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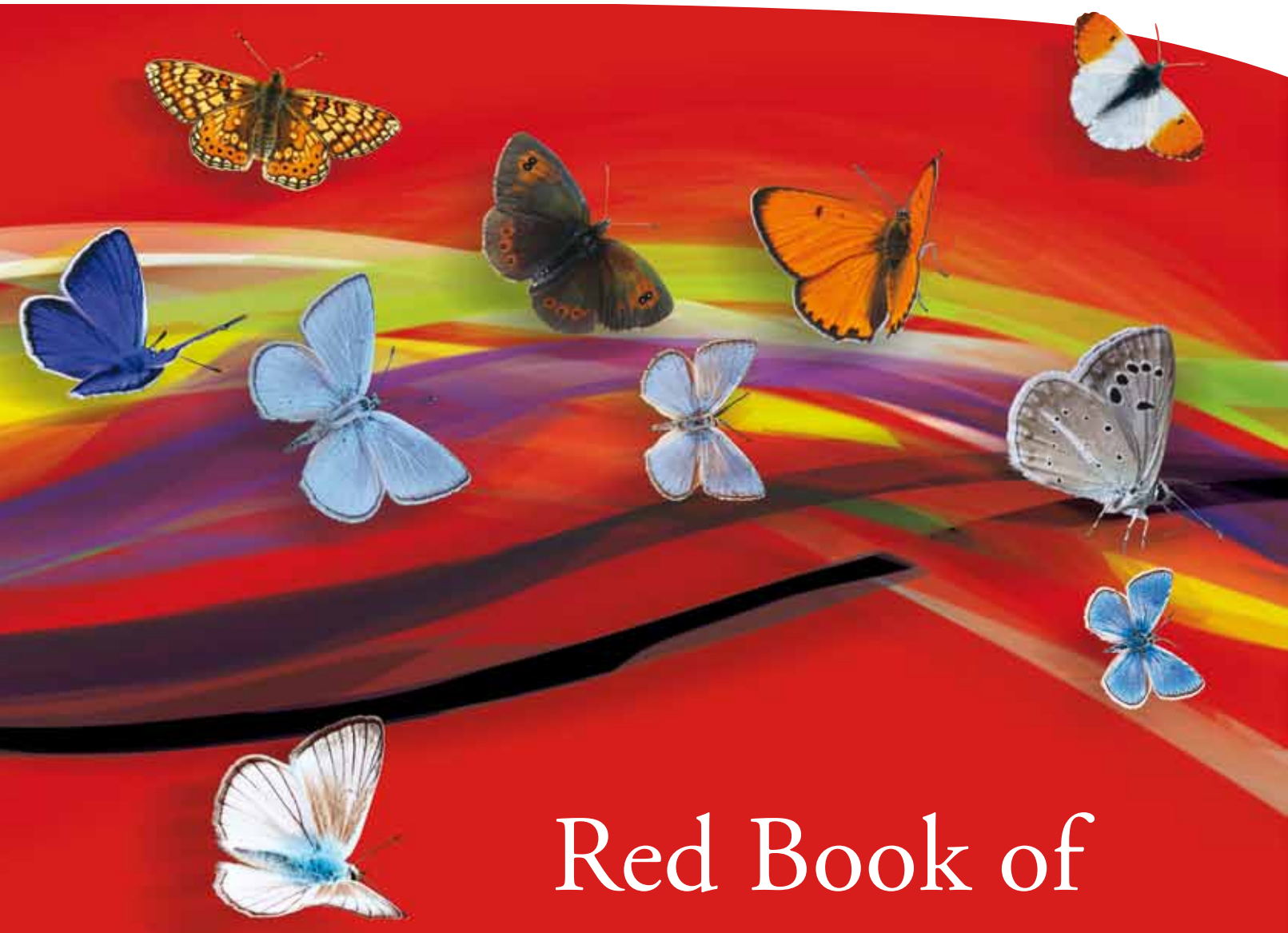

Red Book of Butterflies in Turkey

Evrim Karaçetin & Hilary J. Welch

IUCN
RED LIST
THE IUCN RED LIST OF THREATENED SPECIES
ERCİYES ÜNİVERSİTESİ 1978
Butterfly CONSERVATION EUROPE
De Vlinderstichting
Ministry of Economic Affairs, Agriculture and Innovation

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Karaçetin, E. & Welch, H.J. 2011

Red Book of Butterflies in Turkey

Doğa Koruma Merkezi, Ankara, Turkey

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Ortadoğu Sitesi, 1589. Sok. No:4, Yüzüncüyıl, Ankara / Turkey

Tel: (312) 287 8144

Fax: (312) 286 6820

www.dkm.org.tr

dkm@dkm.org.tr

Maps: Mustafa Durmuş, Alper Ertürk

Editing: Geoff Welch, Burcu Meltem Arık Akyüz

Graphic design: Güngör Genç

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Doğa Koruma Merkezi – Nature Conservation Centre

DKM works in partnership with government, NGOs, research institutions, experts and volunteers, aiming to develop national capacity and a sound scientific and technical basis for effective nature conservation. It encourages and facilitates the systematic collection and analysis of biodiversity and other data, and uses these both to identify priority areas for conservation, and to develop sustainable resource-use plans which will benefit biodiversity and people.

DKM is the Turkish representative of Butterfly Conservation Europe (BCE), an umbrella organization for a network of partners and individuals which aims both to stimulate and co-ordinate conservation action for butterflies, moths and their habitats across Europe. BCE and Dutch Butterfly Conservation are partnering DKM in the project *Developing a basis for the active conservation of Turkey's butterflies (2009-11)* funded by the Dutch Government's BBI-Matra programme.

http://www.bc-europe.org

Evrim Karaçetin began to develop an interest in butterflies in 1996 when she was a Biology undergraduate at the Middle East Technical University (METU), Ankara, a university with a 4,000 ha campus famous for its rich diversity of butterflies. After completing her Masters she spent five years in the United States working on her PhD, studying Ecology and Botany under Oregon State University's Environmental Science programme. On her return to Turkey she started her current job as an Assistant Professor in Environmental Sciences at Erciyes University. Ever since she was a student, Evrim has been involved in many nature conservation projects, acting as volunteer, researcher, advisor and teacher. Since 2007 she has worked on butterfly projects with DKM and Hilary Welch. Together with Ahmet Baytaş she is co-author of *Butterflies of Turkey Hand Book* published by Doğa Derneği in 2008.

Evrim Karaçetin ©Hülya Alkan

Hilary Welch is a founder member of DKM and has been visiting Turkey, to enjoy the landscapes and watch birds, since 1989. For 35 years her interest in natural history has developed and broadened as she has worked in nature conservation as a freelance consultant and volunteer, in the UK and abroad. In 2004 she moved from the UK to Turkey, and here a serious interest in butterflies began to develop, fuelled by the rich diversity of species and the publication of *A Field Guide to the Butterflies of Turkey*, by Ahmet Baytaş, in autumn 2007. She has been delighted to be able to combine her knowledge, experience and enthusiasm with that of Evrim and many other experts to develop the red list and this book, which she hopes will make a concrete contribution to the conservation of butterflies in Turkey.

Hilary J. Welch ©Geoff & Hilary Welch

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Didem Ambarlı and Ümit Durdu studying butterflies in Central Anatolia, following in the footsteps of a long line of curious naturalists –amateur and professional– who, over the last two centuries have collected the data on which this Red Book is based.

When embarking on this red list we knew that to produce the solidly researched document, which was our aim, we were going to be reliant on the willingness of many people to share with us their time and expert knowledge. Nevertheless, we were not prepared for the widespread enthusiasm and generosity we met with. Almost without exception data, photographs, knowledge, ideas and opinions were freely shared; all added immeasurable authority and value to the final assessments. The comment of Dominique Dumont, who contributed to the assessment of Bolland's Blue (Polyommatus bollandi) was typical of the sentiments we encountered: 'I'm happy to give as much information as possible to people who are studying my dear butterflies'.

Production of this red list has thus only been possible through the assistance of a large number of people. Contributions have been many and varied: sharing expert knowledge, contributing expert opinion, assessing species' accounts, providing butterfly records and photographs, tracking down and scanning obscure papers, collating, inputting and checking data and maps, and attending meetings and workshops. To everyone we express our sincere thanks. Whilst we take full responsibility for any errors or omissions in this red list, everyone listed below can take credit for the authority of the final product, which we sincerely hope will prove valuable in guiding butterfly conservation in Turkey for the next ten years and beyond. Our sincere apologies to anyone we have inadvertently omitted from the list:

Hülya Alkan, Didem Ambarlı, Hüseyin Ambarlı, Mukadder Arslan, Adnan Ataç, Ali Atahan, Özge Balkız, Onat Başbay, Ahmet Baytaş, Doğa Derneği, Dubi Benyamini, Bahar Bilgen, Can Bilgin, Frédéric Carbonell, Yahya Emin Demirci, Dominique Dumont, Ümit Durdu, Mustafa Durmuş, Wolfgang Eckweiler, Süleyman Ekşioğlu, Alper Ertürk, Halil Fırat, Bernard Fransen, Asuman Aydın Gem, Ian Green (Green Tours), Wolfgang ten Hagen, Münir Hançer, Emre Kaytan, Ersoy Kılıç, Yeşim Kınıkoğlu, Bernard Kranenbarg, Fatih Köleli, Atila Küçükala, Bahtiyar Kurt, Torben Larsen, Vladimir Lukhtanov, Dirk Maes, Alireza Naderi, Vazrick Nazari, Karen Nichols, Aslı Nur Bakan, Harry van Oorschot, Kadir Özdel, Özge Özden, Willy de Prins, Matt Rowlings, Szabolcs Sáfián, Turgut Sarıgül, Onur Sayar, Klaus Schurian, Josef Settele, Paul Severns, Simon Spencer, Oktay Subaşı, Chris van Swaay, Jose Tavares, Murat Telli, Seda Emel Tek, Neil Thompson, George Thomson, Ayşe Turak, Mehmet Ünlü, Albert Vliegenthart, Mecit Vural, Sigbert Wagener, Geoff Welch, Irma Wynhoff, Olcay Yeğin, Uğur Zeydanlı.

Special thanks are given to Reşit Akçakaya, Rudi Verovnik and Martin Wiemers. Throughout the two year process they have shared their technical expertise and knowledge with endless patience, and have always been available to answer questions. Their wisdom has been a constant support. Without them, completing this red list would quite simply not have been possible.

In the final two months of the production process we have been enormously grateful for the commitment and sheer hard work of the translators, Icarus Translation, and the red list's overall editor, Burcu Meltem Arık Akyüz.

We would also like to take this opportunity to give special thanks to the guest authors of the red list's introductory chapters: Reşit Akçakaya, Chris van Swaay, Mecit Vural, Can Bilgin and Ahmet Baytaş.

This is also the place to thank the staff of Erciyes University, Kayseri, whose cooperation enabled Evrim to participate in the project and the two of us to work together in her office at the university; in particular we would like to thank Prof. Dr Fahrettin Keleştimur (Rector) and Prof. Dr Mustafa Alçı (Dean, Engineering Faculty).

Finally we extend our thanks to the many individuals who have shared their butterfly records and made this red list possible. We hope this document will encourage more butterfly watchers to search for some of Turkey's little known species, to submit their records and thus facilitate the production of a revised red list in 2021.

Foreword

H. Reşit Akçakaya, *Ph.D.*
Professor, Stony Brook University, Department of Ecology and Evolution, New York, USA
Chair, Standards and Petitions Sub-Committee of the IUCN SSC Red List Committee

Reşit Akçakaya (left), Can Bilgin and Ayşe Turak at the Red List Workshop, 2009.

The world is facing a biodiversity crisis, with about one in every five species threatened with extinction. At the same time, we now have a better understanding of how the natural world forms a support system for humanity. International efforts such as the *Millennium Ecosystem Assessment* are documenting the vital importance of the services provided by the natural systems for human well-being. A drastic decline in biodiversity would destroy these critical ecosystem services.

Preventing a steep decline in biodiversity requires identifying species that are at the highest risk of extinction, and understanding the threats they are facing. The most comprehensive source of information on the global conservation status of species is the *IUCN Red List of Threatened Species*. The main attributes of the IUCN Red List are its global coverage (of about 56,000 species), the vast network of scientists contributing to its expansion, and the quantitative and transparent rules that are used to determine the red list status of species.

Although assessing the status of species is ecologically most relevant at the global scale, national red lists are very important for three reasons. First, the assessment of national endemics directly contributes to the global red list, as will be the case in this red list of Turkish butterflies. Second, data for global red-listing often comes from regional and national assessments, because in many cases these are the scales at which monitoring and research are carried out. Third, effective biodiversity conservation generally occurs nationally and locally. Even global conservation agreements such as the Convention on Biological Diversity rely primarily on conservation actions implemented nationally.

Historically, both global and national red lists have focused on charismatic animal groups such as birds and mammals, and more generally vertebrates. Recently, however, conservation groups have been paying more attention to other species groups. Invertebrates, which as a group represent about three quarters of biological diversity at the species level, are especially important as indicators of the state of biodiversity.

So, when I learned of plans for a Turkish national red list of butterflies, I was happy to be involved in its development. The resulting product is not only an important document for all the reasons discussed above, but also exceptionally well done. The project team worked diligently to collate, verify, and organize all the available data on Turkish butterflies. They applied the IUCN Red List Categories and Criteria and the associated guidelines to produce a science-based, objective, and transparent assessment of the conservation status of the butterflies of Turkey. This red list will not only be relied upon for developing sound conservation policy, but also increase public awareness about the status of biodiversity.

But the work is only beginning. First, there is the work of periodically updating this list, which requires contributions from everyone with relevant information on the occurrence, trends, and abundance of butterflies, and threats to their populations. Second, there is the work of putting this information to good use. One important use is developing conservation and recovery plans for threatened species. Other uses include developing research priorities based on the information gaps identified in this study, and analyzing the results to find patterns and trends such as the prevalence of different types of threats in different taxonomic groups and geographical regions.

Third, there is the work of developing red lists for other species groups, especially those that are not yet comprehensively assessed at the global scale. I believe this study of butterflies of Turkey will be a model for future national red lists of Turkey's fauna and flora.

The Importance of **Red Lists**

Chris van Swaay
Dutch Butterfly Conservation
Senior Author of the 1999 and 2010 European Red Lists

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Chris van Swaay (in red) at the Red List Workshop together with (left to right) Seda Emel Tek, Murat Telli and Süleyman Ekşioğlu.

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Alcon Blue (*Phengaris alcon)*

From the start of nature conservation, conservationists have searched for methods to determine the most important areas and species to focus their attention on. As we cannot protect everything everywhere, we have to make choices. Preferably these choices should be based on a scientifically sound method as well as good quality data. Red Lists have proven to be an excellent way to standardize this process and come to a useful prioritization of species for conservation action. Red Lists are coordinated by IUCN, the International Union for Conservation of Nature.

Up to 1994 every country, NGO, or person used its own criteria to determine species for their own Red List. As a result it was impossible to compare Red Lists from different regions and for different species, or bring them together to get a global overview. In 1994 the IUCN started with a scientific approach to come up with a standardized method to determine the risk of extinction that is applicable to all species. Red Lists are nowadays regarded as the most important tool to prioritize species conservation.

The goals of the IUCN Red List are to:

- Identify and document those species most in need of conservation attention if global extinction rates are to be reduced; and
- Provide a global index of the state of change of biodiversity.

The Red List of butterflies in Turkey will focus on the first objective. This Red List coincides with the new *European Red List of Butterflies* (van Swaay *et al*. 2010). This is a follow up to the first Red Data Book of European Butterflies (van Swaay and Warren 1999). Contrary to the Red Data Book, the new Red List does not include the whole of Turkey, but only the European part west of the Bosphorus. In Europe (excluding Asian Turkey), there are 482 species of butterflies, 451 of them being also found in the 27 member states of the EU. Almost a third of these species (142 species) are endemic to Europe (which means that they are unique to Europe and are found nowhere else in the world). Forty-one species occur only marginally on the European continent, while one species was introduced in the 1980s (*Cacyreus marshalli*, a species rapidly spreading in the Western and Central Mediterranean, soon to be expected in Turkey as well), all of them are considered as Not Applicable in this assessment. The highest diversity of butterflies is found in mountainous areas in southern Europe, mainly in the Pyrenees, the Alps and the mountains of the Balkans, where numerous restricted-range species are encountered (van Swaay *et al*. 2010).

Overall, about 9% of European butterflies are threatened in Europe. A further 10% are considered Near Threatened. Despite the lack of good trend data in some countries, the study shows that about a third (31%) of European butterflies have declining populations, while 4% are increasing and more than half of the species are stable. For the remaining 10%, the current information is too limited to define their overall population trend (van Swaay *et al.* 2010).

The main long-term threat for butterflies in Europe is the loss and degradation of suitable habitat as the result of changes in land-use, in particular intensification of agriculture and abandonment of land leading to invasion of shrub and trees. Climate change is already having an impact on several butterfly species and is likely to have a strong effect on many more in the future. In order to improve the conservation status of European butterflies and to reverse their decline, further conservation actions are urgently needed, in particular (van Swaay *et al.* 2010):

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Alcon Blue eggs on Cross-leaved Gentian (*Gentiana cruciata*)

- ensuring the adequate protection and management of key butterfly habitats and their surrounding areas (e.g. by the Natura 2000 network),
- drawing up Species Action Plans for the most threatened species,
- establishing monitoring programmes,
- improving land management policies such as the European Agricultural Policy, and
- revising national and European legislation, adding species identified as threatened where needed.

One of the spin-offs of the first Red Data Book (van Swaay and Warren 1999) was the identification of Prime Butterfly Areas in Europe (van Swaay and Warren 2003), where conservation efforts should be focused as a matter of urgency. A total of 431 Prime Butterfly Areas are distributed among 37 countries and three archipelagos, covering more than 21 million ha (1.8% of the European landcover). This first identification on a European level was followed by national assessments in Bulgaria (Abadjiev and Beshkov 2007) and Serbia (Jakšic 2008).

The European Prime Butterfly Areas on agricultural land or with typical grassland species, were one of the criteria used to determine areas of High Nature Value Farmland in Europe – HNV Farmland (Paracchini *et al.* 2008). Andersen *et al*. (2003) describe HNV farmland as: "Those areas in Europe where agriculture is a major (usually the dominant) land use and where that agriculture supports, or is associated with, either a high species and habitat diversity or the presence of species of European conservation concern, or both." It is very likely that large parts of Turkey would fulfill these requirements as well. Typically these are low intensity farming systems in marginal hill land where abandonment is the major threat. Without support, these systems, which support over half of Europe's butterflies, could vanish in a generation. For a sustainable future for Europe's high biodiversity, including butterflies, it is important that a better system of agricultural payments is constructed to maintain wildlife habitats on farmland and encourage environmentally sustainable production.

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Traditional mowing by scythe –seen here in the Kaçkar mountains, Artvin– creates a varied vegetation structure, perfect for a wide range of plants and butterflies, like Alcon Blue.

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A Short History of **Red Listing** in Turkey

Prof.Dr**. Mecit Vural**
Gazi University, Biology Department
Doğa Koruma Merkezi Scientific Committee Member

Assoc.Prof. **C. Can Bilgin**
Middle East Technical University, Biology Department
Doğa Koruma Merkezi Scientific Committee Member

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Can Bilgin (left) and Mecit Vural (in blue shirt) at the Red List Workshop, together with (left to right) Ayşe Turak, Özge Özden, Süleyman Ekşioğlu, Bahar Bilgen and Ümit Durdu.

With approximately 10,000 plant and several times more numerous animal species and high rates of endemism (Kence and Bilgin 1996, Turak *et al.* 2002), Turkey has been considered to have a high priority in several global biodiversity studies (Meyers *et al.* 2000, Mittermeier *et al.* 2004, Eken *et al.* 2006). It is, however, important to know which species should have priority at the country scale. If we can answer questions on habitat preferences, population trends and threats we can then prepare Red Lists and determine conservation priorities for different groups of organisms.

The first such list for Turkey was the work on birds published in 1987 by İ. Kiziroğlu (Kiziroğlu 1987). This paper was followed by the *Red Data Book of Birds of Turkey* published by the Turkish Society for the Conservation of Nature (Kiziroğlu 1993). However, in both these publications, and a revised version in 2008 (Kiziroğlu 2008), a categorisation system specific to German-speaking countries and based largely on population size was used instead of the more widely accepted IUCN categories and criteria. Failure to utilise a system that is standard across countries, based on clearly defined criteria, and with proven application value, unfortunately reduces the value of these works.

Among other groups in Turkey, the first 'red data' book on flowering plants was funded by the Turkish Society for the Conservation of Nature (DHKD). In 1989 just 275 copies of this book were published under the title *Türkiye'nin Tehlike Altındaki Nadir ve Endemik Bitkileri / List of Rare, Threatened and Endemic Plants in Turkey* (Ekim *et al.* 1989). In that year, various countries were preparing their own red lists and ultimately all information was compiled by the IUCN Species Survival Commission into the *1997 IUCN Red List of Threatened Plants*, published in 1998. This publication used data from 198 countries, including Turkey. According to this document –based on pre-1994 Red List categories– 33,798 (12.5%) of the 270,000 vascular plant species assessed were considered under threat. In Turkey, 1,876 (21.7%) of the 8,650 vascular plant species were threatened.

In 1994 Red List categories were revised and, accordingly, Ekim *et al.* 1989 was revised and published again in 2000 (Ekim *et al.* 2000). This work determined threat status for both Turkish endemics and for non-endemic plants with restricted ranges. For data it benefited both from the distribution data in Davis' *Flora of Turkey and the East Aegean Islands* (Davis 1965-1985, Davis *et al.* 1988) and that generated by 'Endemic Plants of Turkey', a project which involved about 30 researchers from 9 universities. However, the species assessments were largely based on observations and expertise of researchers, and did not fully follow the prescribed IUCN procedure.

The first attempt to cover all vertebrate species was the *Draft Red List of Threatened Animals of Turkey*, prepared for the European Economic Commission meeting in Antalya by the Undersecretariat for the Environment in 1991. In the 15 years following that report, a notable series of efforts endeavoured to introduce the new IUCN Red List system and criteria in Turkey, and to establish the necessary framework for its implementation (Bilgin 1995, 2002). The workshops and meetings, initiated by the Middle East Technical University (METU) and the Turkish Bird Research Society (KAD), and funded by the UN or UNDP, provided opportunities to transfer new concepts and approaches to both the experts in the Ministry of Environment and to academicians and other researchers. Among these initiatives, the Population Viability Analysis (PVA) workshop organised at METU on 12-14 May 1999; the Symposium on Bird Research and Nature Conservation organised in Ankara on 7-8 February 2002; and the Red List and Prioritisation Workshop that took place at METU on 10-11 March 2003 are considered to have been the most important.

Finally, the "National Red List Workshop" organized on 7-8 December 2006 under the aegis of the General Directorate of Nature Conservation and National Parks and with the participation of IUCN's Mediterranean Office, major nature conservation NGOs and university representatives, can be considered a milestone. As a result of this workshop the red list issue became a serious institutional concern and an 'Action Plan for Preparing Red Lists' was prepared with the involvement of 96 experts from universities, government and NGOs. The presence of Dr. H. Reşit Akçakaya, the head of the IUCN Standards and Petitions Subcommittee, either as an organiser or a trainer in almost all of these meetings has been crucial.

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The first red list of butterflies in Turkey was the *Tentative List of Threatened Species* (Koçak and Seven 1998). In this study, the pre-1994 IUCN categories, as used by Walter and Gillet (1998) for plants all over the world, were followed. 293 subspecies were considered, of which two were classified as EN (Endangered), four as RA (Rare), 33 as VU (Vulnerable) and 254 as IN (Indeterminate). Although the sources used were given as literature data, species distribution maps and the authors' personal experiences, lack of details for threats, population-habitat information and explanations as to why taxon were placed in each category, make this publication difficult to use for conservation. Carrying out assessments at the subspecies level, combined with an absence of additional species level assessments, limit its use further due to the disputed subspecies taxonomy of many butterflies. Furthermore, under the new (2001) IUCN categories, in order to perform assessments at the subspecies level and all levels below it, species level assessments are required.

