochazara alpina* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | V | | | | | | | | | | |
| *Pseudochazara mniszechii* | | | | | | | | | | | | | | | | | | | | R | | | | | | | | | | | | | | | | | | | | | | | | - | | | |
| *Pseudochazara cingovskii* | | - | | | | | | | | | | | | | | | | E | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Pseudochazara anthelea* | | - | | | | - | V | | | | | | | | | | | E | | - | | - | | | | | | | | | | | | | | | | | | | | | - | | | |
| *Pseudochazara thelephassa* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | - | | | |
| *Oeneis norna* | | | | | | | | | | | | | | | | - | | | | | | | | | | | | | | - | | | | | K | I | | | - | | | | | | |
| *Oeneis bore* | | | | | | | | | | | | | | | | R | | | | | | | | | | | | | | - | | | | | R | - | | | - | | | | | | |
| *Oeneis glacialis* | - | | | | | | | | - | | | R | | | I | | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Oeneis jutta* | | | | | | | | R | | | | | | | | - | | | | | | | | | V | R | | | | - | | | V | | R | - | R | | - | | | | | | |
| *Oeneis melissa* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | I | | | | | | | | | |
| *Oeneis patrushevae* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | K | I | | | | | | | | | |
| *Oeneis polixenes* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | - | | | | | | | | | | |
| *Oeneis tarpeia* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | I | - | R | | | | | | | | |
| *Danaus plexippus* | | | | - | | | | | | | | | | V | | | | | | | | | | | | | | - | | | | | | | | | | | | | | | | |
| *Danaus chrysippus* | | R | | | | | | | | | | | | | V | | | | | R | | | | | | | | - | | | | | | | | | | | | | | I | | | R |

# Appendix 7: List of threatened (SPEC 1-3) species per country

For every country all threatened (SPEC 1-3) species are given.
^: species is extinct in this country.

**Albania**
- *Thymelicus acteon*
- *Parnassius apollo*
- *Lycaena ottomanus*
- *Pseudophilotes vicrama*
- *Scolitantides orion*
- *Glaucopsyche alexis*
- *Maculinea arion*
- *Maculinea alcon*
- *Polyommatus eroides*
- *Nymphalis xanthomelas*
- *Nymphalis vaualbum*
- *Euphydryas aurinia*
- *Coenonympha tullia*
- *Erebia medusa*

**Andorra**
- *Pyrgus cirsii*
- *Thymelicus acteon*
- *Parnassius apollo*
- *Glaucopsyche alexis*
- *Maculinea arion*
- *Maculinea rebeli*
- *Euphydryas aurinia*

**Austria**
- *Pyrgus cirsii*
- *Thymelicus acteon*
- *Parnassius phoebus*
- *Parnassius apollo*
- *Leptidea morsei*
- *Colias myrmidone*
- *Colias chrysotheme*
- *Lycaena helle*
- *Pseudophilotes vicrama*
- *Scolitantides orion*
- *Glaucopsyche alexis*
- *Maculinea arion*
- *Maculinea teleius*
- *Maculinea nausithous*
- *Maculinea alcon*
- *Maculinea rebeli*
- *Boloria titania*
- *Boloria thore*
- *Nymphalis vaualbum*^
- *Euphydryas intermedia*
- *Euphydryas maturna*
- *Euphydryas aurinia*
- *Melitaea aurelia*
- *Melitaea britomartis*
- *Lopinga achine*
- *Coenonympha tullia*
- *Coenonympha oedippus*
- *Coenonympha hero*
- *Erebia medusa*

**Azores**
- *Hipparchia azorina*
- *Hipparchia occidentalis*
- *Hipparchia miguelensis*

**Belarus**
- *Parnassius apollo*^
- *Leptidea morsei*
- *Colias myrmidone*
- *Lycaena helle*
- *Pseudophilotes vicrama*
- *Scolitantides orion*
- *Glaucopsyche alexis*
- *Maculinea arion*
- *Maculinea teleius*
- *Maculinea nausithous*
- *Maculinea alcon*
- *Polyommatus eroides*
- *Boloria titania*
- *Boloria thore*
- *Boloria frigga*
- *Nymphalis xanthomelas*
- *Nymphalis vaualbum*
- *Euphydryas maturna*
- *Euphydryas aurinia*
- *Melitaea aurelia*
- *Melitaea britomartis*
- *Lopinga achine*
- *Coenonympha tullia*
- *Coenonympha oedippus*
- *Coenonympha hero*
- *Erebia medusa*^

