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Local recording scheme	http://www.tagfalter-monitoring.de/
Butterfly list	In this section of the EBG website

Books

Die Tagfalter Deutschlands, J. Settele, R. Feldmann and R. Reinhardt, Eugen Ulmer (1999), ISBN 3-8001-3519-1. In German, hardback. The greater part of this book comprises a detailed and scholarly exposition on a wide range of topics concerning lepidoptera, including taxonomy and nomenclature, ecology, legal protection, population dynamics, research and monitoring, and conservation, including a study of integrated planning in Baden-Württemberg. The remainder contains descriptions of the German butterfly species, excluding the species found exclusively in the Alps. For readers with good German and an appetite for technical terminology, the material in the first part of this book is an excellent resource for deepening an understanding of butterflies. For those simply seeking descriptive and status information on the German butterfly species, the next book on this list (by the same authors plus R. Steiner and G. Hermann) may suit the purpose better, as it is in a more compact format and (broadly) reproduces much of the same species information as is contained in this book.

Schmetterlinge: Die Tagfalter Deutschlands, J. Settele, R. Steiner, R. Reinhardt, R. Feldmann and G. Hermann, 2nd edn., Eugen Ulmer (2009), ISBN 978-3-8001-58980. In German. Paperback (A5) in field-guide style. Entries for each species include half-page of text, describing distinguishing characteristics, habitat, nectar and foodplants, and conservation status and requirements, together with half-page of visual information, including large photograph in the wild, plus insets with timeline of flight period/ life cycle stages, map and table showing occurrence (although not distribution) and conservation status in each of the states (*Länder*), and supplementary photographs. This makes it relatively user-friendly for readers with only limited German.



Also includes section on general topics, table of museum specimen photographs annotated with distinguishing characteristics, and table of larval foodplants with the species which use each. Note that this book does not cover those species found exclusively in the Bavarian Alps (see next entry for these).

Die Tagfalter Bayerns und Österreichs, C. Stettmer, M. Bräu, P. Gros and O. Wanninger, Bayerische Akademie für Naturschutz und Landschaftspflege, (2007), ISBN 3-931175-89-8. In German. Paperback (A5). Guide to the butterflies of Bavaria (including Alps species) and Austria. Note that, although this fills the gap in terms of species covered in the previous entry, it is not actually a companion volume to that, and uses a completely different format for the species information, which comprises most of the book. The first part of the species information is text in tabular form covering distinguishing characteristics, habitat, larval foodplant, flight period, occurrence and conservation status. The second part contains a photograph-based key for assistance with distinguishing between species, followed by museum-type pictures of the species, with further identification annotations.

Die Schmetterlinge Baden-Württembergs, G. Ebert and E. Rennwald, Eugen Ulmer (1991, [reprinted 1993]). 2 vols. on butterflies, ISBN 3-8001-3451-9 and ISBN 38001-3459-4. (There are also a further 8 volumes, primarily on moths; the last one, vol. 10, also contains some interesting updates on selected butterfly species of conservation concern.) In German. The first part of vol. 1 is a scholarly treatise on various general topics (with particular reference to Baden Württemberg), including taxonomy and nomenclature, ecology, behaviour and conservation, together with a detailed account of data recording projects in the state, and a very comprehensive list of plants on which butterflies have been recorded as nectaring, or even just perching, plus the species recorded as using them. Following this are detailed accounts of the species found in the south-western state of Baden-Württemberg, each covering distribution (including a distribution map and diagram showing altitudinal range), flight periods and life cycle stages (including histograms for different areas within the state), habitat, foodplants and behaviour, and conservation.

Tagfalter in Bayern, M. Bräu and others, Eugen Ulmer (2013), ISBN 978-3-80017985-5. In German, hardback. A recent addition to the bibliography on German lepidoptera, this will surely be the definitive text on the butterflies of Bavaria, the country's most species-rich state, for many years to come. Introductory chapters cover topics such as geology and geography, morphology, life cycle and behaviour, a brief history of lepidoptery in Bavaria and data sources and methodology.



A further chapter giving an overview of the species which occur in Bavaria, including a comprehensive list of foodplants used and detailed analyses of species density by area, is followed by individual accounts for each species covering identification, distribution, habitats and behaviour, status and conservation, with highly detailed distribution maps at 5km² resolution and histograms for altitudinal range and flight period. The work concludes with extended chapters on habitats in Bavaria and on conservation.

Tagfalter von Sachsen, R. Reinhardt and others, Entomofaunistische Gesellschaft e.V. (2007), ISSN 0232-5535. In German, hardback. A comprehensive treatise on the butterflies of the eastern state of Saxony. Introductory chapters include a brief overview of the geology, climate and land use and a historical account of entomology in Saxony, with detailed bibliography. Detailed accounts for each species constitute most of the book, each covering distribution, habitat, flight period, life cycle and behaviour, status and conservation, with distribution maps at 5km² resolution and flight period histograms. The concluding chapters include analyses of status and abundance by area, habitats, and the Red List for Saxony.