The project recently completed by the Nature Conservation Centre (DKM) to assess the threat status of Turkish butterflies should be considered a step forward in the red listing process for Turkey due to the involvement of international experts, the meticulous treatment of each taxon, and the full and detailed documentation of decisions taken. The listing process that started with a technical workshop on 10-12 August 2009 at METU and culminated in the sharing of the findings through this publication, is exemplary for other similar efforts in the future.

Today, there is also need for the revision of Red Lists already published in Turkey. For plants, birds and other vertebrates, now it is not only possible to determine threat status with better, more detailed data but also to include into such lists many species described or split since then. In this context, it is encouraging that the Red List categories for plant species endemic to the Caucasus (including part of Turkey) are being determined through the collaboration of five countries in the region. This detailed work is currently under production and will provide an example for the assessment of other restricted range plant species in Turkey.

As a last word, we would like to emphasise the necessity of producing future Turkish Red Lists using a valid and accepted methodology, with as extensive consultation as possible, following a transparent and fully documented process. Only in this way will Red Lists be accepted and implemented as essential documents to protect the living natural resources of our country. We would like to congratulate those responsible for the production of *The Red Book of Butterflies in Turkey* for providing one of the most successful examples of this approach to date.

As agriculture intensifies, flowery roadside verges such as this can provide valuable semi-natural habitats and corridors for butterflies, but the most specialised species cannot survive here.

Butterflies: Beautiful & Important

Ahmet Baytaş

Ahmet Baytaş is Professor of Economics at Montclair State University, New Jersey and author of *A Fieldguide to the Butterflies of Turkey*, published by NTV in 2007.

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Ahmet Baytaş (left) with butterfly watchers Emre Kaytan and Hülya Alkan during butterfly identification training in Kayseri, 2008.

©Karen Nicols

Mofidi's Fritillary (*Brenthis mofidii*) occurs only in Hakkari and Iran where snow-melt is crucial for maintenance of a year-round water supply in its habitat. In the long-term, climate change may thus threaten this butterfly.

If you consider that barely 60 butterfly species have ever been recorded in the UK, that just over 700 are found in the US and Canada combined, and that Europe has under 500 regularly occurring species, you start to appreciate just how special Turkey is. On my first visit to the northeast, in one week and within an area of two square kilometres, I saw over 100 of Turkey's roughly 380 species. Nowhere else in the temperate zone have I seen so many butterflies in such a small area: not in the great wildernesses of the American West, the Canadian Rockies or the Swiss Alps.

I was also swept away by the breathtaking beauty of the northeast; its imposing mountains, magnificent alpine meadows and, above all, the extraordinary diversity of wildflowers, insects and birds. The combination of coniferous woodland margins and lush alpine and subalpine meadows, the dry and stony banks of the Çoruh River, and the flowery slopes along the main road from İspir over the mountains to Rize host 60 to 70 percent of all the butterfly species found in Turkey. And the butterfly numbers were astonishing. Around one small, muddy footbridge I found perhaps a thousand individuals of a couple of dozen species drinking minerals from the wet mud.

That first butterflying trip to Turkey was in 1999. Then I knew almost nothing about Turkey's butterfly fauna and did not know what to expect. The experience was unforgettable. As soon as I boarded my plane back home to New Jersey I was already planning my next trip. And before reaching the Atlantic Ocean, I had decided to work on a photographic field guide for Turkey.

But why should we save butterfly species? Why should we monitor butterfly populations? And why should we have a red list of Turkish butterflies? When answering such questions, I often prefer moral and aesthetic arguments to pragmatic ones. I believe that all living creatures have intrinsic value and deserve protection. Who doesn't love butterflies anyway? They should be protected because they are graceful, colourful, fragile, instantly familiar and universally popular, and because they have been associated with freedom and beauty for centuries all around the world. Of course, there are practical reasons as well. Butterflies happen to be excellent indicators of environmental health, which in turn is essential for human health. A decline in local butterfly populations often indicates a deterioration of our natural environment. Monitoring the diversity and number of local butterflies can thus be an important tool in environmental protection. Also, species diversity is clearly beneficial to us humans; each plant and animal species may possess unique or useful qualities that would be forever lost should it become extinct. Butterflies

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are important pollinators, and many species have vital relationships with ants, birds, lizards and other wildlife, which in turn are indispensible components of our natural environment. Finally, it is well established that the disappearance of even a single species may adversely affect the balance in an entire ecosystem, in which all living things are interrelated in complex ways.

Unfortunately, the destruction of natural habitats is continuing at an alarming rate in Turkey. We are rapidly losing many butterflies, and other wildlife, as the few remaining grasslands and heaths around large cities and smaller towns are being used for housing developments and shopping malls; as the wetlands are drained for agricultural or industrial use; as the valuable coastal scrub and dunes are destroyed for tourism; as the traditional natural agricultural practices are being replaced by intensive commercial agriculture and monocultures that require a heavy use of insecticides and pesticides; as the unsustainable and harmful mining practices and construction of dams and hydro-electric power plants destroy our unique natural habitats both in the Northeast and the Southeast; as increased commercialisation of fresh water resources is irretrievably destroying our riparian habitats throughout Turkey, and so on. The conservationists in Turkey are thus facing enormous challenges at this critical time.

As far as the butterflies are concerned, however, there is a bit of good news. Less than a decade ago, there were probably no more than two or three butterfly watchers in Turkey who could identify many butterflies in the field. There was almost no information on the identification, distribution and the status of the butterflies that was easily accessible to policy-makers and ordinary people interested in nature alike. Knowledge of butterfly identification and of their life histories, however, as well as a constituency that passionately cares about butterflies, are essential to their protection. Few people become passionate about creatures they do not know. Thankfully, today we have a good number of relatively young, energetic people who are interested in identification and conservation of butterflies. Books, posters and brochures on butterflies for the general public are becoming more readily available. And in DKM, we finally have a nature organisation that undertakes field surveys of and collects data on butterflies. As a result of the fieldwork of many butterfly watchers and the hard work of those at DKM, we now have a much better understanding of the distribution and the status of around 380 species of butterflies in Turkey, as well as this publication on the red list of butterflies in Turkey. There is no doubt that this publication will prove to be one of the most significant developments in the history of butterfly conservation in Turkey.

We need to continue to learn more about the rare and endangered species in Turkey, to reassess their status periodically, and help protect their habitats. We also need to encourage the public to reconnect with nature, and appreciate their local fauna and flora, so that they will try to preserve them. We can have a better chance to protect our natural habitats by exploiting the popular appeal of butterflies, which spontaneously arouse our conservationist instincts.

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Butterfly watchers in the Kaçkar Mts: left to right, Mukadder Arslan, Deniz Biriken, Halil Fırat, Asuman Aydın Gem, Bosse van Swaay and Paul Severns.

©Hale Binay

Osiris Blue
(Cupido osiris)

The Process of Compiling the **Red List**

Dr. **Evrim Karaçetin**
Erciyes University, Environmental Engineering Department

Hilary J. Welch
Senior Conservation Officer, Doğa Koruma Merkezi

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Evrim Karaçetin and Hilary Welch working on species assessments, August 2010.

The need for a Red List of Turkey's Butterflies

In a country as important for butterflies as Turkey – with around 380 species, 45 of them endemic and another 21 very nearly so – conserving butterflies is evidently a priority. However, 380 is a lot of species and for effective conservation in a world of limited and dwindling resources we need to invest wisely, to focus on the highest priorities where we can expect the best conservation return. To identify those priorities – the species, habitats, issues most in need of our attention – Red Lists are an indispensable tool.

The first regional prioritisation study in Turkey to include butterflies was the *GAP Biodiversity Research Project 2001-2003* (Welch 2004), implemented by DHKD (Turkish Society for the Conservation of Nature) and WWF-Turkey. This aimed to identify the priority areas for biodiversity conservation in Southeast Anatolia and had the good fortune to have considerable technical support from Sigbert Wagener, one of the three authors of Hesselbarth *et al.* (1995) (hereinafter referred to as 'Hesselbarth *et al.*'). In the absence of a national Red List, Dr Wagener strongly recommended ignoring both the global and European Red Lists and instead taking a national approach to priority setting using the distribution data presented in Hesselbarth *et al.* He worked at the subspecies level, grading each taxon according to its rarity in Turkey, deriving values from the number of squares it was recorded in. So a taxon which occurred in 50 or less (10x10 km) squares was considered 'rare', and one which occurred in 25 squares or less, 'very rare'.

This approach had the advantage of using only national data but still had its limitations. Later studies involving DKM members[1] continued to try to formularize prioritization, adding together endemism, a national rarity score – a version of the 'Wagener system' – and the international Red List categories. However, despite trying many different formulae, this combination has proved inappropriate for arriving at a national measure of priority and has always resulted in some relatively common species appearing rare, and thus coming out as a high priority.

Doğa Derneği's *Key Biodiversity Areas* (Eken *et al.* 2006) is a major site prioritisation study carried out at the national scale. For butterflies this study chose to use the only butterfly Red Lists then available; IUCN's global list (which included only 11 species occurring in Turkey) and the 1999 European Red List (which included the whole of Turkey but evaluated all species at a European scale). As a result, Green-underside Blue (*Glaucopsyche alexis*), which is extremely common in Turkey but threatened in Europe (van Swaay and Warren 1999), was identified as a priority species, whereas Balkan Fritillary (*Boloria graeca*), which this study has found to be Critically Endangered in Turkey but is considered of Least Concern in Europe, was excluded. Thus Red Lists have their limitations if used at a scale for which they were not intended.

While 1999-2008 was a period in which several studies set conservation priorities for butterflies, it was also a time when it became increasingly evident that species scoring, valuable tool though it is, is no replacement for a well-researched and systematically formulated national red list. However, the painstaking species-by-species appraisal this involves, using all available data and expertise to measure every taxon against strict criteria in the same systematic way, is a task not to be taken lightly.

So, in 2008 when DKM was assessing the elements to include in the project *Developing a basis for the active conservation of Butterflies in Turkey* (funded by the Dutch government's BBI-Matra programme), it was clear that this was the opportunity to develop a Red List of the Butterflies of Turkey. Most importantly, to ensure that the list could be used alongside the global and European lists, it was vital that it should follow the most recent IUCN guidelines and criteria.

1 Since 1999 DKM or its members have been involved in many of Turkey's site prioritisation studies, and since 2003 has managed most of those implemented by the Biodiversity Monitoring Unit of the Ministry of Environment and Forestry. These are organised under a national systematic conservation planning programme which aims to identify priority sites for conservation and to develop an achievable and sustainable regional conservation plan based on healthy biodiversity and a robust socio-economy. A key element in determining the priority sites is butterflies.

Karaçetin, E. and Welch, H.J. (2011). Red Book of Butterflies in Turkey. Ankara, Turkey: Doğa Koruma Merkezi. Available from: [www.dkm.org.tr]

Tackling taxonomy and revising the checklist

Species

Before work could begin on the Red List, there was a need to agree a single checklist of the species to be assessed. Experts in Europe who had been involved in developing the European Red List strongly advised working at species level. This would not only significantly reduce the number of taxa to be assessed, but also reduce the taxonomic complexity of the task. From a practical point of view, because the Red List would be a tool to guide practical conservation action, the species level was also preferable because it is a taxonomic level which is readily recognisable and can thus be conserved.

However, species continue to change and evolve, and this is nowhere more evident than in the group of 'blue' butterflies in the *Polyommatus* subgenus *Agrodiaetus*, the so-called 'anomalous' blues. There are around 50 species of *Agrodiaetus* in Turkey, more than half of them endemic, and almost all of them difficult to identify. Within this complex even working at species level was going to be complicated as it has been found that a morphological difference – or lack of it – does not necessarily indicate an individual belongs to a different – or the same – species. For this group it was thus particularly important to include the results of molecular studies when drawing up the list, though often these brought more problematic questions than definitive answers.

Existing lists

At the time work started in January 2009, two major lists of Turkish butterflies were available: Hesselbarth *et al.* (1995) – 363 species and Koçak and Kemal (2008) – 406 species.

Both the lists presented information on subspecies and both were used to inform the taxonomic arrangement and develop the list of taxa to be considered. In July 2009 Koçak and Kemal produced a second, updated list – this time at species level and including information on distribution – and this was consulted where there were differences of treatment between Koçak and Kemal (2008) and the other authorities. In many cases their 2009 list incorporated newly and widely accepted changes and thus removed areas of disagreement.

Of the two, the Turkish list most widely used by experts is that presented in Hesselbarth *et al*. Despite now being 15 years old, it remains a valuable and authoritative document because it is thoroughly researched and all supporting documentation for each species is provided. It was thus decided that the new checklist should be based on the Hesselbarth *et al.* list and, where there were choices, the Hesselbarth *et al.* name should be retained if no compelling reason for a change was found.

Additional lists consulted were those used for the 1999 and 2010 European Red Lists as, in parallel with the revision of the Turkish list, a similar revision was taking place in Europe. The new European list was being produced through wide consultation with experts and the two lead authors–Rudi Verovnik and Martin Wiemers–were also providing technical support for the revision of the Turkish list, so changes presented in the European list have generally, but not invariably, been included in the new Turkish list. The new European list became available in May 2010 (see http://www.bc-europe.org/category.asp?catid=9).

The first step was to bring together these four lists so they could be compared; this was done in a database (see *Red Listing* below) which then developed organically according to the needs of the red listing process.

When comparing the Hesselbarth *et al.* and Koçak and Kemal (2008) lists, apart from the fact that Koçak and Kemal's list incorporated changes and additions as the result of work since 1995, the principal differences stem from the tendency of Hesselbarth *et al*. to 'lump' taxa under one species (as subspecies), compared with Koçak and Kemal's approach of 'splitting' and thus elevating some taxa to species level; hence Hesselbarth's 363 species and Koçak and Kemal's 406.

To help resolve which of these approaches to follow, authoritative publications from neighbouring countries were consulted. The principal references were Tuzov *et al*. 1997 and 2000 (*Guide to the Butterflies of Russia and Adjacent Territories*) and Nazari 2003 (*Butterflies of Iran*). However, many other supporting documents and websites were also used to cross-check spellings and common usage, these are all listed elsewhere in this chapter. For the *Agrodiaetus* subgenus Martin Wiemers' PhD thesis (2003), was extensively used and helped guide a path through the

©Martin Wiemers

Koçak's Blue (*Polyommatus sertavulensis*) is a member of the taxanomically problematic subgenus Agrodiaetus.

Taxonomy Workshop, Kızılcahamam, August 2009: from left to right, Martin Wiemers, Chris van Swaay, Evrim Karaçetin and Rudi Verovnik.

many problems associated with this group. For newly described species papers were obtained from various sources and with the assistance of many people.

Taxonomic workshop

Once all this initial work had been done, a taxonomic workshop was organised in Ankara (8-9 August 2009) to finalise the species list. Participants were Chris van Swaay, Evrim Karaçetin, Hilary Welch, Martin Wiemers, and Rudi Verovnik. In the two days, the problematic species were discussed and decisions made.

In order to ensure an objective and consistent approach, according to the information available for each species one of the following rules was applied:

1- For a new taxon to be accepted, or for the status of an existing one to be changed, a scientific paper presenting the case for this should be available for review by the international entomological community. This rule was applied for all the newly described endemic species.

2- For changes of status or name of more widespread species, at least two of the principal authorities should also have adopted this change in their checklists.

A major benefit of the workshop was being able to use Martin Wiemer's experience to review and organise (as far as possible) the *Agrodiaetus* subgenus. Despite this, question marks remain over several Lycaenid species (marked with a single asterisk [*]) on the new checklist. Generally these are taxa in complex and unsettled taxonomic groups, where recent genetic work has raised questions about the relationships between the group members. In these cases it was agreed that a species' taxonomic status should follow the most recent published and scientifically supported opinion. This means that until the genetic work needed to answer the questions has been carried out and published – and can thus supersede any earlier published work – taxa of uncertain status should remain on the list.

In the year since the new checklist was drafted, taxonomy has continued to evolve. In the autumn of 2009 Nazari *et al.* (2009) published a paper on the molecular systematics and phylogeny of the Marbled Whites (*Melanargia* spp.); as a result of this four species (*M. syriaca, M. hylata, M. grumi* and *M. titea*) were downgraded to subspecies level and one subspecies, *M. titea wiskotti*, was upgraded, becoming an endemic species. Then, ten Hagen and Miller (2010) published a major article discussing the taxonomic situation of the Green Hairstreaks (*Callophrys* spp.) and, as a result one species was downgraded to a subspecies (*C. chalybeitincta* became *C. rubi chalybeitincta*), another species' distribution was re-evaluated (so all populations of *C. suaveola* in Turkey became *C. danchenkoi*) and a third species was split in two (so some populations of *C. rubi* became a new endemic species, *C. herculeana*). In addition to these major genus level changes, new scientific articles are being published and minor changes to species are continuously proposed. For the *Agrodiaetus* subgenus, papers on genetic work are particularly prolific.

The authors have tried to keep abreast of the literature, but recognise that some new papers may have been missed. Further, major papers are expected on both the *Hyponephele* and *Hipparchia* in the near future so this list will soon require further revisions. Thus it is acknowledged that no checklist can be considered final, only a presentation of current knowledge and opinion.

A detailed annotated checklist is in preparation, presenting and justifying all the changes made to the Turkish list during this review; it will be available to download from www.dkm.org.tr.

Karaçetin, E. and Welch, H.J. (2011). Red Book of Butterflies in Turkey. Ankara, Turkey: Doğa Koruma Merkezi. Available from: [www.dkm.org.tr]

Red Listing

Data preparation – ***Database***

A database was developed for storing, organising and analysing data on a species-by-species basis. The software used was FileMaker Pro 8.5, an easy to use but powerful database programme which allows online data entry for up to five users, and supports data output both in pdf and Excel formats. The database was organised in three related files: taxonomy, ecology & threats, and population & status. Later a fourth file was developed for storing the species records.

- *Taxonomy* included all the species lists compared for preparing the new checklist, together with lists of key taxonomy related references, and a summary of recent taxonomic issues and decisions.
- *Ecology & threats* included information on habitat, foodplant and ecology, threats and proposed conservation actions. Information from Turkey and from other countries in its range was included here.
- *Population & status* included details of the taxon's global distribution, a Turkish distribution map (see *Data age, quality and mapping* below), its calculated extent of occurrence (EOO) and area of occupancy (AOO) in Turkey, its threat category (globally, in Europe and in Turkey), and notes on its status.

The information came from a variety of sources (*See* table 1) and all were credited in the database so that the source of the information should not be lost. Most valuable were notes gleaned from scientific papers and from personal communications with species experts.

Additionally a references database was maintained using the software EndNote (Version X.0.2). This facilitated effective storage of and access to more than 900 scientific articles, the majority of which were held in electronic format.

Data preparation – ***Sourcing and organising data***

For species distribution data to be of value for nature conservation, each record of each species needs to include three basic pieces of information:

1- a recognisable species name (ideally the scientific name);
2- the date of the observation (minimally the year);
3- the locality (minimally the 10x10 km square coordinates or a precise location description).

Turkish butterfly data was found to come in a range of resolutions and formats, and not all of it fulfilled the minimal criteria listed above. However, particularly if the record related to a scarce species, every effort was made to find a way to include the record in the red list assessment process.

Table 1. Main references, used for almost every species and assessment

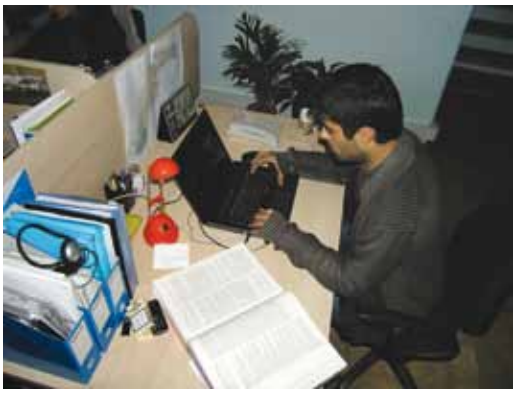
Reference citation	Used for
Baytaş, A. (2007) *A Field Guide to the Butterflies of Turkey.* İstanbul: NTV Yayınları.	Distribution and ecological data; English names
Baytaş, A. (2008) *Türkiye'nin Kelebekleri Doğa Rehberi.* İstanbul: NTV Yayınları.	Distribution and ecological data; Turkish names
Davis, P.H. (ed.). (1965-1985) *Flora of Turkey and the East Aegean Islands*. Vol 1-9. Edinburgh: Edinburgh University Press.	Larval foodplant distributions
Davis, P.H., Mill, R. and Tan, K. (1988) *Flora of Turkey and the East Aegean Islands*. Vol 10. Edinburgh: Edinburgh University Press.	Larval foodplant distributions
Eken, G. Bozdoğan, M., İsfendiyaroğlu, S., Kılıç, D.T. and Lise, Y. (eds.) (2006) *Türkiye'nin Önemli Doğa Alanları (Key Biodiversity Areas of Turkey).* Ankara, Turkey: Doğa Derneği.	Threats
Hesselbarth, G., van Oorschot, H. and Wagener, S. (1995) *Die Tagfalter der Türkei*. Bocholt, Germany: Selbstverlag Sigbert Wagener.	Distribution, taxonomy, identification and ecology, references
Koçak, Ö.A. and Kemal, M. (2008) Checklist of the Diurnal Lepidoptera of Turkey. *Priamus Supplement*, No:15. The Centre for Entomological Studies Ankara.	Taxonomy (this list at subspecies level)
Koçak, Ö.A. and Kemal, M. (2009) Revised Checklist of the Lepidoptera of Turkey. The Centre for Entomological Studies Ankara. *Priamus Supplement,* No:17, pp.49-68.	Distribution by province (this list at species level)
Koçak, Ö.A. and Kemal, M. (2009a) Revised list of the species of the Lepidoptera carrying vernacular names in Turkish language. The Centre for Entomological Studies Ankara. *Cesa News*, 52, pp.64-109.	Turkish names of species not included in Baytaş (2008)
Koçak, Ö.A. and Seven, S. (1998) A Tentative List of the Threatened Butterflies in Turkey. Miscellaneous Papers. No:52. The Centre for Entomological Studies Ankara.	Threat categories imported to database for reference
Kudrna, O. (2002) *The Distribution Atlas of European Butterflies*. Apollo Books.	European distribution
Özhatay, N., Byfield, A. and Atay, S. (2005) *Türkiye'nin 122 Önemli Bitki Alanı*. İstanbul: WWF Turkey.	Threats
Nazari, V. (2003) *Butterflies of Iran.* İran: Dayereh-Sabz.	Iranian distribution, taxonomy
Tolman, T. and Lewington, R. (1997) *Butterflies of Britain and Europe*. London: HarperCollins.	Distributions, habitat preferences, checking English names
Tshikolovets, V.V. (2003) *Butterflies of Eastern Europe, Urals and Caucasus. An illustrated guide*. Kiev, Ukrania: Vadim V. Tshikolovets.	Distributions
Tuzov, V.K., Bogdanov, S.V., Devyatkin, A.L., Kaabak, L. V., Korolev, V. A., Murzin, V.S., Samodurov, G. D. and Tarasov, E. A. (1997) *Guide to the Butterflies of Russia and Adjacent Territories* (Lepidoptera, Rhopalocera) *Volume 1.* Hesperiidae, Papilionidae, Pieridae, Satyridae. Sofia, Moscow: Pensoft.	Distribution, ecology, taxonomy
Tuzov, V.K., Bogdanov, S.V., Churkin, A.V., Dantchenko, A. V., Devyatkin, V.S., Murzin, V.S., Samodurov, G.D. and Zhdanko, A.B. (2000) *Guide to the Butterflies of Russia and Adjacent Territories* (Lepidoptera, Rhopalocera). *Volume 2.* Libytheidae, Danaidae, Nymphalidae, Riodinidae, Lycaenidae. Sofia, Moscow: Pensoft.	Distribution, ecology, taxonomy
van Swaay, C.A.M. and Warren, M.S. (1999) *Red data book of European butterflies* (Rhopalocera). Nature and environment. Strasbourg: Council of Europe Publishing, No. 99.	Information on species assessed for the European list in 1999
Verovnik, R. Wiemers, M., Balletto, E., Coutsis, J., Karsholt, O., Kudrna, O., Lopez Munguira, M., Šašic, M., van Nieukerken, E.J. and Wahlberg, N. (2010) *Revised List of European Butterflies*. Taxonomy Commission of Butterfly Conservation Europe. [Online]. Available from: [http://www.bc-europe.org/category.asp?catid=9].	Taxonomy

Data preparation – ***Data resolution and coordinate system***
It was decided to map species' distributions by 10x10 km squares (the scale used by Hesselbarth *et al.*) using Arc GIS 9.2 software, and to use the same scale to calculate the EOO and AOO of each species using RAMAS Red List Professional software modules Spatial Analysis and RAMAS Red List 3.0 ©Applied Biomathematics. All data which could be assigned to 10x10 km squares were thus organised in one common Excel format, a total of more than 70,800 records.