**Belgium**
- *Thymelicus acteon*
- *Lycaena helle*
- *Glaucopsyche alexis*
- *Maculinea arion*
- *Maculinea teleius*^
- *Maculinea alcon*
- *Maculinea rebeli*^
- *Euphydryas maturna*^
- *Euphydryas aurinia*
- *Melitaea aurelia*
- *Lopinga achine*^
- *Coenonympha tullia*
- *Coenonympha hero*
- *Erebia medusa*

**Bosnia**
- *Thymelicus acteon*
- *Parnassius apollo*
- *Leptidea morsei*
- *Colias myrmidone*
- *Lycaena ottomanus*
- *Scolitantides orion*
- *Glaucopsyche alexis*
- *Maculinea arion*
- *Maculinea alcon*
- *Boloria titania*
- *Nymphalis xanthomelas*
- *Nymphalis vaualbum*
- *Euphydryas aurinia*
- *Melitaea aurelia*
- *Lopinga achine*
- *Coenonympha tullia*
- *Erebia medusa*

**Bulgaria**
- *Thymelicus acteon*
- *Parnassius apollo*
- *Colias myrmidone*^
- *Lycaena ottomanus*
- *Pseudophilotes vicrama*
- *Scolitantides orion*
- *Glaucopsyche alexis*
- *Maculinea arion*
- *Maculinea nausithous*
- *Maculinea rebeli*
- *Polyommatus eroides*
- *Nymphalis xanthomelas*^
- *Euphydryas maturna*
- *Euphydryas aurinia*
- *Melitaea aurelia*
- *Melitaea britomartis*
- *Lopinga achine*^
- *Coenonympha oedippus*^
- *Erebia medusa*

**Canary Islands**
- *Thymelicus acteon*
- *Pieris cheiranthi*

**Croatia**
- *Thymelicus acteon*
- *Parnassius apollo*
- *Leptidea morsei*
- *Colias myrmidone*
- *Pseudophilotes vicrama*
- *Scolitantides orion*
- *Glaucopsyche alexis*
- *Maculinea arion*
- *Maculinea teleius*
- *Maculinea nausithous*
- *Maculinea rebeli*
- *Boloria titania*
- *Nymphalis xanthomelas*
- *Nymphalis vaualbum*
- *Euphydryas maturna*
- *Euphydryas aurinia*
- *Melitaea aurelia*
- *Melitaea britomartis*
- *Lopinga achine*
- *Coenonympha tullia*^
- *Erebia medusa*

**Cyprus**
- *Thymelicus acteon*
- *Pseudophilotes vicrama*

**Czech Republic**
- *Thymelicus acteon*
- *Parnassius apollo*^
- *Leptidea morsei*
- *Colias myrmidone*
- *Colias chrysotheme*
- *Lycaena helle*^
- *Pseudophilotes vicrama*
- *Scolitantides orion*
- *Glaucopsyche alexis*
- *Maculinea arion*
- *Maculinea teleius*
- *Maculinea nausithous*
- *Maculinea alcon*
- *Maculinea rebeli*
- *Polyommatus eroides*^
- *Nymphalis xanthomelas*^
- *Nymphalis vaualbum*^
- *Euphydryas maturna*
- *Euphydryas aurinia*
- *Melitaea aurelia*
- *Melitaea britomartis*
- *Lopinga achine*
- *Coenonympha tullia*
- *Coenonympha hero*^
- *Erebia sudetica*
- *Erebia medusa*

**Denmark**
- *Maculinea arion*
- *Maculinea alcon*

*Euphydryas aurinia*
*Coenonympha tullia*
*Coenonympha hero*^

**Estonia**
*Pseudophilotes vicrama*
*Scolitantides orion*
*Glaucopsyche alexis*
*Maculinea arion*
*Boloria titania*
*Boloria frigga*
*Nymphalis xanthomelas*
*Euphydryas maturna*
*Euphydryas aurinia*
*Melitaea aurelia*
*Lopinga achine*
*Coenonympha tullia*
*Coenonympha hero*
*Erebia embla*