Die Tagfalter der Pfalz, T. Schulte and others, Gesellschaft für Naturschutz und Ornithologie Rheinland-Pfalz e.V. (GNOR) (2007), ISBN 978-3-9807669-2-0. In German, hardback (2 vols.) A detailed account of the butterfly species of the state of Rheinland-Pfalz (Rhineland-Palatinate), one of the westernmost German states. Introductory chapters include an extended description of the different areas and natural habitats of Rheinland-Pfalz, and the incidence of species in them, a detailed historical account of lepidoptery in the state, including biographies, and a shorter summary of butterfly life cycle and behaviour. The detailed species accounts (which also deal with species recorded in adjoining territories but not in the state itself) cover, for species recorded in the state, identification and distinguishing characteristics, habitat, life cycle and behaviour, distribution, flight period and conservation, including distribution maps at 5km² resolution and flight period histograms. Also included are detailed tables on larval foodplants, Red List data and further information on conservation and monitoring.

For information in English covering the butterflies of Germany, see the general guides such as Tolman & Lewington, *Butterflies of Britain and Europe*, Lafranchis, *Butterflies of Europe* and Haahtela et al., *Butterflies of Britain and Europe: A Photographic Guide*.



Websites

<http://www.ufz.de/european-butterflies/index.php?de=17421> Website of the Society for the Conservation of Butterflies (Gesellschaft für Schmetterlingsschutz e.V. (“GfS”), a non-profit organization dedicated to the protection of European butterfly fauna with emphasis on the German fauna. The GfS runs the German butterfly monitoring scheme (see introductory box above) and is the publisher of the Distribution Atlas of Butterflies in Europe.

<http://www.nabu.de> Website of the Nature and Biodiversity Conservation Union of Germany (Naturschutzbund Deutschland e.V.). There is an English version (<http://www.nabu.de/en/>), but more search results are obtained if you search the site using the German terms “Schmetterlinge” (covers lepidoptera generally) or “Tagfalter” (butterflies).

<http://www.schmetterlinge-bw.de/> Website of lepidoptera database for the state of Baden-Württemberg. Updated distribution maps, based on those in Ebert and Rennwald (see above) are available here, and there is a facility for contributing records.

<http://www.tagfalter-sachsen.de/> Website on the butterflies of the state of Saxony.

http://www.lanuv.nrw.de/natur/arten/rote_liste/pdf/RL-NW11-SCHMETTERLINGE/RL-NW11-1-Tagfalter-Diurna-endst.pdf Red list for the butterflies of North Rhine – Westphalia.

<http://www.die-schmetterlinge-deutschlands.de/> General website on German butterflies.

<http://www.lepiforum.de/> Site with forums for identification of species, life stages and foodplants, and for discussion on observations, research and conservation.

<http://www.schmetterling-raupe.de/> Information portal on European lepidoptera and their larvae, with a facility for identification of larvae.

http://www.ffh-anhang4.bfn.de/ffh_anhang4-schmetterlinge.html?&no_cache=1 Overview of management for all 16 species of annex IV of the habitats directive that occur (or occurred) in Germany. Includes information on life cycle and distribution.

Holidays



Scarce Swallowtail (*Iphiclides podalirius*) above the Rhine

There currently seem to be relatively few organised nature tours to Germany. At the time of writing (2014), Travelling Naturalist and Naturetrek both offered trips to Bavaria in June, and their schedules also include these for 2015. The Naturetrek trips are based in the Berchtesgaden National Park, in the Alps, whilst the Travelling Naturalist trip is based in the lakes area, and includes excursions to wetland and bog areas as well as the Alps. The advertised itinerary for the Travelling Naturalist trips appears to be focused principally on birds, with that for the Naturetrek trip being more generalised, and the timing in each case is of course rather early in the butterfly season (especially for montane/ alpine species) but it may be worth noting that the Travelling Naturalist itinerary includes Murnauer Moos (see below).

Germany is an easy destination for self-organised trips, with a first-class road and public transport network and plenty of excellent holiday accommodation of all types, plus the practical advantage that English is very well spoken and understood.

Although the summer weather is rather less reliable than in southern Europe, Germany offers an enormous range of cultural and historic attractions, so that it is easy to find alternative diversions in the event of an inclement weather day. (Indeed, there can be unexpected opportunities for combining cultural excursions with butterflying – such as on one occasion where climbing the 600-odd steps up to the top of a ruined castle on the Rhine was rewarded not only with a magnificent panorama, but also with a close up view of the canopy of an oak tree on which a group of male Brown Hairstreak (*Thecla betulae*) were basking).