Although all records followed the same coordinate system (UTM), there were two datums involved (WGS84 and ED50). This was easily rectified and all records were converted to one datum (WGS84). More problematic was that, from west to east, Turkey falls in four UTM zones (35-38) so the easting coordinates repeat at least three times (see the coordinates across the top of the map on the inside back cover). One zone, and a grid in metres or kilometres, was important for both mapping the data in Arc GIS and for calculating the extent of occurrence in RAMAS. Thus a continuous coordinate system was produced for Turkey, which looked like UTM but which used only coordinates derived from zone 36. So instead of having four zones from west to east, each with coordinates running from 0300000-0700000, there was a single coordinate system of consecutive numbers running from -0089664 (İzmir in the west) to 1530837 (Hakkari in the east). Using this numbering system, revised coordinates were calculated for every record.

Table 2. Data sources and formats

Data source	Contains	Resolution	Procedure for adding to the data set	No. of records
Hesselbarth *et al.* 1995	All known published and unpublished records up to 1994.	10x10 km square	Permission was obtained to digitise the data; scans were converted to text using Abbyy OCR (Optical Character Recognition) software, extracted to Excel (via macros developed by Neil Thompson), and data gaps and errors corrected by hand.	55,700+
DKM fieldwork	Kaçkar Mountains and Anatolian Diagonal records, 2008	Point coordinates	Provided in Excel. Ready to use.	7,500+
Unpublished data from butterfly watchers, scientists, Green Tours trip reports	Records since 1995	Locality name, 10x10 km square or point coordinates	Most were provided in Excel. Required reformatting, standardisation of species names, checking and identification of localities via Google Earth.	5,600+
Published data in scientific papers	Data for newly described species	Locality name or point coordinates	Most data was entered manually to Excel, localities identified and coordinates allocated via Google Earth	2,000+
Koçak and Kemal (2009), CESA publications, www.kelebek-turk.com and www.leptr.org	Recent records, records from new localities, records of new species for Turkey.	Province	Resolution too coarse to incorporate in the main data set; separate Excel file developed which facilitated mapping by provinces.	5,000+



Alper Ertürk working on digitising the Hesselbarth *et al.* data set.

Those data where the only location information was the province name could not be incorporated in the main data set. These came largely from Koçak and Kemal (2009), and from websites (e.g. www.kelebek-turk.com, www.leptr.org, www.trakel.org). Koçak and Kemal (2009) proved most difficult to use as it also did not include any dates. However, since it was known that Hesselbarth *et al.* (1995) had been well-researched, the decision was made to assume that any new provinces listed for a species by Koçak and Kemal (2009) were likely to represent records since 1995. Since these data frequently changed the current distribution picture – by providing new records from new provinces, or by providing recent records from provinces where the species was thought to be extinct – it was important to include them. However, because almost all these records had no supporting data, for species with complex or changing taxonomy the decision was occasionally made not to use these data as it was impossible to know which period of taxonomic thinking records related to. For the Red List, the greatest value of these records was a) in interpreting whether or not a species' range might be declining, and b) in calculating the area of occupancy; a record from an

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additional province could, at minimum, be treated as one additional locality and be used to fine-tune the final area of occupancy figure.

Data preparation – ***Data age, quality and mapping***

The data set covers a period of more than 230 years. The oldest record in Hesselbarth *et al.* is 1777, with a further 1,600 records from the 19th century and 15,200 in the period from 1900-1980. Normally IUCN suggests that data used for assessing species be no more than 10 years old, but if this requirement was followed there would have been many gaps on the map, even for very common species, as in some areas – particularly in the west – there were no documented records since the 1980s. After some discussion, and considering the limitations of the data, it was decided to divide it into three periods:

- Up to and including 1979 (See map 1 solid grey circles);
- 1980-1994 inclusive (See map 1 solid dark maroon circles);
- 1995-2009; although the cut-off date for records was 2009, a small number of significant records from 2010 were also included (*See* map 1 solid bright red circles).

Other factors which it was considered valuable to present on the species maps were:

- Systematically collected data – this applied to the DKM 2008 data collected along the Anatolian Diagonal and from the Yusufeli Kaçkar Mountains (See map 1 solid dark red circles).
- Squares which had been visited but which had no records of the species – this would indicate that the species (particularly if it was easy to detect or generally common) was probably absent (See map 1 open circles).
- Provinces with records – this made it possible to map the data for which only province level information was available (See map 1 grey provinces).

Map 1 and the key below presents a final map for a common and widespread species. Due to the colour-coding of the various records the localities of recent records and the influence (and bias) produced by the systematically collected DKM data is clear. These factors could thus readily be considered during the assessments.

For the published Red List it was decided to present species maps at province resolution only – since IUCN prefers not to make precise distribution data for threatened species widely available – but to make the maps more useful by adding an indication of data age. Thus on these maps the data is divided into the two main periods used for the assessments: 1) up to 1979 and 2) since 1980.

Species assessments – ***Red List Workshop***

During the development of the project proposal, Reşit Akçakaya (Professor, Department of Ecology and Evolution, Stony Brook University, New York, USA and Chair of the Standards and Petitions Sub-Committee of the IUCN SSC Red List Committee) had agreed to provide technical support for the development of the Red List. This included facilitating a workshop which would guide the start of the species assessment process and train the participants in how to apply

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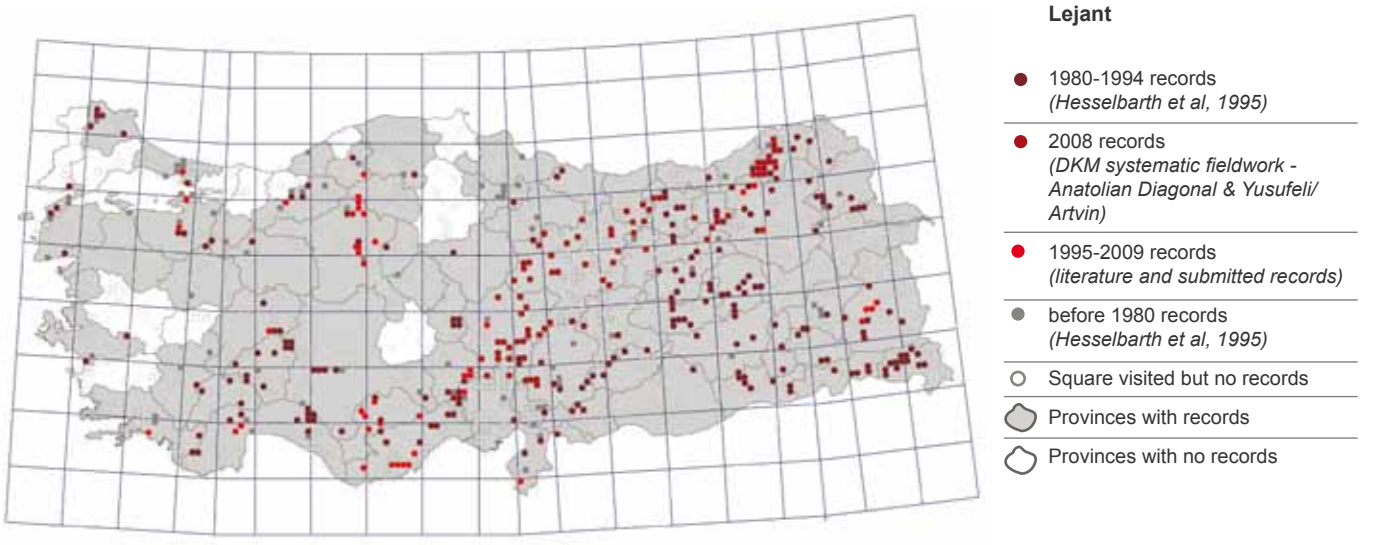
Cardinal (*Argynnis pandora*)

Map 1. Detailed distribution map for Cardinal (*Argynnis pandora*), assessed as LC (Least Concern)



Red List Workshop: from left to right, Reşit Akçakaya, Uğur Zeydanlı, Özge Özden, Yahya Emin Demirci, Murat Telli, Chris van Swaay, Martin Wiemers, Rudi Verovnik, Can Bilgin, Evrim Karaçetin, Alper Ertürk.

IUCN's 2001 Red List Categories and Criteria: Version 3.1 at the regional level.

The Red List Workshop took place on 10-12 August 2009, at the Middle East Technical University, Ankara. A wide range of national and international experts on red listing and butterflies were invited: table 3 presents the final working group members.

During the three day workshop, rapid assessments of 90 species which presented a range of different problems were carried out:
- globally threatened species;
- species threatened in Europe;
- Turkish endemics;
- species rare in Turkey but common elsewhere;
- species with a complex taxonomy (from the subgenus *Agrodiaetus*).

The workshop covered the steps of calculating the EOO and AOO using RAMAS Red List Professional software module Spatial Analysis, and used the available literature and expert knowledge present to understand each species' status, habitat preferences, and identify potential threats (See the Glossary of IUCN terminology in the Appendices and the IUCN guidelines at www.iucnredlist.org for detailed explanations of the terms EOO and AOO).

After the workshop, the remaining species were assessed by the principal authors and a draft threatened species list was prepared. These rapid assessments identified the LC (Least Concern) and NA (Not Applicable) species and assigned an initial threat category to the remainder.

*Species assessments – **AOO scale correction***

The rapid assessment process had identified a group of 53 'borderline' threatened species which have relatively restricted or sparse distributions in Turkey and for which the AOO might thus be critical factor in deciding their threat category. The AOO is calculated by multiplying the number of localities at which a species has been recorded by the locality size (area). However, although each butterfly record was allocated to a 10x10 km square, this did not necessarily mean that it was likely to be

Table 3. Red List Working Group members

Name	From	Role in workshop
H. Reşit Akçakaya PhD	Professor, Stony Brook University, Dept of Ecology & Evolution, New York, USA Chair, Standards & Petitions Sub-Committee of the IUCN SSC Red List Committee	Facilitator
Dr Can Bilgin	Dept of Biology, Middle East Technical University, Ankara	Chairman
Chris van Swaay	De Vlinderstichting, Netherlands; senior author of the 1999 and 2010 European Red Lists of Butterflies	Expert
Dr Martin Wiemers	Dept of Community Ecology, Helmholtz Centre for Environmental Research, Halle (Germany); expert on the *Polyommatus* subgenus *Agrodiaetus*, joint lead author of the *Revised List of European Butterflies* 2010; co-compiler of the *European Red List of Butterflies* 2010	Expert
Dr Rudi Verovnik	Dept of Biological Sciences, Ljubljana University (Slovenia); joint lead author of the *Revised List of European Butterflies* 2010, and co-compiler of the *European Red List of Butterflies* 2010	Expert
Dr Özge Özden	Faculty of Agricultural Sciences and Technologies at European University of Lefke, Cyprus	Butterfly specialist
Dr Mecit Vural	Botanist, Dept of Biology, Gazi University, Ankara; co-author of the Red List of Threatened Plants in Turkey	Botanist
Dr Evrim Karaçetin	Butterfly specialist, Erciyes University, Kayseri	Butterfly specialist
Hilary Welch	Butterfly Project Manager, Senior Conservation Officer, DKM, Ankara	Project Manager
Alper Ertürk	Biodiversity Data Manager and GIS specialist, DKM Ankara	Data Manager
Didem Ambarlı	Grassland Conservation Programme Coordinator, DKM, Ankara	Butterfly watcher
Adnan Ataç	Butterfly watcher, Ankara	Butterfly watcher
Bahar Bilgen	Butterfly watcher, Istanbul	Butterfly watcher
Yahya Emin Demirci	Butterfly watcher, Tokat	Butterfly watcher
Ümit Durdu	Biology student, Kars	Butterfly watcher
Süleyman Ekşioğlu	Bird Research Society (KAD), Ankara	Butterfly watcher
Seda Emel Tek	Biology graduate, Ankara	Butterfly watcher
Murat Telli	PhD. in Biology, Ankara	Translator

Karaçetin, E. and Welch, H.J. (2011). Red Book of Butterflies in Turkey. Ankara, Turkey: Doğa Koruma Merkezi. Available from: [www.dkm.org.tr]

present throughout the square (an area of 100 km^2). Depending upon its behaviour and habitat preferences, its actual occupancy of the square could be expected to be a lot less, and for this IUCN recommends considering scale correction.

For each of the 53 species the task was thus to decide what the average occupancy of each 10x10 km square was likely to be. Expert input was obtained for this process through:

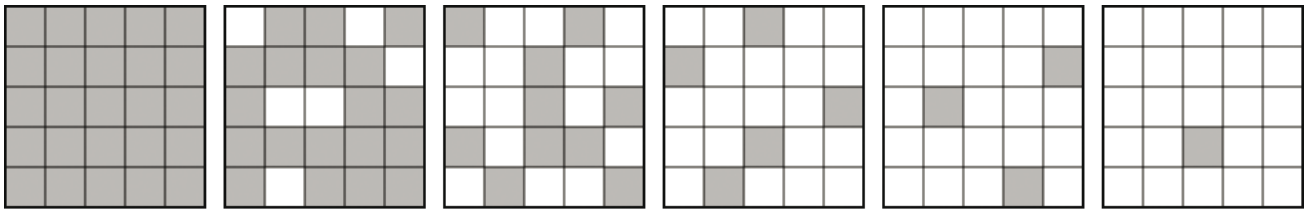
1. A small Scale Correction Workshop held at the end of Butterfly Conservation UK's 6th International Symposium (Reading, UK, 25-28 March 2010). Participants at the workshop were Annabelle Cuttelod (IUCN), four butterfly watchers with knowledge of Turkish butterflies: Martin Davies, Peter Russell, Szabolcs Sáfián and Rudi Verovnik; plus Evrim Karaçetin and Hilary Welch. Nineteen species were considered by this group.
2. Email correspondence with Rudi Verovnik and Martin Wiemers. They considered the remaining 34 species.

To simplify and standardise the task a visual aid was produced. Since the minimum occupancy for any species permitted by IUCN is 4 km^2, a square, representing the standard 10x10 km square used for mapping species distribution, was subdivided into 25 squares, each of 2x2 kms (*See* figure 1). Six such 10x10 km squares were drawn, and in each a different number of 2x2 km squares were shaded giving a choice of occupancy options ranging from 5-100% (*See* figure 1).

There were various factors which could affect the number of records (and thus the AOO) and, because of the low observer effort in relation to the size of the country, these had to be considered and interpreted species-by-species. Therefore experts were asked to consider the following factors while selecting the occupancy:

- Accessibility of the species' habitat (e.g. above 2,500 m);
- Availability of suitable habitat;
- Detectability of the species;
- How difficult the species is to identify;
- Flight period; early species tend to be under-recorded because few butterfly watchers are in the field.

Figure 1. Scale correction: options for the number of 2x2 km squares in which a given species is considered likely to be present in any one 10x10 km square



Species assessments – ***Assessment steps***

With the data preparation work completed, the task of researching and writing detailed species assessments for all 95 threatened species was initiated. The following steps were followed for each species according to the information available.

Every assessment was unique, but with 95 species to assess it was not possible to devote the same amount of time to every species. Inevitably the problematic species received the most attention. As an example, the process of assessing Bolland's Blue (*Polyommatus bollandi*) is presented below.

Caucasian Apollo (*Parnassius nordmanni*) is seldom recorded because it has a very restricted range in the extreme NE and occurs only above 3,000 m.

©Adnan Ataç

Subject	Source of information	Action
Habitat, threats, population size	Those known to have seen the species: species' authorities, authors of recent papers, butterfly watchers	Contacted (usually by email or phone) and correspondence initiated; the information obtained added to the butterfly database
General threats to species	Scientific papers, popular articles, other media (including documentaries)	Information added to the butterfly or references database as appropriate
Threats at sites with butterfly records	Google Earth with a UTM grid overlay: the localities of butterfly records were marked and checked for damaging activities (mining, dams, urban growth, road improvements).	Information added to the butterfly database
Threats at priority sites for nature conservation	Google Earth with an overlay of polygons of Key Biodiversity Areas (KBAs – provided by Doğa Derneği): if a species was recorded in a KBA, the threats identified for the KBA (in Eken *et al.* 2006) were reviewed. A similar process was carried out for Important Plant Areas (IPAs) (Özhatay *et al.* 2005), but without the benefit of a Google Earth overlay.	Threats assessed against what is known about the butterfly's habitat preferences and ecology; likely affect of the threat on the butterfly evaluated.
Threats – hydro-electric schemes (HES), mining	DSİ web site, scientific articles, Environmental Impact Assessments, General Directorate of Mining Affairs, online newspapers and general web searches, Doğa Derneği's map of all planned HES.	Mining and HES localities, number and size considered in the evaluation process.
Threat evaluation	Species expert (where available) consulted on the likely affects of the threats on the butterfly.	Information added to the assessment.
Range and status outside Turkey	Experts in neighbouring countries	Information added to the assessment.
Assessment evaluation	Species' experts; all experts approached agreed to be assessors and actively contributed to the assessment(s). A list of assessors can be found at the start of the threatened species assessments (page 19).	Completed (draft) assessments circulated for comment and input.
Final assessment	Final text for each species edited and endemic species submitted to IUCN as a global assessment. With the help of authorities in neighbouring countries three near endemic species were also assessed globally and submitted to IUCN.	Global assessments submitted to IUCN for approval and adding to the global list.

Table 4. Species assessment steps

©DKM Archive

Strict control of damaging activities such as rubbish dumping and mining are vital for the survival of the Critically Endangered Bolland's Blue (*Polyommatus bollandi*) in the Amanos Mountains.

Bolland's Blue (*Polyommatus bollandi*) Assessment Process

In the first analysis Bolland's Blue was listed as DD (Data Deficient) because the only known information was a paper describing the species, published in 1998, in which the description of the type locality was unclear so its whereabouts in Hatay could not be pin-pointed. The principal authors thus decided to contact Ali Atahan, an experienced butterfly watcher from Hatay, and from him they learnt that he had looked for the butterfly without success. However, using his local knowledge and Google Earth he shared the coordinates of localities where he considered the butterfly might be present due to their similarity to the original habitat description. When these coordinates were plotted in Google Earth it was noted that in the close vicinity there was an opencast mine, a wildlife protection area and a radar station. This, together with the information on threats in the KBA book (Eken *et al.* 2006), made it clear that the species might well be threatened but to assess it it was vital to know exactly where it occurred. As mining might be an important threat, the principal authors immediately communicated with Onat Başbay, a mining engineer and experienced butterfly watcher from Ankara. He was able to provide information on mining activities in the region and to give some insight to their potential influence on the butterfly's habitat.

Still the exact locality of the butterfly was unknown and, since the only records of the species dated from when it was first described in 1998, the species authoriy, Dominique Dumont, seemed to be the only source of information. Enquiries to butterfly watchers in Belgium revealed no one who knew Dumont so, although there seemed little chance that the email address given at the end of the scientific paper would still be extant, an email was sent. Within three days a response was received from Dumont, including the precise coordinates of the type locality, more information on habitat and ecology and a copy of a second paper, on the female, published in 2000. With this information mining was now considered to be a very real threat.

Combining all this information an assessment was written and circulated to the assessors (by now Ali Atahan, Dominique Dumont and Onat Başbay). Their responses were incorporated and the final text was submitted to IUCN as an assessment for the global red list.

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Melanargia *wiskotti* occurs only in the Mediterranean coastal area of Mersin and Adana where it is threatened by the spread and intensification of building developments and agriculture.

Threatened Species

Table 5. The complete list of Regionally Extinct (RE), Threatened (CR, EN, VU), Near Threatened (NT) species in Turkey

Endemic: Global distribution restricted to Turkey.
Near Endemic: More than 60% of the global distribution in Turkey.

Scientific	English	Endemicity	Threat category	Criteria
Polyommatus caeruleus	Caeruleus Blue		RE	
Polyommatus bollandi	Bolland's Blue	Endemic	CR	B1ab(iii)+2ab(iii)
Plebejus rosei	Rose's Blue	Nr Endemic	CR	B1ab(i,ii,iii)+2ab(i,ii,iii)
Boloria graeca	Balkan Fritillary		CR	B1ab(iii)+2ab(iii)
Aricia torulensis	Turkish False Argus	Endemic	EN	B1ab(ii,iii,iv)+2ab(ii,iii,iv)
Polyommatus dama	Mesopotamian Blue	Endemic	EN	B1ab(iii)+2ab(iii)c(iv)
Polyommatus theresiae	Theresia's Blue	Endemic	EN	B1ab(iii,v)+2ab(iii,v)
Polyommatus tankeri	Tanker's Blue	Endemic	EN	B1ab(iii)+2ab(iii)
Polyommatus merhaba	Hi Blue	Endemic	EN	A3c
Callophrys mystaphia	Miller's Green Hairstreak	Nr Endemic	EN	B2ab(iii)
Polyommatus diana	Diana Blue	Nr Endemic	EN	B2ab(iii)
Maniola halicarnassus	Halicarnas Brown; Thomson's Meadow Brown	Nr Endemic	EN	B1ab(iii)+2ab(iii)
Colias caucasica	Caucasian Clouded Yellow		EN	B1ab(iii)+2ab(iii)
Satyrium hyrcanicum	Hyrcanian Black Hairstreak		EN	A3c
Apharitis cilissa	Levantine Silver-Line		EN	B2ab(iii)
Phengaris nausithous	Dusky Large Blue		EN	B2ab(iii)
Aricia teberdina	Georgian False Argus; Caucasian Silvery Argus		EN	B1ab(iii)+2ab(iii)
Euphydryas orientalis	Steppe Fritillary		EN	B1ab(i,ii,iii)+2ab(i,ii,iii)
Spialia osthelderi	Osthelder's Skipper		EN	B1ab(iii)+2ab(iii)
Polyommatus artvinensis	Artvin Blue	Endemic	VU	A3c
Polyommatus lycius	Lycian Blue	Endemic	VU	D1+2
Polyommatus iphicarmon	Iphicarmon Blue	Endemic	VU	D2
Melanargia wiskotti	–	Endemic	VU	B1ab(i,iii)+2ab(ii,iii)
Hyponephele urartua	Urartuan Steppe Brown	Endemic	VU	B2ab(iv)
Zerynthia caucasica	Caucasian Festoon		VU	B1ab(iii)+2ab(iii)
Lycaena ottomana	Ottoman's Copper		VU	B2ab(iii)
Polyommatus ciloicus	Cilo Blue		VU	D2
Aricia hyacinthus	Anatolian False Argus	Endemic	NT	B2a
Polyommatus guezelmavi	Beautiful Blue	Endemic	NT	B1a+2a
Erebia melancholica	Alpine Ringlet	Nr Endemic	NT	B2b(iii)
Coenonympha symphyta	Lederer's Heath	Nr Endemic	NT	B2b(iii)
Zegris eupheme	Sooty Orange Tip		NT	A3c
Lycaena dispar	Large Copper		NT	B2b(iii)
Scolitantides orion	Chequered Blue		NT	B2a
Melitaea aurelia	Nickerl's Fritillary		NT	B2b(iii)
Erebia ottomana	Ottoman Ringlet		NT	B2a
Satyrus parthicus	Caspian Satyr		NT	B2a
Muschampia plurimacula	Maculated Skipper		NT	B2a

Data Deficient Species

Table 6. The complete list of Data Deficient (DD) species in Turkey

Endemic: Global distribution restricted to Turkey.
Near Endemic: More than 60% of the global distribution in Turkey.