**FYR of Macedonia**
*Thymelicus acteon*
*Parnassius apollo*
*Anthocharis damone*
*Lycaena ottomanus*
*Pseudophilotes bavius*
*Scolitantides orion*
*Glaucopsyche alexis*
*Maculinea arion*
*Maculinea alcon*
*Polyommatus eroides*
*Nymphalis xanthomelas*
*Euphydryas maturna*
*Euphydryas aurinia*
*Erebia medusa*

**Finland**
*Pyrgus centaureae*
*Parnassius apollo*
*Colias nastes*
*Colias hecla*
*Lycaena helle*
*Pseudophilotes vicrama*
*Scolitantides orion*
*Glaucopsyche alexis*
*Maculinea arion*
*Boloria titania*
*Boloria thore*
*Boloria frigga*
*Euphydryas maturna*
*Euphydryas aurinia*
*Lopinga achine*
*Coenonympha tullia*
*Erebia embla*

**France**
*Pyrgus cirsii*
*Thymelicus acteon*
*Parnassius phoebus*
*Parnassius apollo*
*Euchloe simplonia*
*Lycaena helle*
*Tomares ballus*
*Scolitantides orion*
*Glaucopsyche alexis*
*Maculinea arion*
*Maculinea teleius*
*Maculinea nausithous*
*Maculinea alcon*
*Maculinea rebeli*
*Boloria titania*
*Euphydryas intermedia*
*Euphydryas maturna*
*Euphydryas aurinia*
*Melitaea aurelia*
*Lopinga achine*
*Coenonympha tullia*
*Coenonympha oedippus*
*Coenonympha hero*
*Erebia sudetica*
*Erebia medusa*
*Erebia epistygne*

**Germany**
*Pyrgus cirsii*
*Thymelicus acteon*
*Parnassius phoebus*
*Parnassius apollo*
*Colias myrmidone*
*Lycaena helle*
*Pseudophilotes vicrama*
*Scolitantides orion*
*Glaucopsyche alexis*
*Maculinea arion*
*Maculinea teleius*
*Maculinea nausithous*
*Maculinea alcon*
*Maculinea rebeli*
*Boloria titania*
*Boloria thore*
*Nymphalis xanthomelas*^
*Euphydryas intermedia*
*Euphydryas maturna*
*Euphydryas aurinia*
*Melitaea aurelia*
*Melitaea britomartis*
*Lopinga achine*
*Coenonympha tullia*
*Coenonympha oedippus*^
*Coenonympha hero*
*Erebia medusa*

**Greece**
*Thymelicus acteon*
*Archon apollinus*
*Parnassius apollo*
*Anthocharis damone*
*Lycaena ottomanus*
*Pseudophilotes vicrama*
*Pseudophilotes bavius*
*Scolitantides orion*
*Glaucopsyche alexis*
*Maculinea arion*
*Maculinea alcon*
*Polyommatus eroides*
*Nymphalis xanthomelas*
*Euphydryas aurinia*
*Melitaea aurelia*
*Erebia medusa*

**Hungary**
*Thymelicus acteon*
*Leptidea morsei*
*Colias myrmidone*
*Colias chrysotheme*
*Lycaena helle*^
*Lycaena ottomanus*^
*Pseudophilotes vicrama*
*Scolitantides orion*
*Glaucopsyche alexis*
*Maculinea arion*
*Maculinea teleius*
*Maculinea nausithous*
*Maculinea alcon*
*Maculinea rebeli*
*Nymphalis xanthomelas*
*Nymphalis vaualbum*
*Euphydryas maturna*
*Euphydryas aurinia*
*Melitaea aurelia*
*Melitaea britomartis*
*Lopinga achine*
*Coenonympha tullia*^
*Coenonympha oedippus*
*Erebia medusa*