Purple Emperor (*Apatura iris*)



Purple-edged Copper (*Lycaena hippothoe*)

Whilst it is often possible to find accommodation on an ad hoc basis, popular holiday areas, such as the Black Forest, Bavarian Alps and lakes, and the coast and islands, are often very heavily booked up during holiday periods and at weekends, so it can be worth reserving accommodation in advance if travelling to such areas.

Travelling around on a speculative basis in the hope of encountering a wide variety of interesting species is less likely to be successful in Germany than in some areas of southern or eastern Europe (although even with this approach more species can be readily encountered than in much of the UK). A degree of preparation can thus be very rewarding. It is often worthwhile to purchase small scale hiking or tourist maps of the area to be explored (available in newsagents and service stations, as well as bookshops), since these frequently show the local nature reserves (Naturschutzgebiete, generally marked on maps as “NSG”), and other useful details such as types of vegetation (and, obviously, footpaths). This should facilitate identification of the areas which are most likely to be productive.



Scarce Fritillary (*Euphydryas maturna*)



Marsh Fritillary (*Euphydryas aurinia*)

All butterfly species in Germany are protected by the Law on the Protection of Nature and Care for the Countryside of 1998 (Bundesnaturschutzgesetz or BNatSchG) and regulations made under it. Essentially, there are three levels of protection: a basic one which applies to all species of wild animals (including all wild butterfly species) and plants, an additional level which applies to an extensive list of “specially protected” species, and the highest level of protection, extended to specified “strongly protected” species. In summary, the rules relevant to butterflies contain the following prohibitions:

General protection (applies to all species)

It is forbidden:

- (1) wilfully to disturb wild animals or without reasonable cause to capture, injure or kill them;
- (2) without reasonable cause to damage or destroy sites where wild animals and plants live.

Special protection

For species covered by this, *in addition to the general protection rules*, it is forbidden to pursue, capture, injure or kill them, or to remove, damage or destroy any of their life cycle stages, or the places where they nest, breed, live or take refuge.

Strongest protection

For species covered by this, *in addition to the general and special protection rules*, it is forbidden to disturb them, at the places where they nest, breed, live or take refuge, by picking them up, photographing or filming them, or similar actions.

Also, for species in the special and strongest protection categories, there are prohibitions on possession, buying or selling (or holding or offering for sale, or offering to purchase), displaying or otherwise using for commercial purposes.

(The above is an approximate translation; some of the terms in German are difficult to replicate precisely in English.)

Note that the prohibition for the “strongest protection” category does not prohibit photography in itself, only *disturbance* (whether by photography or other actions).

Individual states (*Länder*) are permitted to make modifications to some of the protections (eg for research purposes, or to make some exceptions to the general protections). However, they cannot modify the protections for species in the “strongest protection” category.



Scarce Large Blue (*Phengaris teleius*) Dusky Large Blue (*Phengaris nausithous*)

The species in the “strongest protection” category at present resident in Germany are currently Apollo (*Parnassius apollo*), Small Apollo (*P. phoebus*), Clouded Apollo (*P. mnemosyne*), Large Copper (*Lycaena dispar*), Violet Copper (*L. helle*), Large Blue (*Phengaris arion*), Scarce Large Blue (*P. teleius*), Dusky Large Blue (*P. nausithous*), Chequered Blue (*Scotilantides orion*), Damon Blue (*Polyommatus damon*), Scarce Fritillary (*Euphydryas maturna*), Marsh Fritillary (*E. aurinia*), Marbled Fritillary



(*Brenthis daphne*), Woodland Brown (*Lopinga achine*), Scarce Heath (*Coenonympha hero*), Woodland Grayling (*Hipparchia fagi*), Rock Grayling (*H. hermione*), Tree Grayling (*H. statilinus*), False Grayling (*Arethusana arethusa*), Oberthür's Grizzled skipper (*Pyrgus armoricanus*), Cinquefoil Skipper (*P. cirsii*), Marbled Skipper (*Carcharodus lavatherae*) and Tufted Marbled Skipper (*C. flocciferus*), together with False Ringlet (*Coenonympha oedippus*), which was long believed to be extinct but rediscovered in 1996. Of others also on the list, Danube Clouded Yellow (*Colias myrmidone*) is thought now to be extinct, as is Mountain Ringlet (*Erebia epiphron*) in the non-Alps area (to which strong protection is, in its case, restricted – formerly it occurred in the Harz mountains), whilst Pallas's Fritillary (*Argynnis laodice*) and Yellow-legged Tortoiseshell (*Nymphalis xanthomelas*) are rare vagrants. Southern Festoon (*Zerynthia polyxena*) and Osiris Blue (*Cupido osiris*) complete the list. The latter is not present in Germany, and historic records for it are dubious. The former is limited to a single, historic occurrence in Bavaria and to an introduced population in northern Bavaria, far outside the original range. For a full list of species showing whether they have strongest, special or only general protection, see the checklist at **in this section of the EBG website**.