Scientific	English	Endemicity	Threat category
Callophrys herculeana	–	Endemic	DD
Polyommatus dezinus	Hakkari Chalk-Hill Blue	Endemic	DD
Polyommatus buzulmavi	Ice Blue	Endemic	DD
Polyommatus actis	–	Endemic	DD
Polyommatus cilicius	Cilician Blue	Endemic	DD
Polyommatus haigi	–	Endemic	DD
Polyommatus sertavulensis	Koçak's Blue	Endemic	DD
Polyommatus sigberti	Sigbert's Blue	Endemic	DD
Polyommatus dantchenkoi	–	Endemic	DD
Polyommatus bilgini	–	Endemic	DD
Polyommatus interjectus	–	Endemic	DD
Polyommatus antidolus	Anatolian Furry Blue	Endemic	DD
Polyommatus kurdistanicus	Forster's Anomalous Furry Blue	Endemic	DD
Polyommatus mithridates	Mithridates	Endemic	DD
Polyommatus wagneri	Wagner's Blue	Endemic	DD
Polyommatus anticarmon	Anticarmon Blue	Endemic	DD
Polyommatus pierceae	–	Endemic	DD
Polyommatus erzindjanensis	–	Endemic	DD
Polyommatus schuriani	–	Endemic	DD
Polyommatus putnami	–	Endemic	DD
Pyrgus aladaghensis	Aladag Skipper	Endemic	DD
Pyrgus bolkariensis	Bolkar Skipper	Endemic	DD
Pieris bowdeni	Bowden's White	Nr Endemic	DD
Lycaena euphratica	Anatolian Turan Copper	Nr Endemic	DD
Hyponephele kocaki	Koçak's Steppe Brown	Nr Endemic	DD
Colias thisoa	Menetries' Clouded Yellow		DD
Colias chlorocoma	Christoph's Clouded Yellow		DD
Leptidea morsei	Fenton's Wood White		DD
Pieris persis	–		DD
Thecla betulae	Brown Hairstreak		DD
Callophrys danchenkoi	Alpine Green Hairstreak		DD
Satyrium marcidum	Riley's Hairstreak		DD
Tomares callimachus	Caucasian Vernal Copper		DD
Tomares desinens	–		DD
Lycaena lampon	Persian Fiery Copper		DD
Cupido decoloratus	Eastern Short-tailed Blue		DD
Cupido staudingeri	–		DD
Aricia bassoni	Steely Argus		DD
Polyommatus firdussii	Firdussi's Blue		DD
Polyommatus karacetinae	Evrim's Blue		DD
Polyommatus aroaniensis	Grecian Anomalous Blue		DD
Polyommatus eriwanensis	Forster's Anomalous Blue		DD
Polyommatus altivagans	Alpine Blue		DD
Polyommatus aserbeidschanus	Azerbaijan Blue		DD
Polyommatus zapvadi	–		DD
Polyommatus surakovi	Surakov's Blue		DD
Polyommatus turcicolus	–		DD
Polyommatus damocles	–		DD
Euphydryas iduna	Lapland Fritillary		DD
Erebia iranica	Persian Ringlet		DD
Pseudochazara schakuhensis	Persian Tawny Rockbrown		DD
Pseudochazara guriensis	Georgian Tawny Rockbrown		DD
Pyronia cecilia	Southern Gatekeeper		DD
Coenonympha phryne	Siberian Brown		DD
Pyrgus cirsii	Cinquefoil Skipper		DD
Eogenes lesliei	Pakistani Skipper		DD
Gegenes nostrodamus	Mediterranean Skipper		DD

Karaçetin, E. and Welch, H.J. (2011). Red Book of Butterflies in Turkey. Ankara, Turkey: Doğa Koruma Merkezi. Available from: [www.dkm.org.tr]

Species Assessments

CONTENTS

full assessments
RE Regionally Extinct
CR Critically Endangered
EN Endangered
VU Vulnerable
NT Near Threatened

summary assessments
DD Data Deficient

table
NE Not Evaluated
NA Not Applicable

ASSESSORS

Principal Authors
Evrim Karaçetin
Hilary J. Welch

Assessors

Didem Ambarlı	Alireza Naderi
Ali Atahan	Vazrick Nazari
Onat Başbay	Szabolcs Sáfián
Ahmet Baytaş	Klaus Schurian
Dubi Benyamini	Josef Settele
Frédéric Carbonell	Chris van Swaay
Dominique Dumont	George Thomson
Wolfgang Eckweiler	Rudi Verovnik
Wolfgang ten Hagen	Martin Wiemers
Torben Larsen	Irma Wynhoff

Red List Working Group

Reşit Akçakaya	Alper Ertürk
Didem Ambarlı	Özge Özden
Adnan Ataç	Chris van Swaay
Bahar Bilgen	Seda Emel Tek
Can Bilgin	Murat Telli
Yahya Emin Demirci	Rudi Verovnik
Ümit Durdu	Mecit Vural
Süleyman Ekşioğlu	Martin Wiemers

Scale Correction Workshop

Annabelle Cuttelod	Szabolcs Sáfián
Martin Davies	Rudi Verovnik
Peter Russell	

Order: LEPIDOPTERA **Family:** LYCAENIDAE

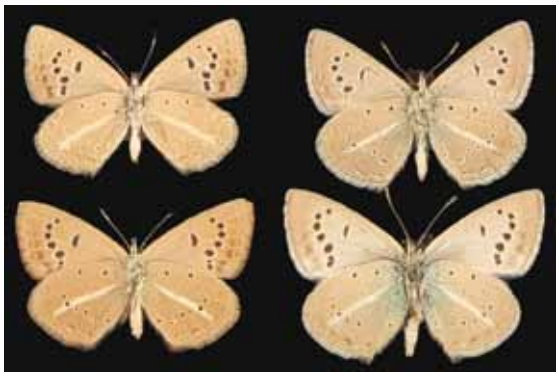
RE Regionally Extinct

001950 **_Polyommatus caeruleus_**

(Staudinger, 1871)

IUCN Global Red List category
-

IUCN Global Red List criteria
-



Underwings ©Hesselbarth *et al.* (1995)

RECENT SYNONYMS

Scientific: -

English: **Caeruleus Blue**

Turkish: **Çokgözlü Hazer Mavisi**

DISTRIBUTION - Global:

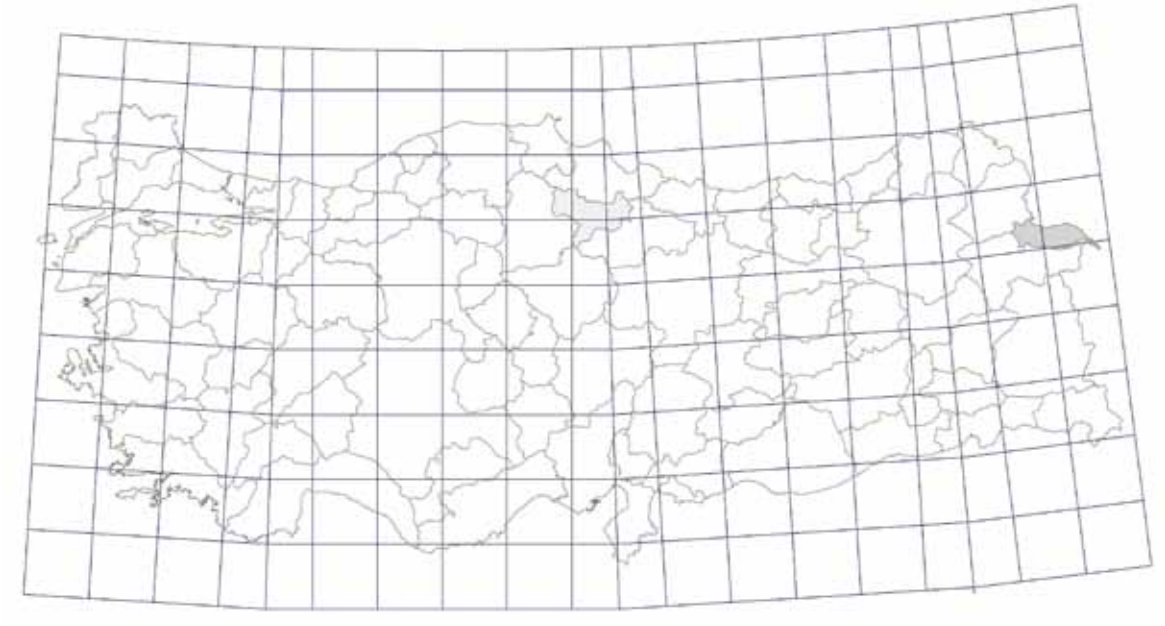
Turkey (Iğdır), Transcaucasus and N Iran to the trans Caspian (Hesselbarth *et al.* 1995).

Turkey: *Extent Of Occurrence (EOO) post* 1980 (*km²*) **000** *Area Of Occupancy (AOO) post 1980 (km²)* **000**

The species was reported from Amasya but has not been recorded there since 1900. Hesselbarth *et al.* considered it probably extinct there or, more likely, due to the confused taxonomy, possibly never occurred. Otherwise only known from two neighbouring localities in Iğdır, with records in 1802, 1901, 1934, 1981 (Hesselbarth *et al*, 1995).

RED LIST ASSESSMENT JUSTIFICATION

Not recorded in Turkey since 1981 and considered Regionally Extinct in 1999 (van Swaay and Warren 1999). There is no new evidence to change this status.



Key

Provinces with records since 1980

Provinces with only old records, before 1979

Karaçetin, E. and Welch, H.J. (2011). Red Book of Butterflies in Turkey. Ankara, Turkey: Doğa Koruma Merkezi. Available from: [www.dkm.org.tr]

Order: LEPIDOPTERA **Family:** LYCAENIDAE

001570 **Polyommatus bollandi**

Dumont, 1998

CR Critically Endangered

B1ab(iii)+2ab(iii)

ENDEMIC

IUCN Global Red List category	IUCN Global Red List criteria
-	-

Assessment submitted to IUCN for Global Red List: approval pending

Males, above & below ©Dominique Dumont

RECENT SYNONYMS

Scientific: -

English: **Bolland's Blue**

Turkish: **Çokgözlü Hatay Mavisi**

DISTRIBUTION - Global:

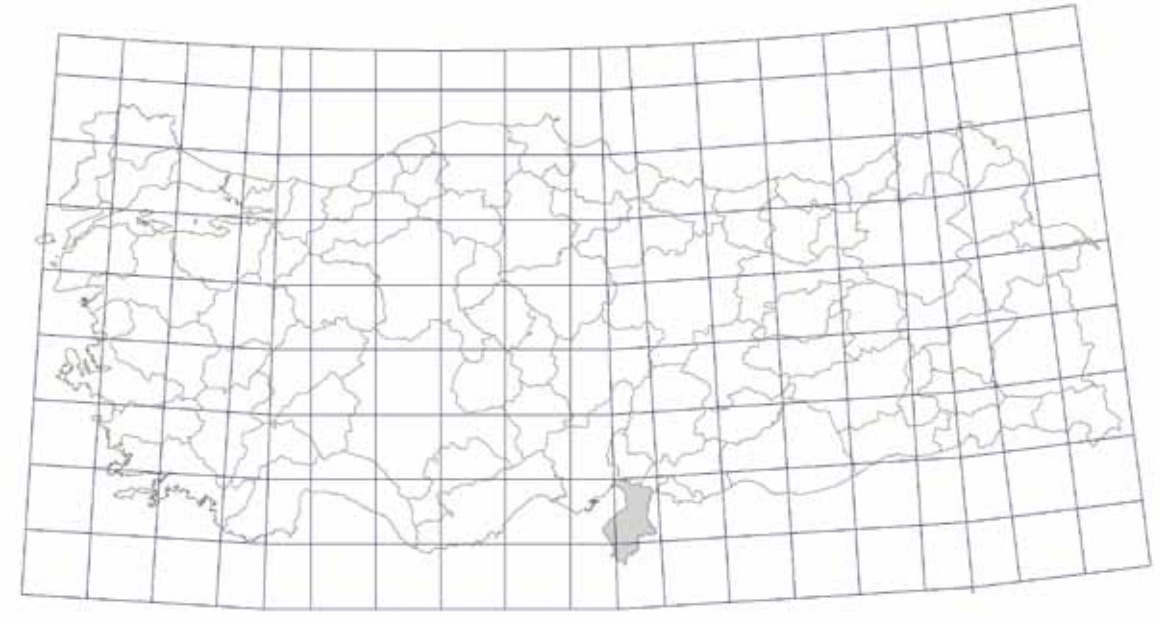
Turkey.

Turkey: *Extent Of Occurrence (EOO) post* 1980 (*km²*) **<100** *Area Of Occupancy (AOO) post 1980 (km²)* **<10**

This species is endemic to Turkey, only observed at its type locality on Kızıldağ, Hatay (Dumont 1998), on the southwestern edge of the Amanos Mountains. This is a Key Biodiversity Area (KBA) (Eken *et al.* 2006) and falls within the eastern border of İskenderun-Arsuz Wildlife Reserve, established for the protection of Roe Deer (*Capreolus capreolus*) and Wild Goat (*Capra aegagrus*) (General Directorate of Nature Conservation and National Parks 2010). The butterfly's extent of occurrence (EOO) is smaller than 100 km² and area of occupancy (AOO) is less than 10 km².

RED LIST ASSESSMENT JUSTIFICATION

Bolland's Blue (*Polyommatus bollandi*) is a recently described species known only from its type locality. Its extent of occurrence (EOO) is smaller than 100 km² and area of occupancy (AOO) is less than 10 km². The butterfly's range lies within a wildlife reserve but the reserve regulations do not include specific measures to protect the butterfly and damaging activities such as illegal mining and garbage disposal have both been reported. Very little is known about the butterfly's biology, ecology and behaviour except that its population is very local. It is thus considered that any changes in the vicinity which do not take into account the butterfly and its habitat risk having a detrimental impact. This species is therefore listed as Critically Endangered.



Key

Provinces with records since 1980

Provinces with only old records, before 1979

Taxonomic notes

No known taxonomic problems or issues.

Habitat and Ecology

The habitat at the only locality where Bolland's Blue is recorded is a grassy mountain clearing crossed by numerous streams at an elevation of 1,500 m. Although the butterfly is very similar to the Common Blue (*Polyommatus icarus*), it flies much more rapidly. The butterfly was on the wing at the end of May in 1998. *Lotus* sp. is considered to be the larval foodplant but larval instars are unknown (Dumont 1998, Dumont 2000).

Population trend

○ Increasing ○ Decreasing ○ Stable ◉ Unknown

Population

Bolland's Blue has not been recorded since it was described in 1998, despite experienced butterfly watchers searching for it in July 2008 and 2009. However, it might be that July is too late for the butterfly.

The butterfly is only known from one location. Twenty males were collected in 1997 and 40 males and 15 females in 1998 and, although the species is very local, it is abundant when present. Dominique Dumont states that, although they did not look for this species in surrounding similar habitats, it is possible that there are further small local populations both within and outside the wildlife reserve. However, the whole region is famous for its ophiolite rock complex deposits (Tekeli and Erendil 1985) and there are already active chromium mines, so any further sites may already be at risk from mining activities.

No information is available on the population structure, distribution or metapopulation dynamics of this species.

Threats

After study of the type locality in Google Earth D. Dumont noted changes in the habitat structure since 1998.

The butterfly occurs on the SW edge of the Amanos Mountains Key Biodiversity Area (KBA). Eken *et al.* (2006) list the threats here to be urbanization of seasonal mountain settlements, uncontrolled garbage dumping, overgrazing, collection of rare plants, destruction of water bodies, road construction, forest fires, and quarrying/mining. None of these are allowed within wildlife reserves and, under Turkish law mining is only possible after environmental impact assessments are approved by the Ministry of Environment and Forestry. However, in 2005, an illegal chromium mine was established and did some damage in this area before it was stopped (Anon. 2005) and garbage dumping has been recorded. Currently very little is known about this butterfly's biology, ecology and behaviour, but it is known that its population is very local, and any activities in its vicinity (legal or illegal) which do not take the needs of the butterfly into consideration, risk having a detrimental impact.

Recommended conservation action

Carry out research into the species' distribution, biology and ecology in order to develop a Species Action Plan which focuses on the butterfly's ecological needs and identifies ways to conserve it.

Approval of environmental impact assessments should include a requirement for the active protection of habitats of threatened species. Conservationists should work closely with mining operators to develop practical ways for including conservation of the butterfly in mining and road construction plans. With appropriate controls chromium mining causes minimal environmental damage.

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Assessment date

05.11.2010

Assessors

Karaçetin, E., Welch, H.J., Atahan A. & Başbay, O.

Order: LEPIDOPTERA **Family:** LYCAENIDAE

001270 **_Plebejus rosei_**

(Eckweiler, 1989)

CR Critically Endangered

B1ab(i,ii,iii)+2ab(i,ii,iii)

NEAR ENDEMIC

IUCN Global Red List category	IUCN Global Red List criteria
-	-

Male & female, ups & uns ©Hesselbarth *et al.* (1995)

RECENT SYNONYMS

Scientific: ***Plebeius (Plebejidea) rosei, Albulina rosei, Plebejus (Vaciniina) rosei***

English: **Rose's Blue**

Turkish: **Rose'nin Çokgözlüsü**

DISTRIBUTION - Global:

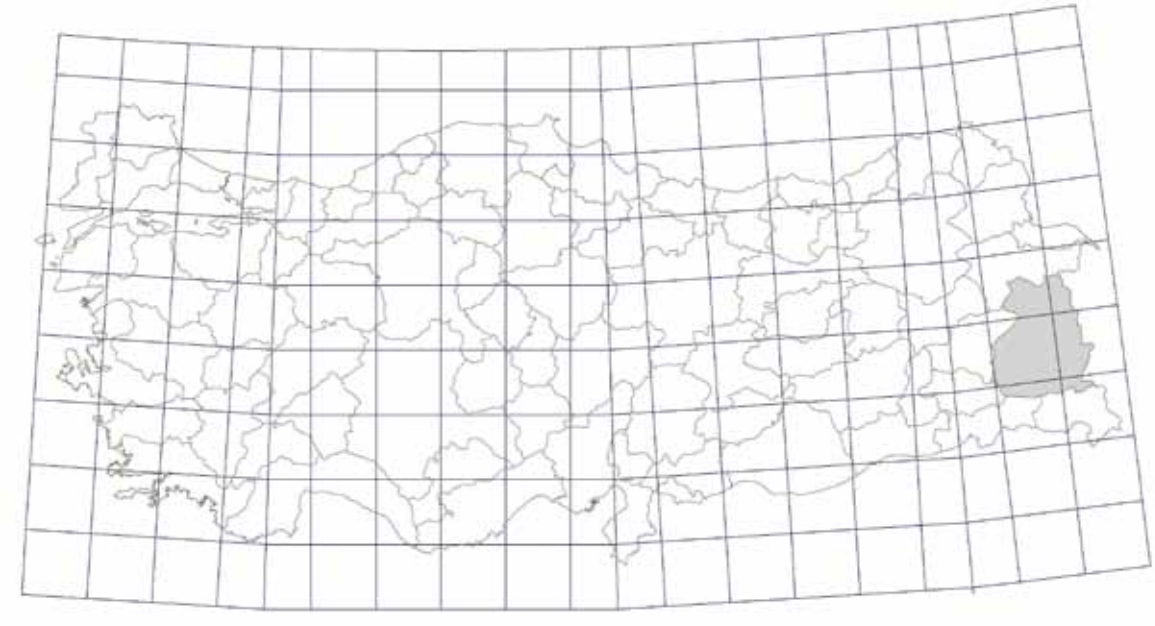
SE Turkey and NW Iran.

Turkey: *Extent Of Occurrence (EOO) post* 1980 (*km²*) **<100** *Area Of Occupancy (AOO) post 1980 (km²)* **4**

Kurubaş Pass, Van, Turkey.

RED LIST ASSESSMENT JUSTIFICATION

In Turkey, Rose's Blue (*Plebejus rosei*) is known only from its type locality in Van province, with an area of occupancy of approximately 4 km². Its population size here is estimated to be no more than 300 mature individuals. Road widening work in 2009 destroyed one of its best areas of habitat and reduced the area and quality of habitat available. There is also mining in the close vicinity which has the potential to have a severe negative impact on the butterfly and its habitat. The species is therefore listed as Critically Endangered. It is not thought that the Turkish population is connected to the next closest known population 100 km to the east in Iran so no regional adjustment has been made.



Key

Provinces with records since 1980

Provinces with only old records, before 1979

Taxonomic notes

There are two subspecies. *Plebejus rosei rosei* occurring in SE Turkey and province Azarbayjan-e Gharbi, Iran, and *P. r. oshtoranus* (Weidenhoffer 2002) from Lorestan, Iran.

Habitat and Ecology

Sparsely vegetated stony slopes at an altitude of 900 m. Flies throughout July. Larval foodplant is a species of Sweetvetch (*Hedysarum syriacum*) (Hesselbarth *et al.* 1995).

Population trend

○ Increasing ○ Decreasing ○ Stable ◉ Unknown

Population

This is considered to be one of the rarest and most threatened species in Turkey and has been recorded only from the type locality since the first record in 1982. It occurs at low density; one visit in 2009 only recorded four or five individuals (O. Subaşı pers. comm. 2009); the population size is estimated to be approximately 300 individuals. Research is needed to understand its population structure.

Threats

During road widening work in 2009, part of the best area of habitat was destroyed. Mining has also been recorded in the area (Eken *et al.* 2006, Özhatay *et al.* 2005) and poses a threat. Damage to the species' habitat may be caused directly by the mine, the associated infrastructure (roads, buildings etc.) and/or by the widespread environmental pollution of dust from the mining operations and vehicle movements to and from the mine. Since this species has a very restricted distribution, a single mining operation could threaten its whole range; thus, the species is considered to occur at a single location.

Recommended conservation action

As an immediate action, the limits of its range at the type locality need to be identified and the area protected from damaging developments. Regulation of road maintenance and mining operations to take account of the locations and needs of rare species is needed at national and regional levels.

Selected References

O. Subaşı pers. comm.(2009): Telephone conversations between Oktay Subaşı and Evrim Karaçetin (Erciyes University, Kayseri, Turkey), 10-12 August 2009.

Weidenhoffer, Z. (2002) New records of blue butterflies of the subfamily *Polyommatinae* from Iran. *Entomologische Zeitschrifti*, 112(3), pp.74.

Assessment date

29.08.2010

Assessors

Karaçetin, E., Welch, H.J., Eckweiler, W., Schurian, K. ten Hagen, W. & Red List Working Group participants, Ankara 10-12.08.2009.