**Ireland**
*Euphydryas aurinia*
*Coenonympha tullia*

**Italy**
*Pyrgus cirsii*
*Thymelicus acteon*
*Parnassius phoebus*
*Parnassius apollo*
*Leptidea morsei*
*Anthocharis damone*
*Euchloe simplonia*
*Pseudophilotes vicrama*
*Scolitantides orion*
*Glaucopsyche alexis*
*Maculinea arion*
*Maculinea teleius*
*Maculinea alcon*
*Maculinea rebeli*
*Boloria titania*
*Boloria thore*
*Euphydryas intermedia*
*Euphydryas aurinia*
*Melitaea aetherie*
*Melitaea aurelia*
*Melitaea britomartis*
*Lopinga achine*
*Coenonympha tullia*
*Coenonympha oedippus*
*Erebia christi*
*Erebia medusa*

**Latvia**
*Parnassius apollo*^
*Lycaena helle*^
*Pseudophilotes vicrama*
*Glaucopsyche alexis*
*Maculinea arion*
*Maculinea teleius*
*Boloria titania*
*Boloria frigga*
*Nymphalis xanthomelas*
*Euphydryas maturna*
*Euphydryas aurinia*
*Melitaea aurelia*
*Lopinga achine*
*Coenonympha tullia*
*Coenonympha hero*
*Erebia embla*

**Liechtenstein**
*Parnassius phoebus*
*Parnassius apollo*
*Glaucopsyche alexis*
*Maculinea arion*
*Maculinea teleius*
*Maculinea nausithous*
*Maculinea alcon*
*Maculinea rebeli*
*Boloria titania*
*Boloria thore*
*Euphydryas aurinia*
*Coenonympha oedippus*
*Erebia medusa*

**Lithuania**
*Lycaena helle*
*Pseudophilotes vicrama*
*Glaucopsyche alexis*
*Maculinea arion*
*Maculinea teleius*
*Maculinea alcon*
*Boloria thore*
*Boloria frigga*
*Euphydryas maturna*
*Euphydryas aurinia*
*Melitaea aurelia*
*Lopinga achine*

*Coenonympha tullia*
*Coenonympha hero*

**Luxemburg**
*Thymelicus acteon*
*Lycaena helle*
*Glaucopsyche alexis*
*Maculinea arion*
*Euphydryas maturna*^
*Euphydryas aurinia*
*Melitaea aurelia*
*Lopinga achine*^
*Coenonympha hero*^
*Erebia medusa*

**Madeira**
*Pieris wollastoni*
*Gonepteryx maderensis*
*Hipparchia maderensis*

**Moldova**
*Leptidea morsei*
*Colias chrysotheme*
*Tomares nogelii*^
*Glaucopsyche alexis*
*Maculinea arion*
*Nymphalis xanthomelas*
*Euphydryas maturna*

**Netherlands**
*Thymelicus acteon*^
*Maculinea arion*^
*Maculinea teleius*
*Maculinea nausithous*
*Maculinea alcon*
*Euphydryas aurinia*^
*Coenonympha tullia*
*Coenonympha hero*^

**Norway**
*Pyrgus centaureae*
*Parnassius apollo*
*Colias nastes*
*Colias hecla*
*Lycaena helle*
*Scolitantides orion*
*Glaucopsyche alexis*
*Boloria thore*
*Boloria frigga*
*Coenonympha tullia*
*Coenonympha hero*
*Erebia embla*

**Poland**
*Thymelicus acteon*
*Parnassius apollo*
*Colias myrmidone*
*Lycaena helle*
*Pseudophilotes vicrama*
*Scolitantides orion*
*Glaucopsyche alexis*
*Maculinea arion*
*Maculinea teleius*
*Maculinea nausithous*
*Maculinea alcon*
*Maculinea rebeli*
*Polyommatus eroides*
*Boloria titania*^
*Nymphalis xanthomelas*
*Euphydryas maturna*
*Euphydryas aurinia*
*Melitaea aurelia*
*Melitaea britomartis*
*Lopinga achine*
*Coenonympha tullia*
*Coenonympha oedippus*
*Coenonympha hero*
*Erebia sudetica*^
*Erebia medusa*

**Portugal**
*Pyrgus cirsii*
*Thymelicus acteon*
*Tomares ballus*
*Glaucopsyche alexis*
*Euphydryas aurinia*
*Melitaea aetherie*