Given the rather wide-ranging nature of the prohibitions in the BNatSchG, and the likelihood of additional rules applying in nature reserves (see below), it is suggested that the “safe harbour” position is to avoid the use of nets and similar.

Also bear in mind that special rules apply in nature reserves. These may include not leaving the path, especially in locations where this may cause danger to the visitor and/or damage to the habitat (eg bog areas). If visiting such areas, it may be helpful to bring a telephoto lens or camera with good optical zoom, as very close approach to butterflies for photography may not always be practicable.



Poplar Admiral (*Limentis populi*)

Sites and species

Germany, the country with the largest population in western Europe, has almost the whole of its land mass lying to the north of the Alps. Whilst the north and north-east of the country exhibits a predominantly rather flat topography, forming part of the north European plain, the central and southern areas feature significant upland and montane areas, culminating in the massif of the Black Forest (Schwarzwald) in the south-west and the Bavarian Alps in the south. In the low-lying north-east of the country, there are areas of wetlands and lakes.

Of the central uplands, the westernmost is the Rhineland schist massif, bisected north-south by the Rhine itself and further divided by its roughly east-west tributaries. This gives blocks of rolling hills, including the Eifel, Taunus, Westerwald and Hunsrück, all with maximum altitudes below 1,000m. Further east lie the volcanic ranges of the Vogelsberg and Rhön, and to their north the Harz, which includes the famous Brocken mountain (alt. 1,142m). The rounded, forested hills of the Thüringer Wald extend south-east along the border between Thuringia and Bavaria, whilst the heavily wooded, granitic ranges of the Erzgebirge, Fichtelgebirge, Böhmerwald and Bayerischer Wald lie along the border with the Czech Republic.

To the south of the central uplands, limestone features more prominently in the geology, first in the rolling plateau of the Swabian-Franconian basin, then in the hills of the Swabian and Franconian Jura. In the far south-west, extending down to the Swiss border, the extensively wooded peaks of the Schwarzwald (max. alt. 1,493m.) are composed of granitic and sandstone rock. To the south-east, the geology of the

prealpine region reflects its history of glaciation, with moranic debris and bogs overlying the bedrock. In the extreme south, along the border with Austria, the Alps (highest point the Zugspitze, alt. 2,962m.) are primarily limestone in composition.



Limestone landscape in Berchtesgaden Alps

The climate of Germany is temperate, and in common with the rest of north-west Europe the predominant influence is generally that of Atlantic pressure systems, giving relatively mild and moist conditions without great extremes of heat or cold, especially in the north-western lowlands. The east and south of the country tend to a more continental climate, with colder winters and hotter summers than in the northwest. More severe winter conditions over the country as a whole occur when high pressure centred over Siberia extends its influence westwards, blocking the milder Atlantic systems. Mountain and upland areas have their own characteristics, with cooler temperatures and higher levels of precipitation, giving rise to snow cover in winter and thunderstorms in summer. This is most obviously so in the Bavarian Alps and Black Forest in the south but also affects lower ranges, especially the Harz mountains.

Weather conditions in Germany are thus often rather similar to those in the UK (and similarly unpredictable). However, summer temperatures can be distinctly higher and sunshine amounts greater, particularly in the south.

Although overall one of the most densely populated countries in Europe, with the challenges for conservation to be expected in a nation of highly developed industry and intensive agriculture, Germany nevertheless retains a very substantial proportion

of land area with habitats favourable for biodiversity. The proportion of forest cover is some 32% (compared with 12% for the UK as a whole and 10% for England alone), of which some 40% is deciduous; whilst pine predominates in the north and spruce in the mountains of the south, more central areas and the lower mountain ranges have extensive forests of beech and oak.

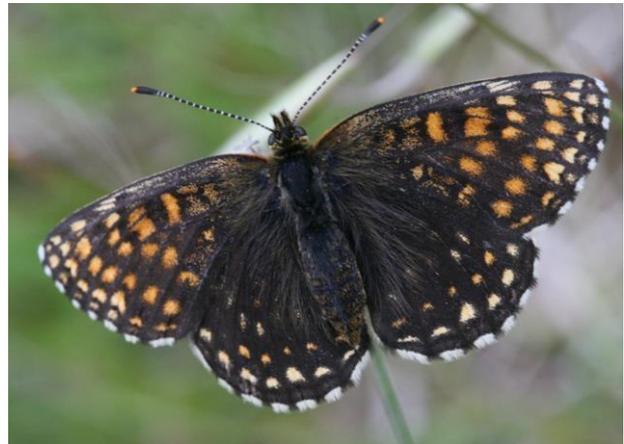


Scarce Heath (*Coenonympha hero*)