Order: LEPIDOPTERA **Family:** NYMPHALIDAE

CR Critically Endangered

B1ab(iii)+2ab(iii)

002420 **_Boloria graeca_**

(Staudinger, 1870)

IUCN Global Red List category

-

IUCN Global Red List criteria

-

Palandöken, 2008 ©Didem Ambarli

RECENT SYNONYMS

Scientific: -

English: **Balkan Fritillary**

Turkish: **Balkan Menekşe Kelebeği**

DISTRIBUTION - Global:

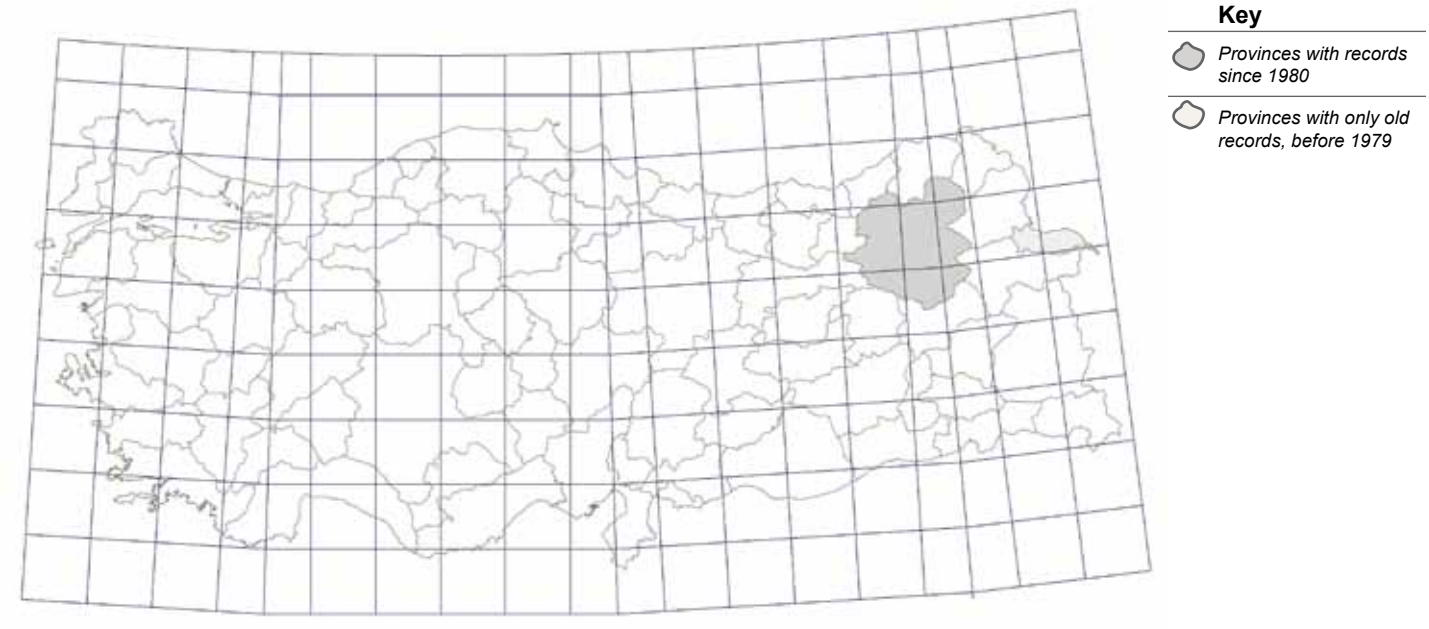
SW Alps, Balkans, Greece and Turkey (Kudrna 2002).

Turkey: *Extent Of Occurrence (EOO) post* 1980 (*km²*) **100** *Area Of Occupancy (AOO) post 1980 (km²)* **4**

The only records since information was published demonstrating that this species occurs in Turkey (in 1990), are from the same locality in the Palandöken Mountains (most recent 2009). The other two localities are Kargapazarı Mountains (Erzurum, 1965), and Kazıkoparan (Iğdır, 1911).

RED LIST ASSESSMENT JUSTIFICATION

The Balkan Fritillary (*Boloria graeca*) has a very small area of occupancy (AOO) in Turkey (4 km²) restricted to one locality in the Palandöken Mountains with all records since 1980 from here. The main threat is habitat loss from winter sports infrastructure developments on the same slopes where the butterfly is known to occur, plus over-grazing and afforestation in the surrounding area. This species is thus listed as Critically Endangered.



Taxonomic notes

First found to occur in Anatolia in 1990 (van Oorschot and Wagener 1990) when specimens of *Boloria pales pontica* Crosson du Cormier, Guerin and de Lesse (1957) were studied in detail. At this point two taxonomic changes were made: *B. p. pontica* was elevated to full species – *Boloria caucasica* – and it was recognised that specimens from Erzurum and Iğdır were *B. graeca*. These were assigned to a new subspecies, *B. graeca karina.*

Habitat and Ecology

Sub-alpine and alpine grasslands. In the western Alps the caterpillars feed on violets (*Viola calcarata* and *V. tricolor*) (Hesselbarth *et al.* 1995). There is no information on the larval foodplant in Turkey.

Only recorded from Palandöken's north-facing slopes. The fact that the records are all from this area might be due to a) the local micro-climate, b) the lower grazing pressure on these slopes, and/or c) observer bias – this is the highest locality accessible by paved road.

Population trend

○ Increasing ○ Decreasing ○ Stable ◉ Unknown

Population

The species appears to be scarce where it occurs as there have been many observers who failed to record this species from the known locality on Palandöken. However, the complete lack of records in the last 50-100 years from the other two known localities (Kargapazarı Mountains [Erzurum, 1965], and Kazıkoparan [Iğdır, 1911]) is of concern.

Threats

Natural grassland habitats in the Palandöken Mountains are over-grazed almost everywhere, with high densities of livestock during the short summer (DKM in prep.). By contrast the area where Balkan Fritillary is regularly recorded is less severely grazed, perhaps partially because it is used for skiing in the winter. However, infrastructure developments for the University Olympics in 2011 are damaging this area (July 2009) and in the long-term further hotel and associated developments are anticipated once the sports facilities are in place.

Afforestation is also being attempted in this area and, although unlikely to be successful due to the harsh climate, it results in disturbance and erosion of the local native vegetation.

Recommended conservation action

The Palandöken Mountains have been identified as a Key Biodiversity Area (KBA) by Doğa Derneği (Eken *et al.* 2006). Surveys of the two localities where the species has not been recorded for more than 40 years to ascertain whether the species is still present, and a systematic survey of the Palandöken Mountains in order to understand the extent and size of the population are both needed.

Selected References

DKM (Doğa Koruma Merkezi) (in prep.) *Anatolian Diagonal Project Report*. Ankara, Turkey: Doğa Koruma Merkezi.

van Oorschot, H. and Wagener, S. (1990) *Boloria caucasica* (Lederer, 1853) und *Boloria graeca* (Staudinger, 1870) in der Türkei. *Ent. Ber. Amst.*, 50(9), pp.117-120.

Assessment date

05.11.2009

Assessors

Welch, H.J., Karaçetin, E., Ambarlı, D. & Sáfián, S.

Order: LEPIDOPTERA **Family:** LYCAENIDAE

001320 **_Aricia torulensis_**

Hesselbarth & Siepe, 1993

EN Endangered

B1ab(ii,iii,iv)+2ab(ii,iii,iv)

ENDEMIC

IUCN Global Red List category	IUCN Global Red List criteria
-	-

Assessment submitted to IUCN for Global Red List: approval pending

©Wolfgang Eckweiler

RECENT SYNONYMS

Scientific: ***Polyommatus (Aricia) torulensis, Plebeius torulensis***

English: **Turkish False Argus**

Turkish: **Torul Çokgözlüsü**

DISTRIBUTION - Global:

Turkey.

Turkey: *Extent Of Occurrence (EOO) post* 1980 (*km²*) **1,056** *Area Of Occupancy (AOO) post 1980 (km²)* **12**

Three localities are mentioned in the literature: 1. The type locality: Demirkaynak, Gümüşhane province (Hesselbarth and Siepe 1993), now destroyed by a gold mine. 2. 'Several kilometres to the south' of the Demirkaynak site (Schurian 2002). 3. About 160 km west of Demirkaynak in Giresun (Schurian 2002); butterflies were found here in 1994. Additionally an unpublished locality in Sivas was discovered in 2005.

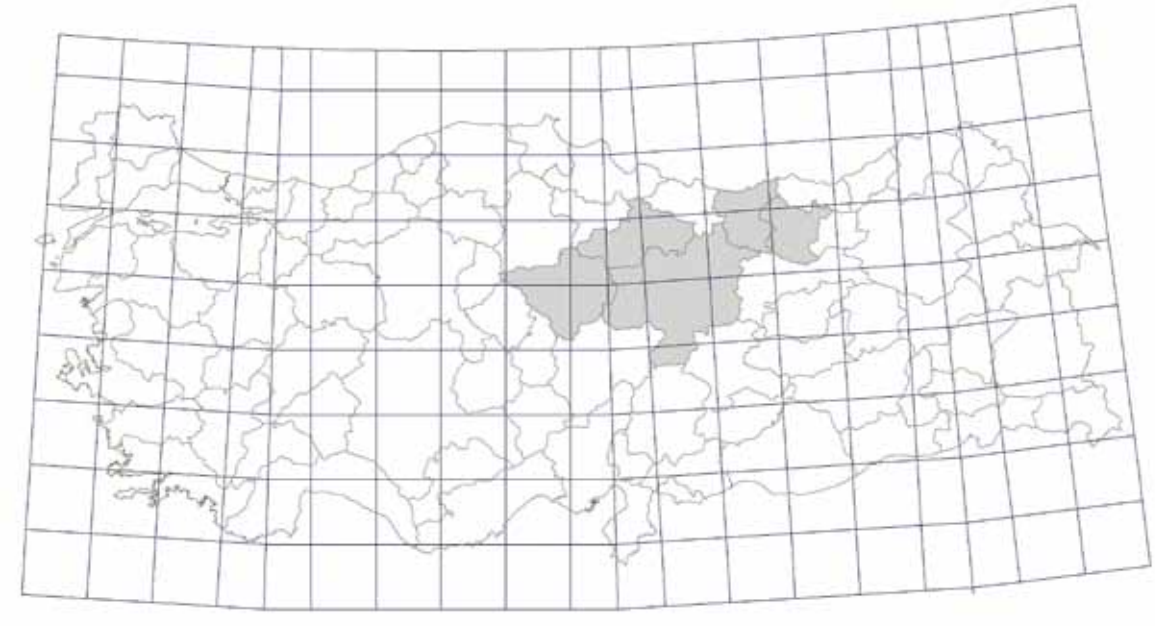
Koçak and Kemal (2009) include Tokat and Yozgat in the distribution area for this species (*see* map) but give no information on localities or dates; these provinces have thus not been included in the analysis for this assessment.

RED LIST ASSESSMENT JUSTIFICATION

Turkish False Argus (*Aricia torulensis*) is known from only four localities in north-east Turkey. However, at the type locality the entire valley has been destroyed by the development of a gold mine in the last 10 years and, despite a focused search in this area in July 2009, none were found. With the effective loss of this site, the AOO is thus now considered to be reduced to a total extent of 12 km² at three widely separated locations. At each location mining is a major and continuing threat.

In the narrow, steep-sided valleys where the species occurs, road construction and widening works are a further threat. Commercial collecting of specimens is known to be taking place and will be putting the restricted populations under additional pressure.

With a small AOO (12km²) divided between three widely separated locations, combined with continuing declines in the AOO (area, extent and quality of habitat, and number of locations) this species qualifies for Endangered.



Key

Provinces with records since 1980

Provinces with only old records, before 1979

Taxonomic notes

Whilst it is now agreed that this taxon belongs in the genus *Aricia* (it was originally described as *Polyommatus* [*Aricia*] *torulensis*, Hesselbarth and Siepe 1993), there is some discussion as to whether it merits full species status. In his paper on the ecology of Turkish False Argus, Schurian (2002) expressed some doubts about its taxonomic status and cited the need for further study of the *Aricia* group. Molecular analysis (M. Wiemers pers. comm. 2009) has revealed that Turkish False Argus and Isaurian False Argus (*Aricia isauricus*) are very closely related, with COI p-distances of only 1%. Such low distances indicate that these taxa have only recently diverged and, unless there is evidence to the contrary (such as overlapping distribution) probably belong to the same species. However, until the justification for this conclusion is published and available to the entomological community for review and discussion, Turkish False Argus is retained as an endemic species. Butterflies from the locality in Giresun, about 160 km west of Demirkaynak (Schurian 2002) are slightly darker blue.

Habitat and Ecology

Rocky mountain slopes at 1,100-1,150 m. Butterflies have been found on sites consisting of dry stream beds with a lush vegetation of herbs, shrubs and bushes and a lot of bramble (Hesselbarth *et al.* 1995).

All sites are described as being very similar: steep rock faces with little vegetation near roads or rivers, but including the butterfly's larval foodplant, a small, localised and violet-flowered Geranium which roots on steep N, NW or NE facing slopes in rock crevices. All known localities cover only a small area and, because of the steepness of the slopes, the larval foodplants are generally not accessible to people, cattle and other larger animals.

Between the years 1994 and 1996, Schurian made three visits to Turkish False Argus sites to study its ecology and biology. He found the butterflies a few kilometres south of the type locality, on a steep west-facing slope above a stream and difficult to access. The butterflies (mostly males) were visiting flowering mint (*Mentha* sp.) near the stream. He studied the cliffs above and found them to be the breeding habitat. Eggs were seen deposited on the leaves of a Geranium with violet flowers and bright leaves, growing on the steep slopes. Blue Argus (*Aricia anteros*) was seen using the same larval foodplant and has very similar eggs. Stemless Storksbill (*Erodium acaule*) (cited as the possible larval foodplant by Hesselbarth and Siepe 1993) is considered not to be used (Schurian 2002).

In captivity, a few eggs were obtained, and from these, in late summer, 20% hatched. The remaining eggs hatched in spring. Cannibalism was common and only one female and one male survived, both of them very large. The caterpillars have dorsal nectar organs and tentacle organs, which prove that they have an association with ants, however, they are not recognised by *Myrmica* or *Lasius* ant species (Schurian 2002).

Population trend

○ Increasing ○ Decreasing ○ Stable ◉ Unknown

Population

Populations seem to be very small (occurring in only a few hundred metres along a road or river), but surprisingly stable. There are two or perhaps even three generations a year so any population decreases are rapidly compensated. Overall it seems that the population size depends on the availability of the larval foodplant.

Additionally, because they are localized and extremely sedentary there is (at best) a reduced gene flow, evident from the visible differences between the three known subpopulations. Each of these subpopulations is considered a separate location as mining is a major and continuing threat in this part of Turkey and its ability to destroy the entire range of this butterfly at a single locality has already been proven.

The population is presumed to have been reducing since the gold mine at Demirkaynak started to be developed in c.1999 but may now have stabilized.

Threats

The development of a gold mine at the type locality (started *c.* 1999 according to locals and still in progress July 2009) has destroyed natural habitats over a very large area, centred on the village of Demirkaynak (DKM 2009). The gold mine is at a higher altitude than the areas from where the species was originally described so it may still occur in other valleys in the area. Mining is increasing in Turkey, particularly in Gümüşhane, a region rich in mineral resources, so the mining threat is expected to intensify.

Collection for commercial purposes has happened in the past (with specimens for sale on the internet in August 2010) and may be continuing, despite the fact that any collecting is illegal without a permit and permits are extremely difficult to obtain. However, since only the butterflies which come down to drink or nectar are catchable, it seems unlikely that collecting would have much influence on the population.

Due to the steepness of the slopes where this species occurs, grazing is not considered a threat.

Recommended conservation action

Use the story of this species to lobby for greater controls on the issue of mining licences.

Encourage taxonomists to publish their work on this species and its group.

Selected References

DKM. (Doğa Koruma Merkezi) (2009) *Aricia torulensis* unpublished data sheet. Ankara, Turkey: Doğa Koruma Merkezi.

Hesselbarth, G. and Siepe, W. (1993) *Polyommatus* (*Aricia*) *torulensis* - eine bisher nicht bekannte Lycaenide aus Anatolien (Lepidoptera:Lycaenidae). *Phegea*, 21(2), pp.47-53.

Schurian, K.G. (2002) Beobachtungen bei der Zucht von *Polyommatus* (*Aricia*) *torulensis* (Lepidoptera:Lycaenidae). *Phegea*, 30(2), pp.55-60.

M. Wiemers pers. comm. (2009) E-mail from Martin Wiemers to Hilary Welch (DKM) dated 6 October 2009

Assessment date

19.10.2010

Assessors

Welch, H.J., Karaçetin, E., Eckweiler, W., Schurian, K., ten Hagen, W., van Swaay, C. & Wiemers, M.

Order: LEPIDOPTERA **Family:** LYCAENIDAE

001810 **Polyommatus dama**

(Staudinger, 1892)

EN Endangered

B1ab(iii)+2ab(iii)c(iv)

ENDEMIC

IUCN Global Red List category	IUCN Global Red List criteria
EN Endangered	A1ac, B1+2ac

Last assessed for IUCN in 2000 by van Swaay and Warren

©Süleyman Ekşioğlu

RECENT SYNONYMS

Scientific: ***Polyommatus (Agrodiaetus) dama***

English: **Mesopotamian Blue**

Turkish: **Mezopotamya Çokgözlüsü**

DISTRIBUTION - Global:

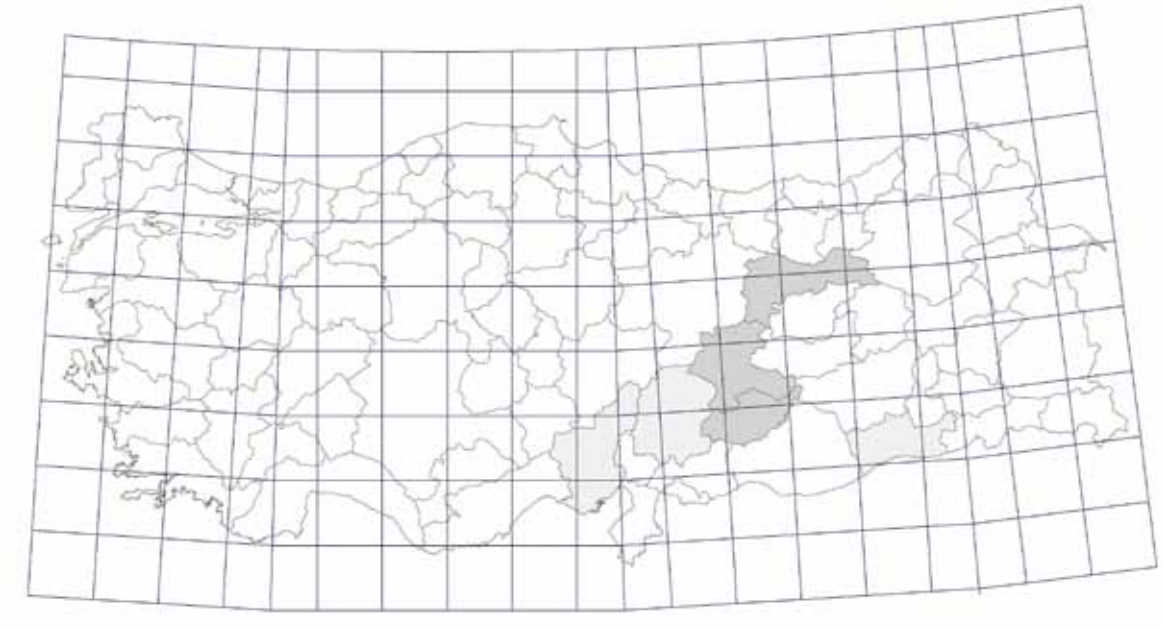
Turkey.

Turkey: *Extent Of Occurrence (EOO) post* 1980 (*km²*) **1,658** *Area Of Occupancy (AOO) post 1980 (km²)* **160**

A Turkish endemic recorded from six provinces (most recent records in brackets): Adana (1884: Olivier *et al.* 1999), Kahramanmaraş (1959: Hesselbarth *et al.* 1995), Malatya (2010: Ambarlı and Ekşioğlu 2010, Karaçetin 2010), Adıyaman (2010: A. Atahan pers. comm. 2010, Karaçetin 2010), Mardin (1902: Hesselbarth *et al.* 1995), and Erzincan (2001: K. Schurian pers. comm. 2009). These are all presented on the map below. However, Mesopotamian Blue's current distribution, based on records since 1980, is limited to Adıyaman, Erzincan and Malatya.

RED LIST ASSESSMENT JUSTIFICATION

Mesopotamian Blue (*Polyommatus dama*), is a rare, endemic species whose current range, based on records since 1980, is restricted to three provinces - Malatya, Adıyaman and Erzincan - where the butterfly's subpopulations are small, isolated and fragmented. Its total extent of occurrence (EOO) is approximately 1,658 km² and area of occupancy (AOO) 160 km². Its population size is estimated to be between 100 and 500 individuals with extreme fluctuations observed. Its habitat is declining due to: road building and the construction of a dam (Yeşilyurt, Malatya); intensive agriculture and irrigation (Adana, Kahramanmaraş and Mardin); house, road and dam construction, afforestation and abandonment of traditional agriculture (Malatya). In addition, illegal collection for trade may put extra pressure on its surviving populations. All these threats are likely to continue as there is no protection in place for the habitats required by this butterfly. This species is therefore listed as Endangered.



Taxonomic notes

Mesopotamian Blue is a species endemic to Turkey and morphologically easy to distinguish from similar species. Although originally it was also considered to occur in Lorestan, W Iran, as subspecies *Polyommatus dama karindus* Riley 1921, that has now been elevated to a full species, *Polyommatus karindus* (Nazari 2003).

Habitat and Ecology

The butterfly is a strong flier and has been recorded at altitudes of 1,100-1,900 m in a variety of habitats, from mud-puddling sites -where males usually aggregate - to mountain steppes - where they have been seen hill-topping and patrolling (Karaçetin 2010). Recent observations indicate that its breeding habitat is uncultivated steppes or abandoned vineyards with sparsely distributed shrubs and milkvetch (*Astragalus* sp.) patches (Hesselbarth *et al.* 1995, Karaçetin 2010). However, very little is known about its ecology, behaviour and habitat requirements so it is possible that the species may also require the presence of other habitat types. Its larval foodplant may be *Onobrychis tournefortii* but more research is needed to confirm this. Its larval instars are unknown.

Population trend

○ Increasing ○ Decreasing ○ Stable ◉ Unknown

Population

The assessors estimate the population size to be between 100 and 500 individuals. Also the population is prone to extreme fluctuations, so in some years is very scarce (as observed in 1994-95) and some years more abundant (2010).

Threats

Currently populations of Mesopotamian Blue are considered fragmented, isolated and prone to anthropogenic use. The main threats likely to be affecting this butterfly are: road reconstruction and the construction of a dam on the river catchments of Yeşilyurt, Malatya (Wagener 2003); intensive agriculture and irrigation in Adana, Kahramanmaras and Mardin, and house, road and dam construction and afforestation and abandonment of traditional agriculture in Malatya (Karaçetin 2010). Additionally, an incidence of collecting for trade has been reported. M. Wiemers considers collecting this species extensively for trade purposes would be an additional negative pressure, especially serious for small populations.

Recommended conservation action

Very little information is available on this species, so further research is needed to understand its biology, ecology and behaviour. Current information indicates that it uses a variety of habitats. It is probable that species-centred habitat management planning will be required to conserve this butterfly.

Selected References

A. Atahan pers. comm. (2010): Telephone conversations between Ali Atahan and Evrim Karaçetin (Erciyes University, Kayseri, Turkey), July and September 2010.

Ambarlı, D. and Ekşioğlu, S. (2010) Rediscovery of *Polyommatus dama* in Malatya after 10 years. Unpublished report. Ankara: Doğa Koruma Merkezi.

Karaçetin, E. (2010) Discovering the status of Mesopotamian blue *Polyommatus dama* (Lepidoptera:Lycaenidae) in Malatya and Adıyaman, Field Notes for Conservation. Unpublished report. Ankara, Turkey: Doğa Koruma Merkezi.

Olivier, A., van der Poorten, D., Puplesiene, J. and de Prins, W. (1999) On the identity of *Polyommatus* (*Agrodiaetus*) *dama*, with lectotype designation and redescription of its karyotype. *Nota Lepidopterologica*, 22(3), pp.197-211.

Wagener, S. Turkey IN: C. van Swaay and M. Warren (eds.) (2003) *Prime Butterfly Areas in Europe*. The Netherlands: Ministry of Agriculture, Nature Management and Fisheries.

Assessment date

29.08.2010

Assessors

Karaçetin, E., Welch, H.J., Schurian, K. & Wiemers, M.