**Romania**
*Thymelicus acteon*
*Parnassius apollo*
*Leptidea morsei*
*Colias myrmidone*
*Colias chrysotheme*
*Lycaena helle*
*Tomares nogelii*^
*Pseudophilotes vicrama*
*Pseudophilotes bavius*
*Scolitantides orion*
*Glaucopsyche alexis*
*Maculinea arion*
*Maculinea teleius*
*Maculinea nausithous*
*Maculinea alcon*
*Boloria titania*
*Nymphalis xanthomelas*
*Nymphalis vaualbum*
*Euphydryas maturna*
*Euphydryas aurinia*
*Melitaea aurelia*
*Melitaea britomartis*
*Lopinga achine*
*Coenonympha tullia*
*Erebia sudetica*
*Erebia medusa*

**Russia (European part)**
*Pyrgus centaureae*
*Thymelicus acteon*
*Parnassius phoebus*
*Parnassius apollo*
*Leptidea morsei*
*Colias nastes*
*Colias hecla*
*Colias myrmidone*
*Colias chrysotheme*
*Lycaena helle*
*Tomares callimachus*
*Neolycaena rhymnus*
*Pseudophilotes vicrama*
*Scolitantides orion*
*Glaucopsyche alexis*
*Maculinea arion*
*Maculinea teleius*
*Maculinea nausithous*
*Maculinea alcon*
*Maculinea rebeli*
*Polyommatus eroides*
*Polyommatus damone*
*Boloria titania*
*Boloria thore*
*Boloria frigga*
*Nymphalis xanthomelas*
*Nymphalis vaualbum*
*Euphydryas intermedia*
*Euphydryas maturna*
*Euphydryas aurinia*
*Melitaea aurelia*
*Melitaea britomartis*
*Lopinga achine*
*Coenonympha tullia*
*Coenonympha oedippus*
*Coenonympha hero*
*Triphysa phryne*
*Erebia embla*
*Erebia medusa*
*Pseudochazara euxina*

**Slovakia**
*Thymelicus acteon*
*Parnassius apollo*
*Leptidea morsei*
*Colias myrmidone*
*Colias chrysotheme*
*Lycaena helle*^
*Pseudophilotes vicrama*
*Scolitantides orion*
*Glaucopsyche alexis*
*Maculinea arion*
*Maculinea teleius*
*Maculinea nausithous*
*Maculinea alcon*
*Maculinea rebeli*
*Polyommatus eroides*
*Boloria titania*^
*Nymphalis xanthomelas*
*Nymphalis vaualbum*^
*Euphydryas maturna*
*Euphydryas aurinia*
*Melitaea aurelia*
*Melitaea britomartis*
*Lopinga achine*
*Coenonympha tullia*
*Coenonympha oedippus*^
*Coenonympha hero*
*Erebia medusa*

**Slovenia**
*Pyrgus cirsii*^
*Thymelicus acteon*
*Parnassius apollo*
*Leptidea morsei*
*Colias myrmidone*
*Pseudophilotes vicrama*
*Scolitantides orion*
*Glaucopsyche alexis*
*Maculinea arion*
*Maculinea teleius*
*Maculinea nausithous*
*Maculinea alcon*
*Maculinea rebeli*
*Boloria titania*
*Boloria thore*^
*Nymphalis xanthomelas*
*Nymphalis vaualbum*
*Euphydryas intermedia*
*Euphydryas maturna*
*Euphydryas aurinia*
*Melitaea aurelia*
*Melitaea britomartis*
*Lopinga achine*
*Coenonympha tullia*
*Coenonympha oedippus*
*Erebia medusa*

**Spain**
*Pyrgus cirsii*
*Thymelicus acteon*
*Parnassius apollo*
*Lycaena helle*
*Tomares ballus*
*Scolitantides orion*
*Glaucopsyche alexis*
*Maculinea arion*
*Maculinea nausithous*
*Maculinea alcon*
*Maculinea rebeli*
*Plebeius hesperica*
*Euphydryas aurinia*
*Melitaea aetherie*
*Lopinga achine*
*Erebia epistygne*