There are at present some 189 butterfly species native to Germany, of which 5 are extinct (BfN 2012: Red Data Book Germany; this includes Southern Festoon, but see introduced population in Bavaria mentioned above). Of these species, three (Violet Copper (*Lycaena helle*), Large Blue (*Phengaris arion*) and False Ringlet (*Coenonympha oedippus*)) are classified as endangered in Europe on the 2010 European red list (as is Danube Clouded Yellow (*Colias myrmidone*), although it is thought now to be extinct in Germany). A further six (Cinquefoil Skipper (*Pyrgus cirsii*), Scarce Large Blue (*Phengaris teleius*), Scarce Heath (*Coenonympha hero*), Large Heath (*C. tullia*), Woodland Brown (*Lopinga achine*) and Scarce Fritillary (*Euphydryas maturna*)) are classified as vulnerable. A further eight species found in Germany (Olive Skipper (*Pyrgus serratulae*), Purple-shot Copper (*Lycaena alciphron*), Purple-edged Copper (*L. hippothoe*), Alcon Blue (*Phengaris alcon*), Cherquered Skipper (*Scotilantides orion*), Niobe Fritillary (*Argynnis niobe*), Poplar Admiral (*Limenitis populi*) and False Heath Fritillary (*Melitaea diamina*)) are classified as vulnerable in the EU28 although not at present in Europe as a whole.



Poplar Admiral (*Limenitis populi*)



False Heath Fritillary (*Melitaea diamina*)

Almost all of the butterfly fauna of north-west Europe (outside the Alps) are present in Germany, although many of the more specialist species are rare and/or endangered there. As nearly all of the country lies to the north of the Alps, there is little representation of more southerly/ Mediterranean species, although a few such as Tufted Marbled Skipper (*Carcharodus flocciferus*), Southern White Admiral (*Limenitis reducta*) and Knapweed Fritillary (*Melitaea phoebe*) do extend into the southern part. From the other direction, Northern Grizzled Skipper (*Carterocephalus silvicolus*), mainly a Scandinavian/ northern European-based species, is found in the northern part of the country, with its main stronghold in the north-eastern state of Mecklenburg-Vorpommern.

A few species whose core range lies further east have the western limit of their distribution in Germany, including Assmann's Fritillary (*Melitaea britomartis*) and Eastern Baton Blue (*Pseudophilotes vicrama*). Until fairly recently, Danube Clouded Yellow (*Colias myrmidone*) could also be included in this category, with its westerly limit in the area of eastern Bavaria around Regensburg (from which it took its German name of Regensburger Gelbling). However, it was declared extinct in Bavaria in the state Red List of 2004, and consequently is now considered extinct in the country entirely (BfN 2012: Red Data Book of Germany).

Of other more eastern-based species, Eastern Pale Clouded Yellow (*Colias erate*) has been a regular vagrant to some eastern parts of Germany since 2000. Yellowlegged Tortoiseshell (*Nymphalis xanthomelas*) and Pallas's Fritillary (*Argynnis laodice*) are very much rarer vagrants from the east.

Areas of true alpine habitat are fairly small, the most significant being the Bavarian Alps, which host a large variety of typical alpine specialists (see below).

There are two categories of butterfly habitat, in very broad terms, for which the areas found in Germany may be regarded as of most significance on a Europe-wide basis. The first of these is damp temperate deciduous and mixed woodland. Although the decline in traditional woodland management practices and trend towards coniferous monocultures have had adverse effects here, as elsewhere in western Europe, there nevertheless remain significant populations of species such as Woodland Brown, Poplar Admiral, Black Hairstreak (*Satyrium pruni*) and Chequered Skipper (*Carterocephalus palaemon*), together with many woodland fritillaries. Although considered potentially, albeit not currently, endangered in Germany as a whole, Purple Emperor (*Apatura iris*) seems to be quite readily encountered even on a



Woodland Brown (*Lopinga achine*)



Chequered Skipper (*Carterocephalus palaemon*)

casual basis in suitable woodland (much more so than in the UK), whilst Lesser Purple Emperor (*Apatura ilia*) is also present.

The other significant category includes cool bog, moorland and damp grassland areas. Areas of such habitat types are found widely in Germany, including in the prealpine areas of Bavaria (as well as within the Alps), in the extensive central upland / mountain areas, and in the lake/ wetland areas of the north-east. Some of the few remaining western European populations of the glacial relict species Scarce Heath (*C. hero*) and Violet Copper (*L. helle*) are found in such habitats, as well as species such as Bog Fritillary (*Boloria eunomia*), Cranberry Fritillary (*B. aquilonaris*), Marsh Fritillary (*Euphydryas aurinia*), Purple-shot Copper (*Lycaena alciphron*), Purple- edged Copper (*L. hippothoe*) and Large Heath (*C. tullia*), plus the *Phengaris* species Dusky Large Blue (*P. nausithous*), Scarce Large Blue (*P. telejus*) and Alcon Blue (*P. alcon*) (the latter including the Mountain Alcon Blue subspecies, *P. alcon rebeli*). Dusky Large Blue, in particular, retains a strong presence in Germany.