Order: LEPIDOPTERA **Family:** LYCAENIDAE

001850 **Polyommatus theresiae**

Schurian, van Oorschot & van den Brink, 1992

EN Endangered

B1ab(iii,v)+2ab(iii,v)

ENDEMIC

IUCN Global Red List category	IUCN Global Red List criteria
-	-

Assessment submitted to IUCN for Global Red List: approval pending

RECENT SYNONYMS

Scientific: ***Polyommatus (Agrodiaetus) theresiae***

English: **Theresia's Blue**

Turkish: **Çokgözlü Teresya**

Males, above & below ©Hesselbarth *et al.* (1995)

DISTRIBUTION - Global:

Turkey.

Turkey: *Extent Of Occurrence (EOO) post* 1980 (*km²*) **4** *Area Of Occupancy (AOO) post 1980 (km²)* **4**

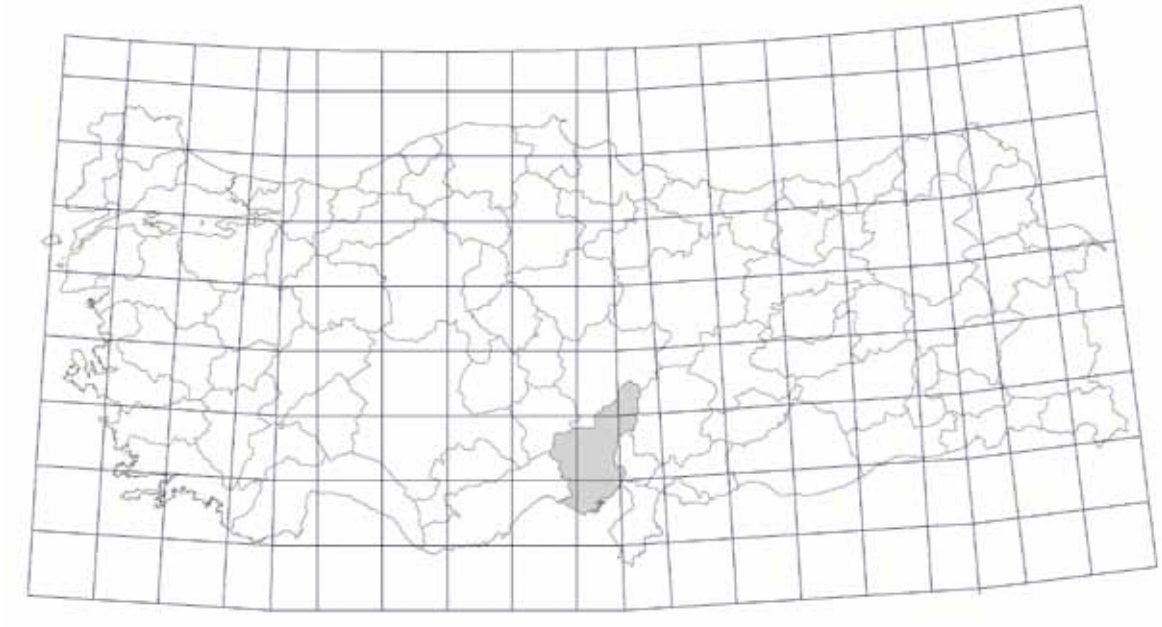
Turkey, recorded from only one locality in northern Adana.

RED LIST ASSESSMENT JUSTIFICATION

Despite the five localities presented in Hesselbarth *et al.* (1995), work by Olivier *et al.* (1999) found this species to be an endemic restricted to one locality in northern Adana. With spatial adjustment the AOO is estimated to be 4 km².

This is thus a very localised species with an estimated total population of less than 1,000 individuals. It occurs very close to a settlement but, despite its accessibility and the fact that it was recorded in six years out of 10 immediately before it was described, since 1992 there have been only two records, in 1994 and 1998, the latter when four specimens were collected in relation to the Olivier *et al.* (1999) paper; this indicates a possible decline in the number of mature individuals.

Settlement expansion, with its associated infrastructure development (e.g. road widening/building, installation of power lines) is considered a potential threat and could affect any part of the species' range, although there is substantial uncertainty about whether habitat quality is currently declining. However, due to the small range area and the nature of the threat, the number of locations is likely to be five or fewer. Considering the available information and the uncertainties, the most plausible threat category is thus judged to be Endangered (up to five locations plus potential decline in habitat quality and the number of mature individuals).



Key

Provinces with records since 1980

Provinces with only old records, before 1979

Taxonomic notes

First described in 1992 from four Turkish provinces (Konya, Adana, Kahramanmaraş and Gaziantep). Then in 1994 Frédéric Carbonell described a new subspecies, *P.* (*A.*) *theresiae larseni* from Lebanon.

In 1999 a thorough review by Olivier *et al.* of all the *theresiae* specimens had the following outcomes:

-Genetic study established that *P. t. larseni* should be elevated to a full species. *P. theresiae* was thus restored to being a Turkish endemic.

- The specimens which had been used to establish the karyotype and chromosome number for *P. theresiae* came from Konya whilst the type specimens came from Adana. However, the Adana specimens were found to have a different chromosome number. It was thus decided to describe the Konya population as a new species: *Polyommatus guezelmavi*.

- The specimens from Kahramanmaraş and Gaziantep were identified to be *Polyommatus poseidon*.

It was thus established that *P. theresiae* is an endemic species known only from the type locality in Adana.

Habitat and Ecology

Occurs at 1,300-1,750 m in moist places in open pine forests and nearby valleys. Along sandy roadsides the butterflies often sit on damp soil, higher up they are often in clearings in Black Pine forest (*Pinus nigra*). Male butterflies are mostly seen in these forest openings while females tend to stay in the shade under the pine trees (Hesselbarth *et al.* 1995).

The only known locality for the butterfly is close to habitation. There are inaccessible cliffs nearby which the butterfly may also use.

Schurian (IN Schurian, van Oorschot and van den Brink 1992) observed oviposition on a milkweed (*Astragalus* sp.), that grew mainly in the shade of large pine trees.

Population trend

○ Increasing ○ Decreasing ○ Stable ◉ Unknown

Population

Occurs in small localised subpopulations at low density; the assessors estimate the population at the only known locality to be less than 1,000 individuals. Up until the species was first described in 1992 there were regular records (1983, '84, '87, '88, '90, '91). After this the only known records are in 1994 (three seen) and 1998 when four specimens were collected which led to the Olivier *et al.* 1999 paper. Klaus Schurian visited the locality in 1995 and 1996 and saw none. Experiences of experts thus indicate that butterflies can be difficult to find and that the population may be even smaller than estimated.

Threats

The species occurs within the Feke Key Biodiversity Area identified by Doğa Derneği (Eken *et al.*, 2006). In the KBA (which covers a much larger area) the only potential threat which might affect this species and is identified by Eken *et al.* is illegal cutting of trees.

In the area where the butterfly occurs built developments are the main threat, principally the spread of habitation combined with infrastructure development (i.e. road building/widening, pipe and cable laying); this could occur in any part of the area occupied by the butterfly.

Recommended conservation action

Very little is known about this species. The area where it occurs is not protected. Research is needed to collect information which can be used to develop a conservation action plan. Information needed includes the identity of the larval foodplant, which landscape features are used by the butterfly and the population structure within the area of occurrence.

Selected References

Carbonell, F. (1994) Le complexe d'*Agrodiaetus poseidon* Herrich-Schäffer (1851) en Turquie et au Liban. Description d'une nouvelle sous-espèce d'*A. theresiae*. *Linneana Belgica*.14(6), pp.291-302, and erratum in 14(8), pp.454.

Olivier, A., Puplesiene, J., van Der Poorten, D., De Prins, W., and M. Wiemers, (1999) Revision of some taxa of the *Polyommatus* (*Agrodiaetus*) *transcaspicus* group with description of a new species from Central Anatolia (Lepidoptera: Lycaenidae). *Phegea*, 27(1), pp.1-24.

Schurian, K. G., van Oorschot, H. and van den Brink, H. (1992) *Polyommatus* (*Agrodiatus*) *poseidon* H. –S. [1851] and *Polyommatus* (*Agrodiaetus*) *theresiae* sp. nov. from Turkey. *Nachr. entomol. Ver. Apollo*, 12(4), pp.217-232.

Assessment date

10.09.2010

Assessors

Welch, H.J., Karaçetin, E., Schurian, K. & Red List Working Group participants, Ankara 10-12.08.2009.

Karaçetin, E. and Welch, H.J. (2011). Red Book of Butterflies in Turkey. Ankara, Turkey: Doğa Koruma Merkezi. Available from: [www.dkm.org.tr]

Order: LEPIDOPTERA **Family:** LYCAENIDAE

001900 **Polyommatus tankeri**

(de Lesse, 1960)

EN Endangered

B1ab(iii)+2ab(iii)

ENDEMIC

IUCN Global Red List category	IUCN Global Red List criteria
-	-

Assessment submitted to IUCN for Global Red List: approval pending

Males, above & below ©Hesselbarth *et al.* (1995)

RECENT SYNONYMS

Scientific: ***Polyommatus (Agrodiaetus) tankeri***

English: **Tanker's Blue**

Turkish: **Tanker'in Çokgözlüsü**

DISTRIBUTION - Global:

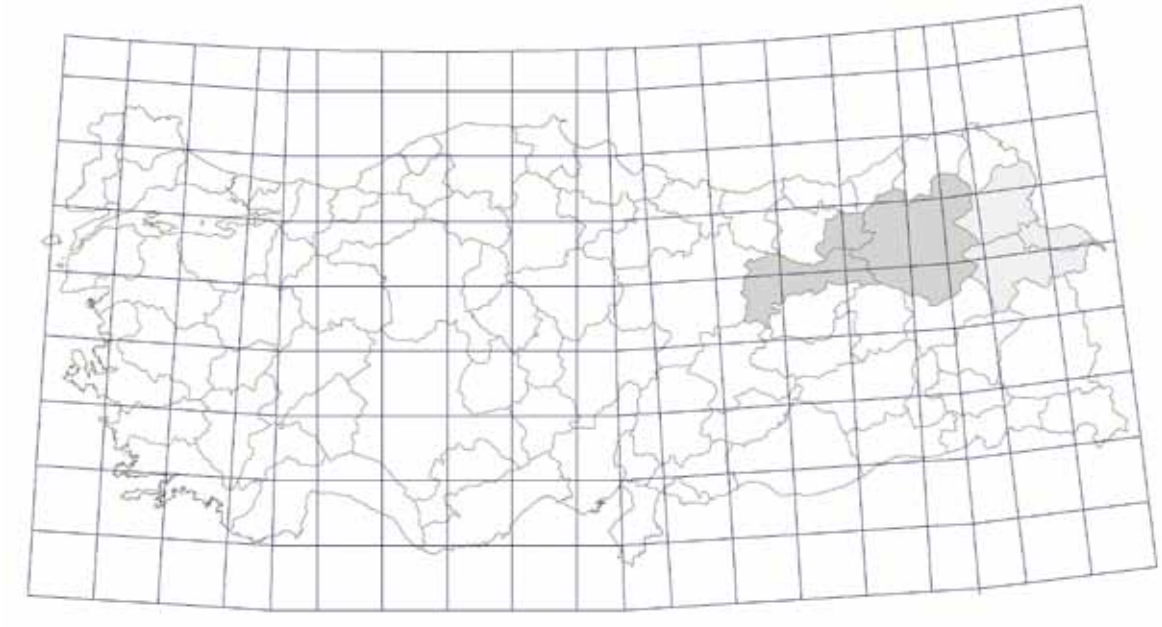
Turkey.

Turkey: *Extent Of Occurrence (EOO) post* 1980 (*km*^{2}) **2,172** *Area Of Occupancy (AOO) post 1980 (km*^{2}*)* **80**

Tanker's Blue is an endemic butterfly, only known from 11 sites in six provinces in NE Turkey: Ağrı, Bayburt, Erzincan, Erzurum, Iğdır, and Kars. The only recent records are from Erzurum (2005), Bayburt (1999) and Erzincan (1988); elsewhere the most recent records are more than 30 years old: Ağrı (1956), Iğdır (1977) and Kars (1978). However, these three provinces are seldom visited by butterfly watchers and, due to the fact that the butterfly is morphologically very similar to the more common Iphigenia Blue (*P. iphigenia*), it is easy to overlook.

RED LIST ASSESSMENT JUSTIFICATION

Tanker's Blue (*Polyommatus tankeri*) has a very restricted range and is known from only seven locations in Turkey. Its subpopulations are local, sedentary and geographically separated, and as a result its population is considered severely fragmented. It is facing a variety of threats at each location in its range; habitat loss is inferred due to construction of winter sports facilities on Palandöken Mountain, mining on Kop Mountain, hydroelectric schemes along the Çoruh and Aras River Valleys and decline in the quality of habitat is suspected due to overgrazing in Erzurum and Erzincan. The species is therefore listed as Endangered.



Taxonomic notes

Tanker's Blue is accepted as a valid species. However, taxonomic studies at molecular level are quite recent and the status of the taxon may change with future research and new findings. According to the most recent work, it is closely related to Iphigenia Blue (*P. iphigenia* (Herrich-Schäffer, [1847])), Turkish Blue (*P. turcicus* (Koçak 1977)), Baytop's Blue (*P. baytopi* (de Lesse 1959)) and Iphicarmon Blue (*P. iphicarmon* (Eckweiler and Rose 1993)). Of these, the distribution of Tanker's Blue overlaps only with the morphologically very similar *P. turcicus* and *P. iphigenia*. However, while genetically *P. tankeri* and *P. turcicus* show similarities, *P. iphigenia* is well differentiated. The close genetic similarity with *P. baytopi* is interesting because the two species are both morphologically different and geographically separated (Wiemers 2003).

Habitat and Ecology

The butterfly flies from mid July to mid August in rich alpine meadows and dwarf shrub vegetation at altitudes of 1,500-2,600 m. The larval foodplant is probably Sainfoin (*Onobrychis* sp.). The butterflies fly close to ground, in or just above the vegetation and only short distances, even after being disturbed. Their preferred source of nectar are the flowers of various species of thyme (*Thymus* sp.) (Hesselbarth *et al.* 1995).

Population trend

○ Increasing ○ Decreasing ○ Stable ◉ Unknown

Population

Tanker's Blue is a local species which flies only short distances, so populations are considered fragmented and geographically isolated (Hesselbarth *et al.* 1995). Where it occurs it can be seen in high numbers. Currently the species has been recorded at 11 sites, but these can be considered seven locations due to the threats: (1) Palandöken Mountains, Erzurum: ski resort development; (2) Kop Mountain Pass, Bayburt: mining and related construction; (3) Çoruh River Valley sites, Erzurum: dams, small-scale hydroelectric schemes and related construction; (4) Aras River Valley sites, Iğdır and Kars: dams, small-scale hydroelectric schemes and related construction; (5) Spikor Pass, Erzincan: over-grazing; (6) Yeşildere, Erzurum: over-grazing; (7) Tahir Pass, Ağrı: no known threats but the species has not been recorded here since 1956.

Threats

On Palandöken Mountain the butterfly is recorded from the 'Kayakevi', a damp area with a different vegetation and microclimate than elsewhere. In the past this area was protected from overgrazing as part of the management of the ski slopes. However, with the development of new wintersports facilities for the 2011 University Olympics, large areas of this habitat have been destroyed (DKM in prep.). At Kop Mountain Pass the butterfly faces possible habitat loss due to mining and related works (DKM in prep., Eken *et al.* 2006). Dams and small-scale hydroelectric schemes threaten six localities, in the Çoruh River Valley (four sites, Muluk *et al.* 2009) and along the Aras River Valley (2 sites, Eken *et al.* 2006). In Yeşildere (Erzurum) and Spikor Pass (Erzincan), over-grazing by large flocks of nomadic livestock is identified as a problem (DKM in prep., Eken *et al.* 2006). In Ağrı, Tahir Pass, the species has not been recorded since 1956, despite visits and records of other species from the area since then. However, whether the lack of records is due to a decline in its population size or the difficulty of identification is not known.

Recommended conservation action

Tanker's Blue is facing a variety of threats, so protecting it throughout its range will be complicated. It is thus recommended that work starts with a study of the species' distribution, population, biology and ecology, and that this is used to develop a Species Action Plan which would identify and prioritise the conservation work which needs to be implemented.

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Wiemers, M. (2003) *Chromosome differentiation and the radiation of the butterfly subgenus Agrodiaetus (Lepidoptera: Lycaenidae: Polyommatus) – a molecular phylogenetic approach.* Ph.D. Thesis. Bonn: Mathematisch-Naturwissenschaftlichen Fakultät der Rheinischen Friedrich-Wilhelms-Universität.

Assessment date

19.10.2010

Assessors

Karaçetin, E., Welch, H.J. & Red List Working Group participants, Ankara 10-12.08.2009.

Karaçetin, E. and Welch, H.J. (2011). Red Book of Butterflies in Turkey. Ankara, Turkey: Doğa Koruma Merkezi. Available from: [www.dkm.org.tr]

Order: LEPIDOPTERA **Family:** LYCAENIDAE

002050 **Polyommatus merhaba**

de Prins, van der Poorten, Borie, van Oorschot, Riemis & Coenen 1991

EN Endangered

A3c

ENDEMIC

IUCN Global Red List category	IUCN Global Red List criteria
-	-

Assessment submitted to IUCN for Global Red List: approval pending

©Evrim Karaçetin

RECENT SYNONYMS

Scientific: ***Polyommatus (Agrodiaetus) merhaba***

English: **Hi Blue**

Turkish: **Merhaba Çokgözlü**

DISTRIBUTION - Global:

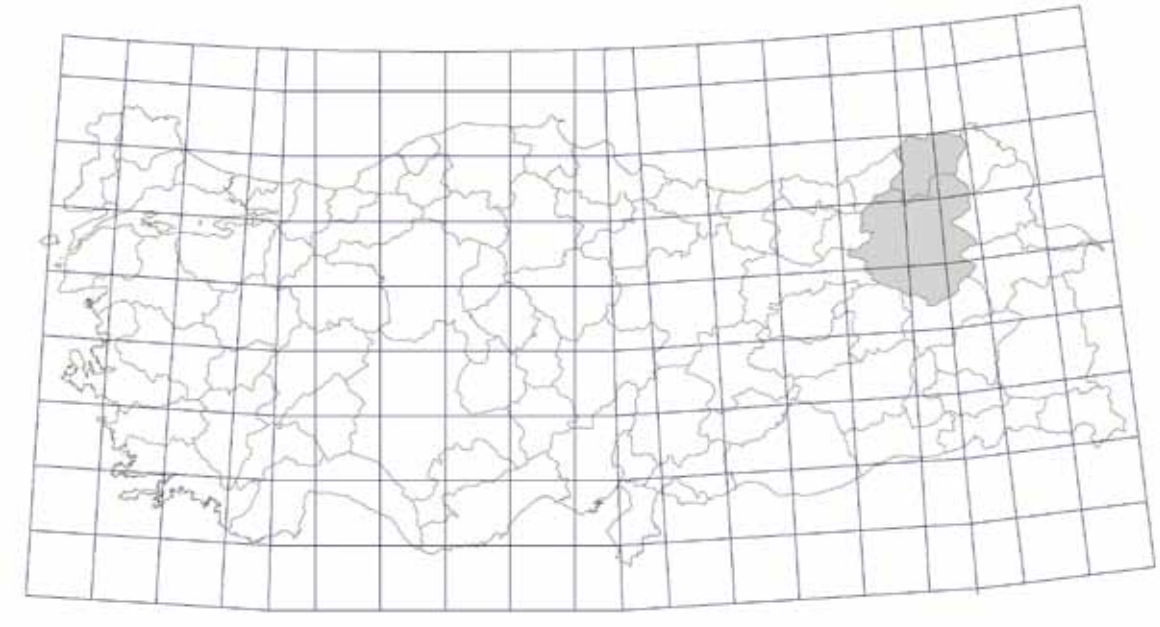
Turkey.

Turkey: *Extent Of Occurrence (EOO) post* 1980 (*km*^{2}) **5,484** *Area Of Occupancy (AOO) post 1980 (km*^{2}*)* **48**

Northeast Turkey, known only from the Çoruh River Valley in Artvin and Erzurum (de Prins *et al.* 1991).

RED LIST ASSESSMENT JUSTIFICATION

Hi Blue (*Polyommatus merhaba*) is a rare, endemic species restricted to the Çoruh River Valley in Erzurum and Artvin. Authorities consider that the dams along the Çoruh River, combined with the extensive hydroelectric schemes planned throughout its range will cause a 50% or more population decline. This will be caused by the rise in water levels combined with the construction of roads and power lines which will destroy large areas of habitat and fragment the remaining population (Akpınar *et al.* 2009). The species is therefore listed as Endangered.



Key

Provinces with records since 1980

Provinces with only old records, before 1979

Taxonomic notes

This endemic species was described in 1991 (de Prins *et al.* 1991). Currently it is accepted as a valid species, but some experts consider that it may turn out to be conspecific with *Polyommatus cyaneus*, a more widespread species occurring in Turkey, Georgia and NW Iran.

Habitat and Ecology

The butterfly flies over loose, mostly steep slopes, with scarce dry steppe-like vegetation (e.g. *Thymus* sp.) and scattered bushes including Jerusalem Thorn (*Paliurus spina-christi*) along the Çoruh River Valley (de Prins *et al.* 1991). The butterfly was recently recorded in dry stream beds in Yusufeli (Baytaş 2007) and Bahçeli (Karaçetin and Welch 2009). Most of the populations fly at an altitude of 670-1,400 m but two individuals were recorded at 1,800 and 2,000 m (de Prins *et al.* 1991). Unlike other closely related species, the males of Hi Blue do not congregate at wet places. The butterflies stay close to the ground and fly very fast. The flight period is from July to August with the peak season generally the first and second week of July (de Prins *et al*. 1991, Baytaş 2007). The larval foodplant and larval instars are unknown (Hesselbarth *et al.* 1995).

Population trend

○ Increasing ○ Decreasing ○ Stable ◉ Unknown

Population

Very little is known about the population structure of this species. It inhabits steep stony slopes along the Çoruh River and adjacent streams. It is recorded from twelve different sites all of which may be connected through the Çoruh River corridor. Further research is needed to understand its biology, ecology and metapopulation structure. Red List Working Group participants considered that a 50% or more population decline is likely following the construction of planned dams and small scale hydroelectric schemes (Akpınar *et al.* 2009).

Threats

The major threat to this butterfly is extensive habitat loss throughout its range caused by construction of large-scale dams and small scale hydroelectric schemes. There are 27 dam projects planned in the Çoruh River Basin; 10 dams on the Çoruh River and another 17 on its tributaries (Sucu and Dinç 2008). Eight of the 10 main dams on the Çoruh River fall within the vicinity of Hi Blue's distribution. Road construction has started for the Yusufeli dam and after its construction at least one known site for this butterfly will be lost due to the rise in water level. Other dams will influence the remaining population(s) as they are built. In addition to large dams, 117 small-scale hydroelectric scheme projects (HES) are planned in the Çoruh catchment area (Akpınar *et al.* 2009). Although the amount of electricity from these HES will be small, the impact of the construction on the environment will be high: the channels of the small streams at higher elevations will be changed, and building of new roads for construction and installation of power lines will cause widespread damage to the landscape (Muluk *et al.* 2009).

Recommended conservation action

Plans for current dam and hydroelectric schemes should be reviewed and efforts made to protect the habitats of this species. Further research is required to understand its ecology.

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Karaçetin, E. and Welch, H. (2009) *Kaçkar Butterfly Camp Report.* [Online]. Available from: http://www.dkm.org.tr/eng/pub_fact.html. Ankara, Turkey: Doğa Koruma Merkezi.

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Sucu, S. and Dinç, T. (2008) Çoruh Havzası Projeleri IN: *TMMOB 2. Water Policies Congress.* pp.33-38. [Online]. Available from: http://e-kutuphane.imo.org.tr/pdf/10912.pdf. [Downloaded on November 2010].