**Sweden**

*Pyrgus centaureae*
*Parnassius apollo*
*Colias nastes*
*Colias hecla*
*Lycaena helle*
*Scolitantides orion*
*Glaucopsyche alexis*
*Maculinea arion*
*Maculinea alcon*
*Boloria thore*
*Boloria frigga*
*Euphydryas maturna*
*Euphydryas aurinia*
*Melitaea britomartis*
*Lopinga achine*
*Coenonympha tullia*
*Coenonympha hero*
*Erebia embla*

**Switzerland**
*Pyrgus cirsii*
*Thymelicus acteon*
*Parnassius phoebus*
*Parnassius apollo*
*Euchloe simplonia*
*Lycaena helle*
*Scolitantides orion*
*Glaucopsyche alexis*
*Maculinea arion*
*Maculinea teleius*
*Maculinea nausithous*
*Maculinea alcon*
*Maculinea rebeli*
*Boloria titania*
*Boloria thore*
*Euphydryas intermedia*
*Euphydryas aurinia*
*Melitaea aurelia*
*Melitaea britomartis*
*Lopinga achine*
*Coenonympha tullia*
*Coenonympha oedippus*
*Coenonympha hero*
*Erebia christi*
*Erebia sudetica*
*Erebia medusa*

**Turkey (Asian part)**
*Spialia osthelderi*
*Muschampia proteides*
*Pyrgus cirsii*
*Thymelicus acteon*
*Zerynthia caucasica*
*Archon apollinus*
*Archon apollinaris*
*Parnassius apollo*
*Anthocharis damone*
*Lycaena ottomanus*
*Tomares nogelii*
*Tomares callimachus*
*Pseudophilotes vicrama*
*Pseudophilotes bavius*
*Scolitantides orion*
*Glaucopsyche alexis*
*Maculinea arion*
*Maculinea nausithous*
*Maculinea alcon*
*Polyommatus eroides*
*Polyommatus poseidon*
*Polyommatus dama*
*Polyommatus caeruleus*^
*Nymphalis xanthomelas*
*Nymphalis vaualbum*
*Euphydryas aurinia*
*Euphydryas orientalis*
*Melitaea aurelia*
*Triphysa phryne*^
*Erebia medusa*
*Melanargia titea*

**Turkey (European part)**
*Thymelicus acteon*
*Archon apollinus*
*Anthocharis damone*^
*Pseudophilotes vicrama*
*Pseudophilotes bavius*
*Scolitantides orion*^
*Glaucopsyche alexis*
*Maculinea arion*
*Euphydryas aurinia*
*Erebia medusa*^

**Ukraine**
*Thymelicus acteon*
*Parnassius apollo*
*Leptidea morsei*
*Colias myrmidone*
*Colias chrysotheme*
*Lycaena helle*
*Tomares nogelii*
*Tomares callimachus*
*Neolycaena rhymnus*
*Pseudophilotes vicrama*
*Pseudophilotes bavius*
*Scolitantides orion*
*Glaucopsyche alexis*
*Maculinea arion*
*Maculinea teleius*
*Maculinea nausithous*
*Maculinea alcon*
*Polyommatus eroides*
*Polyommatus poseidon*
*Polyommatus damone*
*Boloria titania*
*Nymphalis xanthomelas*
*Nymphalis vaualbum*
*Euphydryas maturna*
*Euphydryas aurinia*
*Melitaea aurelia*
*Melitaea britomartis*
*Lopinga achine*
*Coenonympha tullia*
*Coenonympha oedippus*
*Coenonympha hero*
*Triphysa phryne*
*Erebia medusa*
*Pseudochazara euxina*

**United Kingdom**
*Thymelicus acteon*
*Maculinea arion*
*Euphydryas aurinia*
*Coenonympha tullia*

**Yugoslavia**
*Thymelicus acteon*
*Parnassius apollo*
*Leptidea morsei*^
*Colias myrmidone*
*Lycaena ottomanus*
*Pseudophilotes bavius*
*Scolitantides orion*
*Glaucopsyche alexis*
*Maculinea arion*
*Maculinea alcon*
*Polyommatus eroides*
*Boloria titania*
*Nymphalis xanthomelas*
*Nymphalis vaualbum*
*Euphydryas maturna*
*Euphydryas aurinia*
*Melitaea aurelia*
*Lopinga achine*
*Erebia medusa*

# INDEX