A few species are found only, or principally, in the northern part of the country. In addition to Northern Chequered Skipper (*Carterocephaphalus silvicolus*) (mentioned above), Large Chequered Skipper (*Heteropterus morpheus*) is restricted to the more northern states; indeed, the north-east of Germany is one of the remaining hotspots for this species in western and central Europe. Two *Hipparchia* species, Rock Grayling (*H. hermione*) and Tree Grayling (*H. statilinus*), are also mostly restricted to northern and eastern states. Generally, however, the greatest variety of species is found in the south of the country, especially in the southernmost states of Bavaria and Baden-Württemberg.

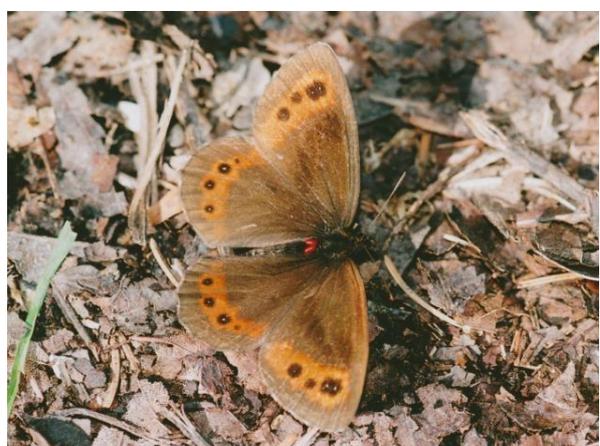
Bavarian Alps

A narrow strip of the Alps runs through the far south of Bavaria, bordering Austria. These broadly divide into three sections: the Allgäu Alps in the west, between Lake Constance and the river Lech; the central section between the Lech and Inn rivers, which includes the highest peak in Germany, the Zugspitze (2962m), and the Chiemgau and Berchtesgaden Alps in the east.

The highest diversity of butterfly species in Germany is to be found here, with the Allgäu and Berchtesgaden ranges, at the western and eastern extremities, constituting particular hotspots. It is the only area in the country where many typical high-altitude species are to be found, including Shepherd's Fritillary (*Boloria pales*), Cynthia's Fritillary (*Euphydryas cynthia*), Peak White (*Pontia callidice*), Mountain Clouded Yellow (*Colias phicomone*), Alpine Grayling (*Oeneis glacialis*) and Alpine Heath (*Coenonympha gardetta*), whilst slightly lower altitudes host other montane species, including Titania's Fritillary (*Boloria titania*), Thor's Fritillary (*B.thore*), Moorland Clouded Yellow (*Colias palaeno*), and Clouded Apollo (*Parnassius mnemosyne*).



Mountain Alcon Blue (*Phengaris alcon rebeli*)

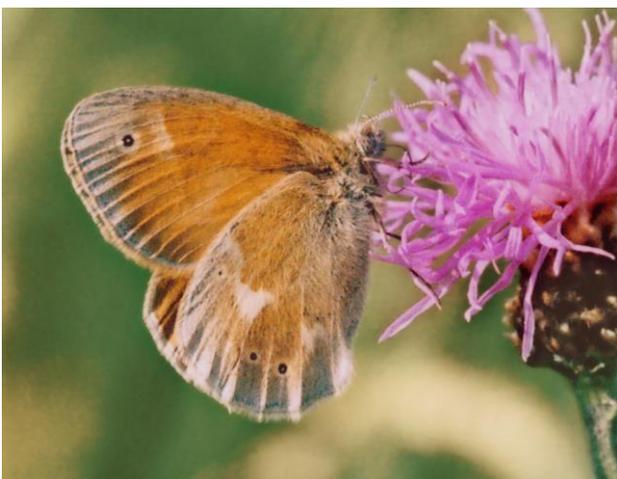


Arran Brown (*Erebia ligea*)

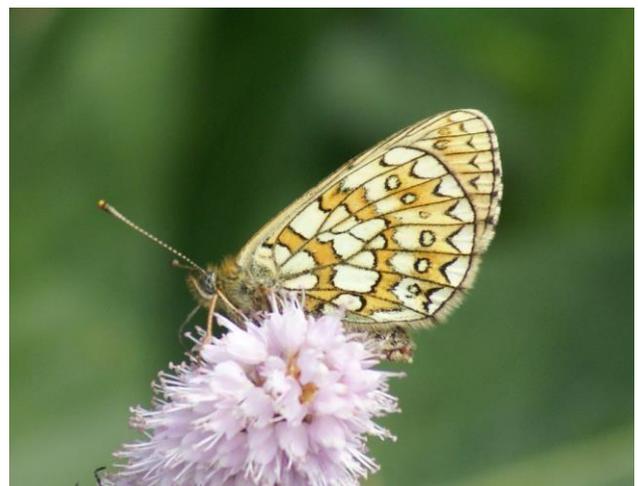
It also contains the main populations of Apollo (*Parnassius apollo*) in Germany, important colonies of Large Blue, and by far the greatest diversity of *Erebia* species. A total of 18 *Erebia* species occur in the country, but all but five of those are confined to the Alps. Stygian Ringlet (*E. styx*) and Eriphyle Ringlet (*E. eriphyle*) are probably the most restricted (on a Europe-wide basis) of the *Erebia* species represented here. (Of the five species not found exclusively in the Alps, the only additional location for Large Ringlet (*E. euryale*) is the Bayerischer Wald mountain range near the border with the Czech Republic, Piedmont Ringlet (*E. meolans*) is found in the Schwarzwald and Pfalz as well as the Alps, whilst Arran Brown (*E. ligea*), Scotch Argus (*E. aethiops*), and Woodland Ringlet (*E. medusa*) are more widely distributed.) Similarly, the Alps contain the only German colonies of Alpine Grizzled Skipper (*Pyrgus andromedae*), Dusky Grizzled Skipper (*P. cacaliae*) and Warren's Skipper (*P. warrenensis*).