Assessment date

11.08.2009

Assessors

Karaçetin, E., Welch, H.J. & Red List Working Group participants, Ankara 10-12.08.2009.

Order: LEPIDOPTERA **Family:** LYCAENIDAE

000590 *Callophrys mystaphia*

Miller, 1913

EN Endangered

B2ab(iii)

NEAR ENDEMIC

IUCN Global Red List category	IUCN Global Red List criteria
-	-

Assessment submitted to IUCN for Global Red List: approval pending

©Wolfgang ten Hagen

RECENT SYNONYMS

Scientific: ***Callophrys paulae*** *(see Taxonomic notes)*

English: **Miller's Green Hairstreak**

Turkish: **Minik Zümrüt**

DISTRIBUTION - Global:

Recorded from six sites, five in E Turkey and one in SW Iran. In Iran, it is recorded in an area of only 2.5 km² of suitable habitat from the eastern border of Dena Protected Area, Kuh-e Dinar (ten Hagen 2006), about 1,000 km from the nearest reported Turkish locality (Koçak and Kemal 2007).

Turkey: *Extent Of Occurrence (EOO) post* 1980 (*km²*) **36,691** *Area Of Occupancy (AOO) post 1980 (km²)* **24**

There are five published sites from Turkey: the type locality in Iğdır (Wagener and van Oorschot 1998), Van (Erek Mountain, Kemal 2009), and Hakkari, Kars and Siirt (Koçak and Kemal 2007, 2009). The species has not been recorded from Iğdır since it was first described in 1913, although the larval foodplant was still present in 2007 so it is possible the butterfly is too.

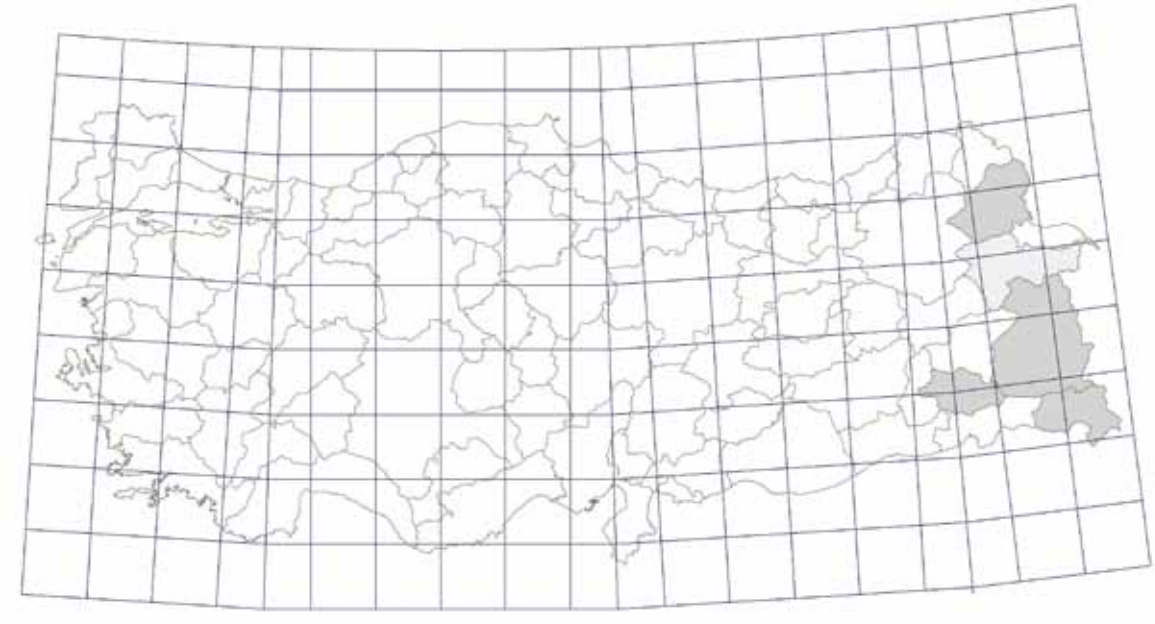
Wolfgang ten Hagen considers the two males seen in Aksaray in 1985 (Hesselbarth *et al.* 1995) not to be this species.

RED LIST ASSESSMENT JUSTIFICATION

Miller's Green Hairstreak has a restricted range –limited by the availability of its food plant– and a global area of occupancy (AOO) of approximately 24 km². It has not been confirmed from the type locality in Iğdır since it was first described in 1913, although it could still occur there, and overall it is considered to be under-recorded due to the fact that it flies early in the year and can be difficult to detect. However, currently the only reported and widely separated subpopulations are five in Turkey (including the type locality) and one in Iran.

Threats are declines in the quality of its habitat through over-collection of its larval foodplant (an activity which may also be having a direct negative effect on the butterfly's population through harvesting of caterpillars together with the plant); soil compaction and erosion on the steep slopes where it occurs caused by overgrazing; and loss of habitat to road building.

Due to the small AOO, severely fragmented population and continuing decline in the area and quality of habitat, this species is listed as Endangered.



Key

Provinces with records since 1980

Provinces with only old records, before 1979

Taxonomic notes

At the time Hesselbarth *et al.* (1995) was published there was some confusion over the identification of the various *Callophrys* in Turkey and the authors chose to synonymize *C. paulae* and *C. mystaphia*. However, work since, including a major paper by ten Hagen and Miller (2010) reviewing all the *Callophrys* in this region has confirmed that on the basis of morphology, ecology (especially choice of larval foodplant) and DNA, *C. mystaphia* should be accepted as a full species.

Habitat and Ecology

This is a univoltine species that flies in May/June, recorded at altitudes of 2,200-2,800 m. Its larval foodplant is Syrian Rhubarb (*Rheum ribes*) in Turkey (Kemal 2009) and *Rheum persicum* in Iran (ten Hagen 2006). The eggs are laid on the larval foodplant and the caterpillars develop in about 25 days in laboratory conditions. The pupal stage is nearly 11 months (Kemal 2009).

The butterfly is considered to have very poor dispersal ability as it is never seen more than a few metres away from the larval foodplant. Additionally it preferentially nectars on the Rhubarb flowers, even when other nectar sources are available. This behaviour of adhering to the foodplant, combined with the early and short flight period (when entomologists are simply not in the field) are considered to be indications that the species is under-recorded.

Experts expect the species to occur at above 2,000 metres throughout the Zagros Mountains, wherever its foodplant grows. Syrian Rhubarb is recorded in the Flora of Turkey (Davis 1965-85) from Kars, Van and Erzincan, and recent studies have found it to be widespread in eastern Anatolia (M. Vural pers. comm. 2009). Other literature on Syrian Rhubarb (on the plant's medicinal properties) record it as present in Elazığ and Tunceli (Munzuroğlu *et al.* 2000).

Population trend

○ Increasing ○ Decreasing ○ Stable ◉ Unknown

Population

Miller's Green Hairstreak is considered to be perhaps the rarest butterfly in Turkey (Kemal 2009) currently known to occur in four to five fragmented subpopulations, all of which are small, local and isolated.

Since the species is known to have a poor dispersal ability, and the main threat in Turkey is local use of the larval foodplant, each locality is considered to be a separate location.

Threats

The major threat to this butterfly in Turkey is uncontrolled local collection of its larval foodplant, with the stems sold in markets as a vegetable in Van (Avcı 2005), Erzincan and Ağrı (Özcan *et al.* 2007). Over-collecting significantly decreases plant populations (M. Vural pers. comm. 2009) and experts have recommended that collection should be regulated (Özhatay *et al.* 2005). Work by Kemal (2009), indicates that the caterpillars are feeding on the plant from late May to mid July so any rhubarb harvested at this time would remove caterpillars from the population and thus cause declines in the butterfly population.

In Iran, collection of the foodplant for local consumption is known but not considered a serious problem. Instead the main threat is considered to be soil compaction and erosion following overgrazing by nomadic herds on the steep slopes of the mountain pass where the Rhubarb grows; the plant itself does not appear to be grazed (the leaves are poisonous to humans). At the Iranian location an additional threat is road building works which, since 2004, have destroyed part of the small area of habitat.

Recommended conservation action

The Iranian locality lies within the E border of Dena Protected Area. Search for the butterfly at sites where the larval foodplant grows. Study the butterfly's ecology, population and dispersal to understand the impacts of a) collection of its larval foodplant and b) its fragmented population. Establish effective controls and regulation of Rhubarb harvesting. Investigate the options for cultivating Rhubarb to decrease pressure on wild populations.

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Munzuroğlu, O., Karataş, F. and Gür, N. (2000) Işgın (*Rheum ribes* L.) Bitkisindeki A, E ve C Vitaminleri ile Selenyum Düzeylerinin Araştırılması. *Turkish Journal of Biology*, (24), pp.397-404.

ten Hagen, W. (2006) Beitrag zur Kenntnis von *Callophrys mystaphia* Miller, 1913 (Lepidoptera:Lycaenidae). *Nachr. entomol. Ver. Apollo*, 27(3), pp.131-137.

ten Hagen, W. and Miller M. A.(2010) Molekulargenetische Untersuchungen der paläarktischen Arten des Genus *Callophrys* Billberg, 1820 mit Hilfe von mtDNACOIBarcodes und taxonomische Überlegungen (Lepidoptera:Lycaenidae). *Nachr. entomol. Ver. Apollo*, 30 (4), pp.177–197.

M. Vural, pers. comm. (2009): Email from Mecit Vural to Hilary Welch (DKM), 6 November 2009.

Wagener, S. and van Oorschot, H. (1998) Rhopalocera and Grypocera of Turkey 15. zur identitat von *Callophrys mystaphia. Phegea*, 26(2), pp.61-67.

Assessment date

18.10.2010

Assessors

Welch, H.J., Karaçetin, E., ten Hagen, W. & Naderi, A.

Order: LEPIDOPTERA **Family:** LYCAENIDAE

001480 **_Polyommatus diana_**

(Miller, 1913)

EN Endangered

B2ab(iii)

NEAR ENDEMIC

IUCN Global Red List category	IUCN Global Red List criteria
-	-

©Oktay Subaşı

RECENT SYNONYMS

Scientific: -

English: **Diana Blue**

Turkish: **Çokgözlü Diana**

DISTRIBUTION - Global:

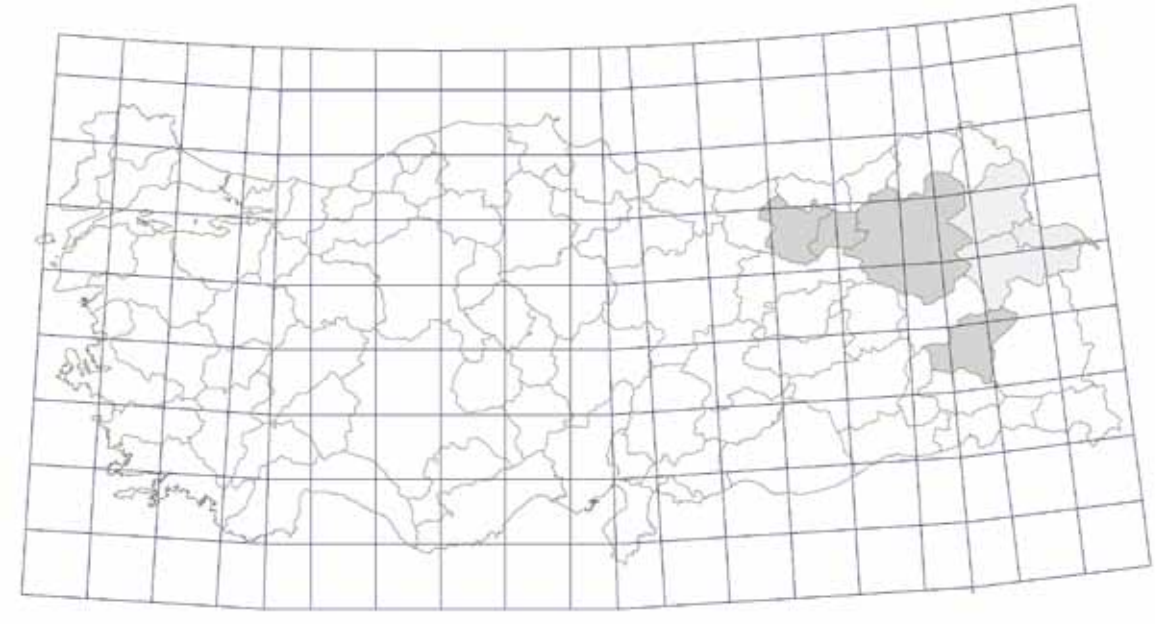
Occurs in the Armenian highlands, in NE Turkey, Armenia and NW Iran. In Iran it is recorded from one small locality in the northwest (Nazari 2003), and in SW Armenia from the vicinity of Yerevan and Khosrovsky Reserve (Tuzov *et al.* 2000).

Turkey: *Extent Of Occurrence (EOO) post* 1980 (*km²*) **5,594** *Area Of Occupancy (AOO) post 1980 (km²)* **160**

The majority of this species' range falls within Turkey, with records from seven provinces in the NE. In chronological order the most recent records from each province are: Iğdır 1911, Kars 1985, Gümüşhane 1988, Erzurum 1993, Ağrı 2006, Bayburt 2008, Bitlis 2009. Bitlis (O. Subaşı pers. comm. 2009) is an extension of the range presented in Hesselbarth *et al.* 1995.

RED LIST ASSESSMENT JUSTIFICATION

Diana Blue (*Polyommatus diana*) is a near endemic with most of its range falling within Turkey's borders. Its extent of occurrence (EOO) is 5,594 km² but its area of occupancy (AOO) is extremely restricted (approximately 160 km²). Since 1980, it has been recorded from only eight sites, all of which are considered small, isolated and fragmented (Hesselbarth *et al.* 1995). The butterflies prefer flower-rich subalpine meadows and show high site fidelity. Over-grazing is recorded as the main threat in its habitats (Hesselbarth *et al.* 1995) and, as its very local larval foodplant is likely to be highly palatable to livestock (Elçi 2005), it is inferred that uncontrolled grazing would be likely to have a detrimental effect on its populations. Therefore the species is listed as Endangered.



Taxonomic notes

In Iran this occurs as a separate subspecies: *Polyommatus diana omnicaerulea* Weidenhöffer, 2002. This small population is not considered to be connected to the more northern populations of the nominate subspecies occurring in Turkey.

Habitat and Ecology

Diana Blue has been recorded from mid May to late July, with most records from June. It occurs from 1,500 to 2,500 m, in mesophilic, flowery subalpine grasslands, usually on volcanic soils. Its larval foodplant has been observed in Ağrı but not yet identified. It is low-growing, with bright pink-purple flowers and thought to be a species of *Vicia*. The plant occurs only locally and is probably the limiting factor for the butterfly, perhaps explaining why the butterflies show very high site fidelity and do not leave even when the vegetation around appears to be similar. They are often seen drinking at mud-puddling sites or nectaring at *Vicia* flowers. Larval instars are unknown (all information from Hesselbarth *et al.* 1995).

In Iran the butterfly has a comparably short and early flight period of about two weeks in June. If it is similar in Turkey this may be a reason why there are so few records of the species.

Population trend

○ Increasing ○ Decreasing ○ Stable ◉ Unknown

Population

Diana Blue is highly site faithful so its ability to colonise new areas is low. Hesselbarth *et al.* (1995) reported populations to be small, fragmented, restricted to small sites and vulnerable to threats (e.g. grazing) in the surrounding area. Recent observations, however, suggest that although localities may be small, subpopulations can number many hundreds of individuals (Ağrı, May 2006, W. ten Hagen and K. Schurian).

Threats

Diana Blue's isolated populations, high site fidelity and reluctance to colonise new areas make it very susceptible to changes in its habitat. Hesselbarth *et al.* (1995) considered overgrazing of the subalpine grasslands where it occurs to be a serious threat since its larval foodplant is likely to be *Vicia* sp., a family of plants highly palatable to grazing animals (Elçi 2005).

Recommended conservation action

Research is required to understand how much grazing is needed and tolerated by this butterfly. Habitat and grazing management plans should be prepared and implemented for the sites where the butterfly occurs.

Selected References

Elçi, Ş. (2005) *Baklagil ve Buğdaygil Yem Bitkileri.* Ankara: T.C. Tarım ve Köy İşleri Bakanlığı.

O. Subaşı pers. comm. (2009): E-mails between Evrim Karaçetin (Erciyes University, Kayseri) and Oktay Subaşı, 10-12 August 2009.

Assessment date

28.03.2010

Assessors

Karaçetin, E., Welch H.J., ten Hagen, W. & Schurian, K.

Order: LEPIDOPTERA **Family:** NYMPHALIDAE

003200 **Maniola halicarnassus**

Thomson, 1990

EN Endangered

B1ab(iii)+2ab(iii)

NEAR ENDEMIC

IUCN Global Red List category	IUCN Global Red List criteria
-	-

Assessment submitted to IUCN for Global Red List: approval pending

Male, Nissiros Island ©George Thomson

RECENT SYNONYMS

Scientific: -

English: **Halicarnas Brown**

Turkish: **Halikarnas Esmeri**

DISTRIBUTION - Global:

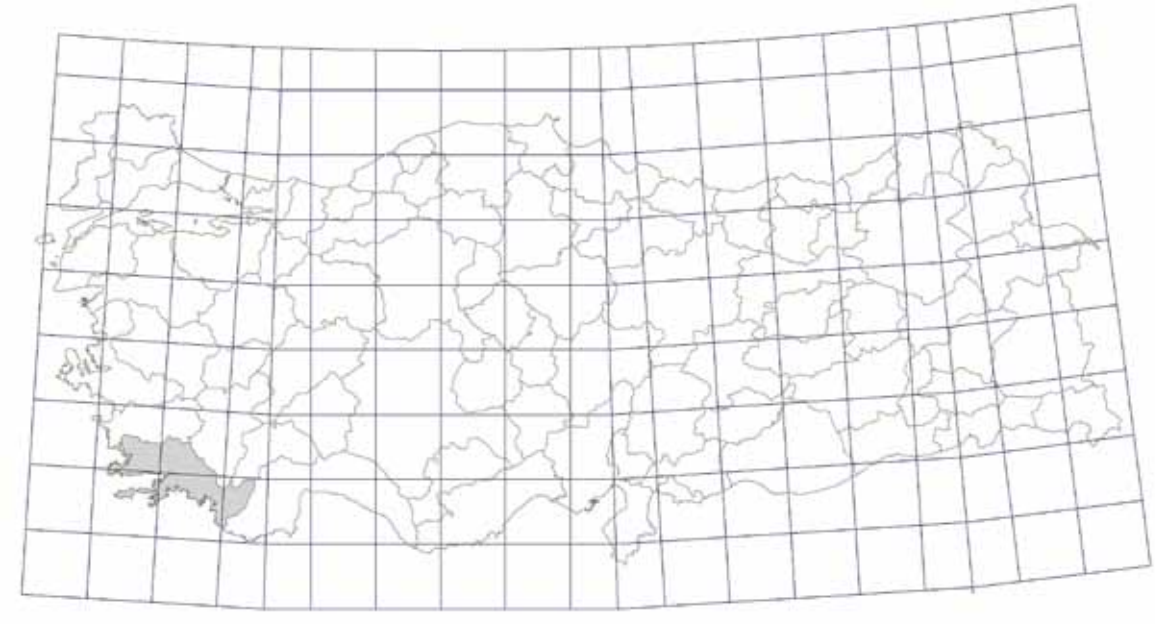
Greece (Nissiros Island) and SW Turkey (Muğla province) (Kudrna 2002). The butterfly has a very restricted range with a total extent of occurrence (not including the intervening sea) of less than 700 km², and total area of occupancy of 498 km².

Turkey: *Extent Of Occurrence (EOO) post* 1980 (*km²*) **600** *Area Of Occupancy (AOO) post 1980 (km²)* **456**

In SW Turkey, where the larger subpopulation is located, it occurs only on the Bodrum Peninsula. Experts consider it may also occur on other southwest coast peninsular areas but as yet there is no evidence to support this. The Greek and Turkish subpopulations are separated by about 16 km of the Aegean Sea and it is not known if they are connected (Hesselbarth *et al.* 1995, Olivier and Coutsis 1995).

RED LIST ASSESSMENT JUSTIFICATION

Halicarnas Brown (*Maniola halicarnassus)* is restricted to the Bodrum Peninsula, Muğla, Turkey and Nissiros Island, Greece, with the majority of the population in Turkey. These two subpopulations are situated 16 km apart, separated by the Aegean Sea (Olivier and Coutsis 1995). The butterfly thus has a very restricted range with a total extent of occurrence of less than 700 km² (approximately 600 km² in Turkey) and an area of occupancy of 498 km² (456 km² in Turkey and 42 km² in Greece). The 2010 European Red List of Butterflies lists the subpopulation in Greece as Near Threatened because of the species' extremely restricted range in Europe (only one location) and lack of specific threats (van Swaay *et al.* 2009k). The subpopulation in Turkey is located on the Bodrum Peninsula, a popular centre for tourism. The major threat here is ongoing tourism-related building developments, as local urban development plans ignore the need to conserve this species and its habitat. Also, despite the fact that there is no threat associated with the site in Greece, if there is gene flow between the Greek and Turkish subpopulations, a decline in Turkey would be expected to have a negative influence on the Greek subpopulation. The species is therefore listed as Endangered.



Key

Provinces with records since 1980

Provinces with only old records, before 1979

Taxonomic notes

Prior to its description in 1990 this species was recorded as *Epinephele jurtina telmessia* or *Maniola telmessia* (Olivier and Coutsis 1995). However, studies of the genitalia show that although there is evidence of gene exchange, *Maniola halicarnassus* is distinctly different from Meadow Brown (*M. jurtina*) and Eastern Meadow Brown (*M. telmessia*) and it is thus now accepted as a valid species (Thomson 1990, Olivier and Coutsis 1995, Grill *et al.* 2004). It is considered that the speciation was recent and that during the last glaciation the species became isolated on Nissiros Island and the Bodrum Peninsula, coming back into contact with Eastern Meadow Brown after the ice retreated (Thomson 1990, Hesselbarth *et al.* 1995).

Habitat and Ecology

In Turkey, the butterfly occurs at low altitude (0-100m), in moist and shaded grassy places in the close vicinity of bushes and trees. The flight period is from early May to early June, then after aestivation until August (Hesselbarth *et al.* 1995). However, on Nissiros in 1987 G. Thomson found fresh males and females up to 17 July, even when it had been very hot for some time. Whether this was an early break from aestivation or a normal pattern of behaviour is not known, but it was notably different from Eastern Meadow Brown which was aestivating at that time (but could be disturbed from its hiding places). It therefore appears that the flight times of Halicarnas Brown are worth investigating and may have some bearing on its speciation.

In Greece the butterfly is recorded at low altitude throughout the island in dry, open scrub and near agricultural land (van Swaay *et al.* 2009k) and in the town. The larvae feed on grasses and the adults are often observed nectaring on oregano (*Origanum* sp.) (Hesselbarth *et al.* 1995).

Population trend

○ Increasing ○ Decreasing ○ Stable ◉ Unknown

The range of Halicarnas Brown is very restricted. In Turkey, the records are from six adjacent 10x10 km squares which are all facing the same threat (expansion of settlements and general building developments, much of it related to tourism). The species is thus considered to exist at a single location in Turkey.

In Greece, the butterfly occurs in several subpopulations but overall these are small and very restricted; they are thus considered to comprise one location (van Swaay *et al.* 2009k).

Globally the species thus occurs at just two locations.

Threats

The Bodrum Peninsula has a warmer and drier climate than the rest of the Aegean Coast and is one of the most popular tourism centres in Turkey. The main threat to this butterfly is thus the spread of new houses and tourism facilities which are steadily reducing the amount and quality of natural habitat available. Since conservation of the butterfly and its habitat are not considered in urban development plans this situation can be expected to worsen. The *European Red List of Butterflies* does not identify any specific threat for the Greek subpopulation (van Swaay *et al.* 2009k).