In addition to these typical Alpine attractions, bog and wetland sites within the area also feature interesting characteristic species; in addition to Large Heath (*C. tullia*), Marsh Fritillary (*E. aurinia*), Bog Fritillary (*B. eunomia*) and Scarce Fritillary (*E. maturna*) have been recorded.

Pre-alpine areas of Bavaria and Baden-Württemberg



Large Heath (*Coenonympha tullia*)



Bog Fritillary (*Boloria eunomia*)

The geology of the area immediately north of the Alps in Bavaria reflects the legacy of successive glaciations, with underlying debris and moraines providing the substrate for a landscape featuring large lakes and bogs.

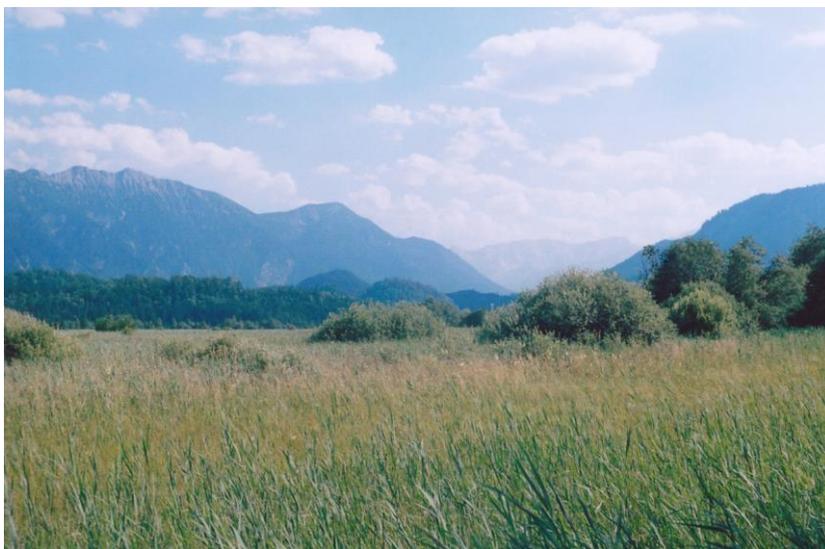


Although now largely given over to intensive agriculture, there remain various pockets, large and small, of suitable habitat, including both raised and lowland bogs, litter meadows and woodland patches, which sustain an interesting variety of specialist species.

The area extending south and south-west from Munich to the foothills of the Alps contains the greatest concentration of such locations.

Strong populations of Dusky Large Blue (*P. nausithous*) occur in this area, together with, rather more sporadically, Alcon Blue and Scarce Large Blue. Other characteristic species include Large Heath (*C. tullia*), Moorland Clouded Yellow (*C. palaeno*), Dryad (*Minois dryas*), Cranberry Blue (*Plebejus optilete*) and Bog Fritillary (*B. eunomia*), whilst threatened species such as Woodland Brown (*L. achine*), Cranberry Fritillary (*B. aquilonaris*), Violet Copper (*L. helle*) and Scarce Heath (*C. hero*) are also present.

Probably the most well-known and significant site representative of this area is Murnauer Moos nature reserve, lying just south-west of the town of Murnau am Staffelsee, and north-east of Oberammergau. Access is restricted to the pathways,



Murnauer Moos

but even from these good views of the typical species may (with luck) be obtained.

The pre-alpine geology of southern Bavaria continues into the neighbouring state of Baden-Württemberg, in the area known as Oberschwaben (Upper Swabia). Areas of bog and damp meadow, although less extensive than in Bavaria, are also to be found here, and the metapopulations of some of the specialist species mentioned above (most notably Cranberry Fritillary (*B. aquilonaris*), Bog Fritillary (*B. eunomia*),

Scarce Heath (*C. hero*), Large Heath (*C. tullia*) and Alcon Blue (*P. alcon*) extend here, although that of Violet Copper (*L. helle*) does not.

Southern Steigerwald

The Steigerwald is an extensive area of largely deciduous forest in north-western Bavaria. In parts of this, traditional woodland management practices (coppicing with standards) have been retained, and the forest is interspersed with more open areas of both dry and moist grassland and of scrub. The southern part of the forest, north of the towns of Bad Windsheim and Neustadt an der Aisch, is particularly rich in lepidoptera. The woodland provides habitat for species such as Poplar Admiral (*Limenitis populi*), Lesser Purple Emperor (*Apatura ilia*), Woodland Brown (*L. achine*), False Heath Fritillary (*Mellitea diamina*), Black Hairstreak (*Satyrium pruni*), Ilex Hairstreak (*Satyrium ilicis*), and Sloe Hairstreak (*S. acaciae*), together with Scarce Fritillary (*E. maturna*) and Scarce Heath (*C. hero*). In moist areas of grassland, species including Scarce Large Blue (*P. telejus*) and Dusky Large Blue (*P. nausithous*) may be found. Access is to the footpaths only; it is worth noting that some of the rare species, including Scarce Fritillary (*E. maturna*), seem to favour different areas at different times, so it can be worth visiting suitable locations more than once.



Scarce Fritillary (*E. maturna*)



Black Hairstreak (*S. pruni*)

There is a nature walk on Scarce Fritillary (*E. maturna*), other lepidoptera of light forests and saproxylic beetles of these forests in Bad Windsheim, <http://www.fraenkischer-albverein.de/nachrichten/item/632-familienwanderung-badwindsheim>.

Franconian and Swabian Jura

These limestone uplands (Fränkische Alb and Schwäbische Alb) stretch discontinuously on a roughly south-west to north-east axis in Baden-Württemberg and Bavaria. With their southerly situation and moderate altitude (max. 1,015m. in the Swabian Jura, 656m. in the Franconian), they provide one of the more favourable areas in Germany for species preferring xerothermic conditions, such as Southern White Admiral (*L. reducta*), Glanville Fritillary (*Melitea cinxia*), Spotted Fritillary (*M. didyma*), Blue-spot Hairstreak (*Satyrium spini*) and Baton Blue (*Pseudophilotes baton*). Areas of karst grassland sustain populations of Large Blue, together with fritillary species such as Assmann's Fritillary (*Melitea britomartis*), Nickerl's Fritillary (*Melitea aurelia*) and (in the Franconian Jura only) Knapweed Fritillary (*Melitaea phoebe*). One locality where species such as these, together with others such as Purple-edged Copper (*L. hippothoe*) and False Heath Fritillary (*M. diamina*), may be found is around Pottenstein in Bavaria, which features karst grassland and some damper areas.



Nickerl's Fritillary (*Melitaea aurinia*)



High Brown Fritillary (*Argynnis adippe*)

Another good butterfly area is the valley of the River Altmühl (Nature Park Altmühltal / Südliche Frankenalb) around the town of Eichstätt. Commonly encountered species of xerothermic conditions are, for example Adonis Blue (*Polyommatus bellargus*), Brown Argus (*Aricia agestis*), Spotted Fritillary (*M. didyma*), Assmann's Fritillary (*M.*



britomatis), Nickerl's Fritillary (*M. aurelia*), Blue-spot Hairstreak (*S. spini*) and Sloe Hairstreak (*S. acacia*).

Several species are extremely rare and have some of their last populations in Bavaria here, such as Damon Blue (*P. damon*), Hermit (*C. briseis*), Scarce Swallowtail (*Iphiclides podalirius*) and Baton Blue (*P. baton*).

There is a "butterfly path" with information on the local butterfly fauna, between the villages of Arnsberg, Böhming and Kipfenberg (<http://www.naturpark-altmuehltal.de/routen/schmetterlingsweg-21/>). Generally, along the valley there are many calcareous grasslands on the slopes, some of them intersected by paths, where butterflies can easily be observed (e.g. Gungoldinger Wacholderheide http://www.naturpark-altmuehltal.de/sehenswertes/gungoldinger_wacholderheide2284/). The most charismatic species of the region is Apollo (*P. Apollo*), which has important populations around Eichstätt. It mainly inhabits quarries, or more precisely the waste rock piles. Check for guided tours to its habitats. *Archaeopteryx* (the famous first bird in evolution) was found in this area, and there are exhibitions of the rich fossil findings.

Photos: S. Reisbach (Marsh Fritillary, Chequered Skipper, Black Hairstreak, Bog Fritillary); M. Thomas (others).



- 1 Bavarian Alps (central region)**
- 2 Allgäu Alps**
- 3 Berchtesgaden Alps**
- 4 Bavarian prealps/ lakes including Murnauer Moos**
- 5 Oberschwaben**
- 6 Southern Steigerwald**
- 7 Franconian Jura**
- 8 Franconian Jura**
- 9 Swabian Jura**