Recommended conservation action

Further research is needed to understand how to differentiate it from Eastern Meadow Brown, to learn about its ecology and how it uses the habitat, and long-term monitoring to provide information on population trends. In Turkey the butterfly's habitats should be protected by including them in local urban development plans.

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Assessment date

29.08.2010

Assessors

Karaçetin, E., Welch, H.J., Thomson, G. & Red List Working Group participants, Ankara 10-12.08.2009.

Order: LEPIDOPTERA **Family:** PIERIDAE

000230 **Colias caucasica**

Staudinger, 1871

EN Endangered

B1ab(iii)+2ab(iii)

IUCN Global Red List category	IUCN Global Red List criteria
-	-

©Ahmet Baytaş

RECENT SYNONYMS

Scientific: -

English: **Caucasian Clouded Yellow**

Turkish: **Kafkasya Azameti**

DISTRIBUTION - Global:

Occurs in the Meskhetian Mountains in the W Caucasus, NE Turkey and the Balkans (Tuzov *et al.* 1997, van Swaay *et al.* 2009).

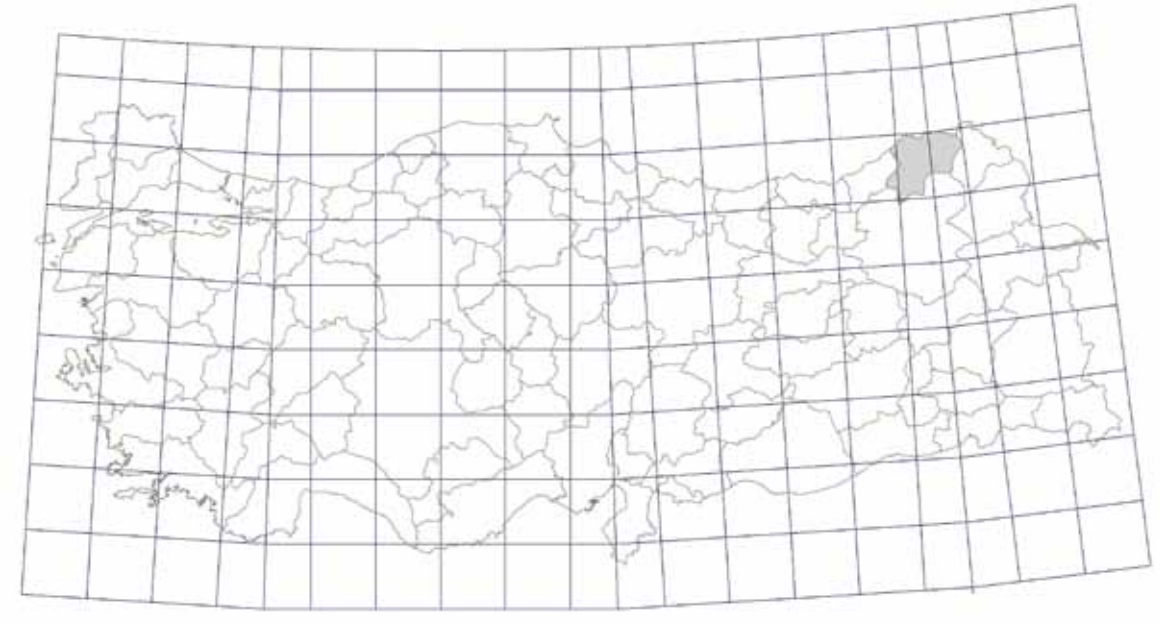
Turkey: *Extent Of Occurrence (EOO) post* 1980 (*km²*) **1,569** *Area Of Occupancy (AOO) post 1980 (km²)* **180**

Recorded only from the province of Artvin with an extent of occurrence (EOO) of 1,569 km² and area of occupancy (AOO) of approximately 180 km².

RED LIST ASSESSMENT JUSTIFICATION

Caucasian Clouded Yellow (*Colias caucasica*) is a restricted range species and, in the eastern part of its range is only observed in Artvin (NE Turkey) and the west Caucasus. Its extent of occurrence (EOO) in Turkey is 1,569 km² and area of occupancy (AOO) is approximately 180 km². In Turkey there are approximately five locations and at at least two of these experts consider planned small scale hydroelectric schemes will cause a decline in the quality of the butterfly's habitats. In addition, cessation of traditional animal husbandry in open woodlands, due to emigration from villages, is recorded as a threat. The species is therefore listed as Endangered.

Due to the lack of information on population and distribution of this butterfly in neighbouring countries no regional adjustment has been made to the threat category.



Key

Provinces with records since 1980

Provinces with only old records, before 1979

Taxonomic notes

No known taxonomic problems or issues.

Habitat and Ecology

Seen on flowery mountains above 1,600 m from mid-June to early August (Baytaş 2007, Hesselbarth *et al.* 1995). It uses a range of larval foodplants, mainly legumes, including *Chamaecytisus hirsutus* (Baytaş 2007).

As a species of moderate temperatures it is absent from the Mediterranean climate of the Çoruh Valley and the extreme alpine zone, and restricted to the intermediate habitats between 1,600 and 2,500 m. Most records come from 1,700-2,000 m.

No information has been found on the species or its habitat in Georgia.

Population trend

○ Increasing ○ Decreasing ○ Stable ◉ Unknown

Population

Caucasian Clouded Yellow is a local species and not much is known about its population structure and trends in the eastern part of its range. In Europe, in Bosnia and Herzegovina, strong declines in distribution or population size of more than 30% have been reported but despite this it is not believed that the species faces major threats there (van Swaay *et al.* 2009b).

In Turkey, current records indicate at most five locations. The Yaylalar region will be affected by the Merhas Regulators and HES plans and is thus considered one location. The Tekkale region, to be affected by the Tekkale Regulators and HES plans (Muluk *et al.* 2009) is a second location. Aside from these two regions, additional records are from three further sites which may or may not be connected and for which the exact HES plans and threats are not known.

Threats

The butterfly occurs only in Artvin, a province where 58 small-scale hydroelectric schemes (HES) are currently planned (Akpınar *et al.* 2009). Muluk *et al.* (2009) presents details of HES in the Barhal Valley, Yusufeli, for which plans are available; this area comprises about half of the butterfly's Turkish range. According to maps in Muluk *et al.*, the altitudinal band used by the butterfly corresponds with the localities designated for the HES, with two HES expected to be particularly damaging and with similar impacts; 'Merhas Regulators and HES plans' and 'Tekkale HES'. The former will canalise the course of the Altıparmak Stream at 2,150 m for 4.5 km, starting from the boundary of the Kaçkar Mountains National Park, and then send it down pipes to 'Damla Regulators and HES'. This will deprive many areas of water, and the new roads built on the steep slopes (for construction and maintenance work) will result in destruction of habitat over a wide area, fragmenting butterfly populations. It is considered that Tekkale HES will have a similar affect.

Cessation of traditional animal husbandry in open woodlands is a threat to the larval foodplant.

Recommended conservation action

Further research is needed to understand the butterfly's biology, ecology and behaviour so as to be able to predict more precisely how the current HES will influence butterflies. This understanding would make it possible to recommend how the HES plans should be revised in order to reduce their damaging impacts on this and other butterflies.

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Assessment date

01.11.2009

Assessors

Karaçetin, E., Welch, H.J. & Sáfián, S.

Order: LEPIDOPTERA **Family:** LYCAENIDAE

000670 # *Satyrium hyrcanicum*

(Riley, 1939)

EN Endangered

A3c

IUCN Global Red List category	IUCN Global Red List criteria
-	-

Upper and undersides ©Hesselbarth *et al.* (1995)

RECENT SYNONYMS

Scientific: ***Armenium hyrcanica***

English: **Hyrcanian Black Hairstreak**

Turkish: **Büyük Benekli Sevbeni**

DISTRIBUTION - Global:

Turkey, the Transcaucasus and Iran to Afghanistan (Tuzov *et al.* 2000).

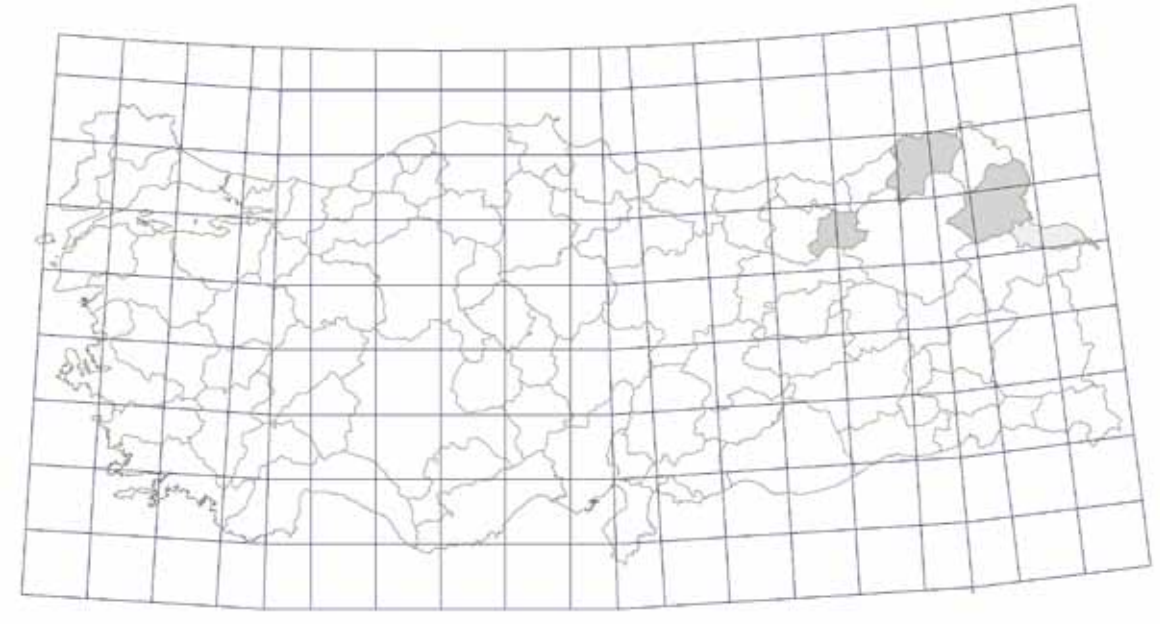
Turkey: *Extent Of Occurrence (EOO) post* 1980 (*km²*) **10,848** *Area Of Occupancy (AOO) post 1980 (km²)* **600**

The species had a very restricted distribution in both Turkey and Iran (Hesselbarth *et al.* 1995, Nazari 2003). In Turkey it has been recorded from nine localities in four provinces, with the most recent records in each province as follows: Kars 1999, Artvin 1993, Bayburt 1988 and Iğdır 1901.

RED LIST ASSESSMENT JUSTIFICATION

Hyrcanian Black Hairstreak (*Satyrium hyrcanicum*) is a rare species occurring from Turkey to Afghanistan (Tuzov *et al.* 2000). Its extent of occurrence (EOO) in Turkey is large, 10,848 km², but its population is fragmented throughout its range so the area of occupancy is only approximately 600 km². All of the three Turkish subpopulations, in Artvin, Kars and Bayburt, are threatened by large dams or hydro-electric schemes and their associated infrastructure. Once all these schemes are completed it is considered that a greater than 50% decline in the population can be expected. Therefore the species is listed as Endangered.

Due to the severely fragmented distribution no regional adjustment has been made to the threat category.



Taxonomic notes

In Turkey this occurs as an endemic subspecies, *S. h. cyri* (Hesselbarth *et al.* 1995)

Habitat and Ecology

The butterfly is on the wing from mid-July to mid-August preferring dry, bushy slopes at altitudes of 900-2,000 m where it can be found around *Crataegus* and *Prunus* bushes. Females prefer to stay inside shrubs of the larval foodplant, *Atraphaxis billardieri* (Hesselbarth *et al.* 1995). Its larval instars are not known.

Population trend

○ Increasing ○ Decreasing ○ Stable ◉ Unknown

Population

In Turkey there are three widely separated subpopulations. In Artvin it occurs along the Çoruh River Valley and in Kars and Iğdır along the Aras River Valley. There have been no records from Bayburt since 1988. Not much is known about this butterfly and research is needed to understand its population structure.

Threats

There are three separate subpopulations of this species in Turkey and each is threatened by dam and/or hydro-electric schemes (HES). The Artvin subpopulation, along the Çoruh River Valley, will be extensively affected by the Yusufeli dam and associated infrastructure construction. In Kars, the subpopulation along the Aras River Valley will be affected by three different dams (Karakurt, Denizgölü and Kuloğlu dams, Eken *et al.* 2006), but here there is no information on planned construction dates. In Bayburt, four small scale HES projects are planned. Once all these schemes are completed it is considered that a greater than 50% decline in the population can be expected.

Recommended conservation action

More work is needed to understand the distribution and population structure of this species and determine if it is as restricted as current records indicate.

Greater understanding of the global distribution, ecology and potential threats is needed.

Selected References

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Assessment date

11.10.2010

Assessors

Karaçetin, E. & Welch, H.J.

Order: LEPIDOPTERA **Family:** LYCAENIDAE

EN Endangered

B2ab(iii)

000710 **Apharitis cilissa**

Lederer, 1861

IUCN Global Red List category	IUCN Global Red List criteria
-	-

©Ali Atahan

RECENT SYNONYMS

Scientific: ***Cigaritis cilissa***

English: **Levantine Silver-line**

Turkish: **Akdeniz Şeytancığı**

DISTRIBUTION - Global:

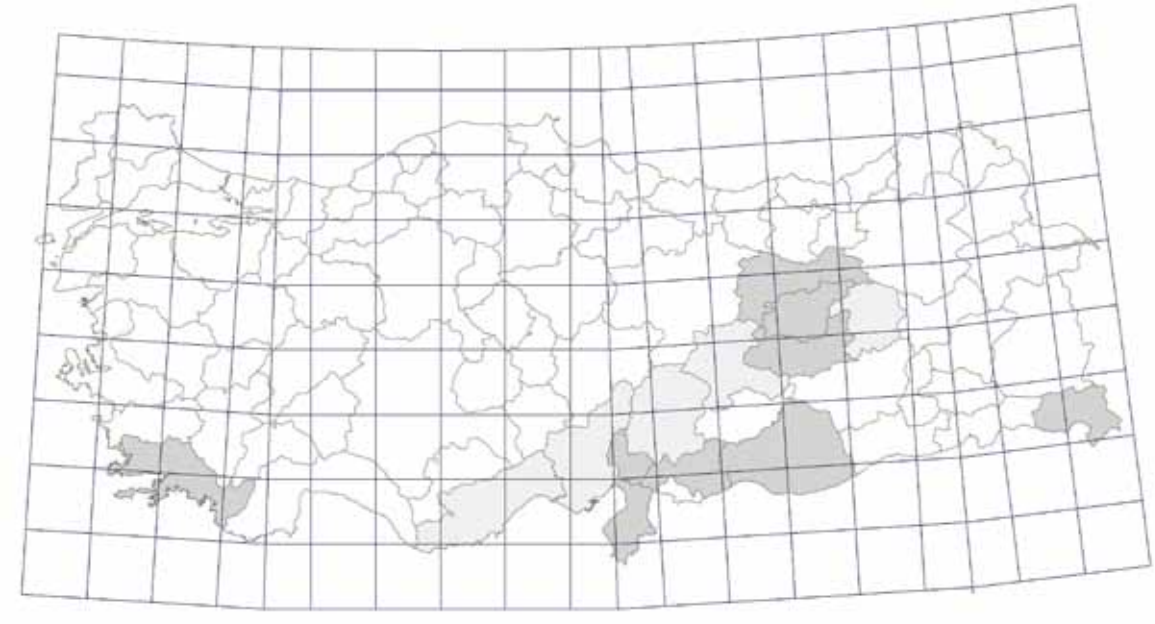
South and east Turkey, possibly southern Lebanon, Israel, west and south-central Iran, northeast Iraq (Larsen *in press*, Nazari 2003, Hesselbarth *et al*. 1995).

Turkey: *Extent Of Occurrence (EOO) post* 1980 (*km²*) **82,401** *Area Of Occupancy (AOO) post 1980 (km²)* **36**

Levantine Silver-line is sparsely but widely distributed across SE Turkey with records from only nine localities since 1980, with the most recent from Şanlıurfa and Hatay in 2009. It is a species which is easily overlooked but although it is likely to have a larger area of occupancy (AOO) than the 36 km² calculated, it is not expected to be more than 500 km².

RED LIST ASSESSMENT JUSTIFICATION

The Levantine Silver-line (*Apharitis cilissa)* is a species of dry habitats and is described as rare and local throughout its range. In Turkey it has a fragmented distribution and a very small area of occupancy of 36 km². It has a strong dependency on ants for a large part of its lifecycle and this makes it very sensitive to changes in its environment. The most plausible and widespread threat is agricultural change and intensification which is occurring on a large scale in southern Turkey, with irrigation and more intensive land use following large dam schemes, cultivation of new areas previously considered too dry, and use of herbicides and pesticides. This species is thus listed as Endangered.



Key

Provinces with records since 1980

Provinces with only old records, before 1979

Elazığ and Muğla are mentioned only by Koçak and Kemal (2009).

Taxonomic notes

Torben Larsen (*in prep*.) considers the three closely allied genera *Apharitis* Riley, 1925, *Cigaritis* Donzel, 1847 and *Spindasis* Wallengren, 1857 should be restored because the biogeography, ecology, and behaviour of each is different. *Cigaritis* is strictly Palaearctic with only three species which penetrate temperate NW Africa (Morocco, Algeria). *Apharitis*, the group which occurs in Turkey, has seven or eight species and is a model group of sandy deserts, distributed across the Sahara to NW India and down into arid Central Africa. Neither of the two has any real distributional overlap with the other, nor with members of the tropical *Spindasis* of Tropical Africa and Asia. This name change has been accepted by the European list.

Habitat and Ecology

Flies from the end of April to mid July in oak shrubland, rocky cliffs and stony mountain slopes from sea-level to 1,800 m (Hesselbarth *et al.* 1995, Baytaş 2007). This is a myrmecophilous species depending on ants of the genus *Crematogaster* for a large part of its lifecycle. This dependence makes the butterfly much more sensitive to changes in the environment.

In Israel the butterfly can be found both in the mountains of Galilee and in coastal sand dunes at one locality in central Israel.

Population trend

○ Increasing ○ Decreasing ○ Stable ◉ Unknown

Population

Levantine Silver-line has a fragmented distribution in Turkey. It is described as rare and local not only in Turkey (Hesselbarth *et al.* 1995) but also in south Lebanon and Israel (T. Larsen *in prep*.). In Iran too it is shown as being very sparsely distributed (Nazari 2003). In Israel the species is listed as one of the country's 14 protected species.

The population trend in Turkey is unknown, but due to the species' affinity with dry habitats and the intensive and extensive changes in land use with widespread irrigation following large dam schemes, particularly in south east Anatolia, it seems very likely that the species is declining.

Threats

Agricultural change and intensification is the most plausible and widespread threat. This includes irrigation and intensification following large dam schemes, cultivation of new areas previously considered too dry, and use of herbicides and pesticides.

Supporting this, in Israel an ongoing decline in the species' distribution has been documented as orchards of apples and plums have been planted in the valleys where it occurs. In most of the valleys the butterfly is now extinct due to the extensive use of agricultural chemicals and only a handful of adults survive around the periphery of the original area.

Recommended conservation action

The areas where the species occurs need to be identified and protection measures developed. This is likely to include development of initiatives and instruments to control intensification of land use.

Research into the species' ecology is needed, drawing on the experience of work on the species' biology and habitat management initiatives in Israel.

Develop a Species Action Plan.

Selected References

Larsen, T. B. (*in prep*.) The Tropical Butterflies of the Levant: a Biogeographical and Ecological Perspective IN: Benyamini, D. (ed.) *Butterflies of the Middle East. First International Congress, 29-30 May 2008*. Jerusalem, Israel

Assessment date

22.10.2010

Assessors

Welch, H.J., Karaçetin, E. & Benyamini, D.

Karaçetin, E. and Welch, H.J. (2011). Red Book of Butterflies in Turkey. Ankara, Turkey: Doğa Koruma Merkezi. Available from: [www.dkm.org.tr]

Order: LEPIDOPTERA **Family:** LYCAENIDAE

001070 **Phengaris nausithous**

(Bergsträsser, 1779)

EN Endangered

B2ab(iii)

IUCN Global Red List category	IUCN Global Red List criteria
NT Near Threatened	-

Last assessed by IUCN in 1996, needs updating.

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RECENT SYNONYMS

Scientific: ***Maculinea nausithous, Glaucopsyche nausithous***

English: **Dusky Large Blue**

Turkish: **Esmer Korubeni**

DISTRIBUTION - Global:

Occurs from Western Europe to Central Siberia (Tuzov *et al.* 2000). The populations in the Caucasus and Turkey are widely separated from the main areas of distribution which lie to the north and west (Tshikolovets 2003).

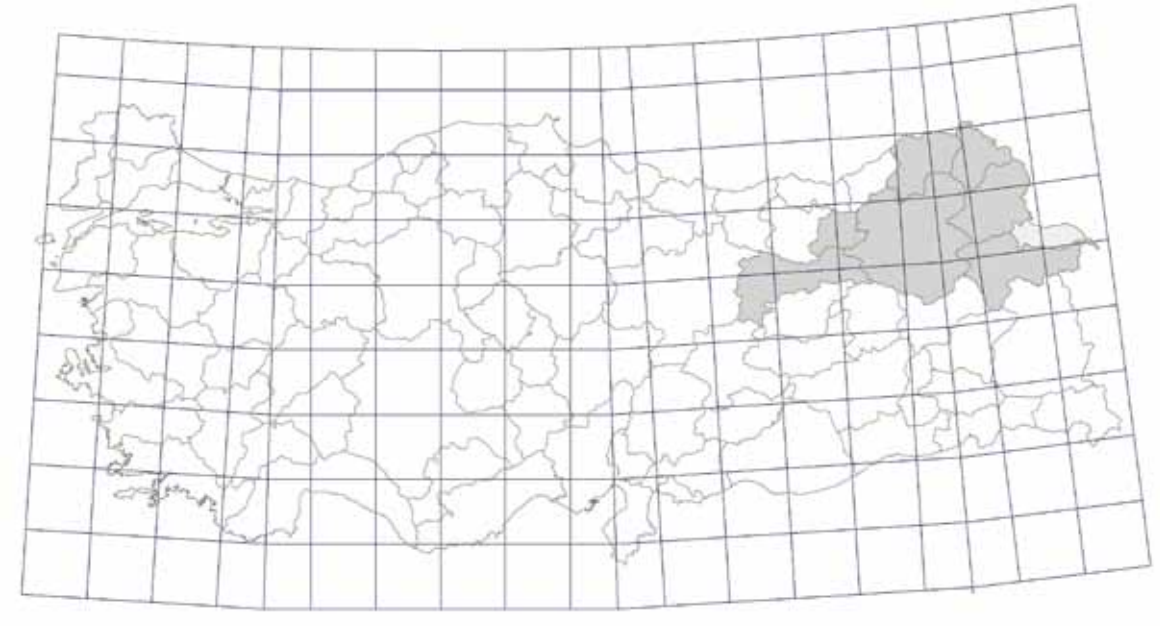
Turkey: *Extent Of Occurrence (EOO) post* 1980 (*km²*) **27,989** *Area Of Occupancy (AOO) post 1980 (km²)* **68**

In Turkey it is only recorded in NE Anatolia, in small fragmented populations.

RED LIST ASSESSMENT JUSTIFICATION

The subpopulations of Dusky Large Blue (*Phengaris nausithous*) in the Caucasus and Turkey are widely separated from the main areas of distribution. Its extent of occurrence (EOO) in Turkey is large (27,989 km²) but, because areas of suitable habitat are small and isolated the area of occupancy is estimated to be only 68 km². The subpopulations are naturally fragmented due to the restricted nature of its habitat and the fact that it is relatively sedentary. In Europe, a population decline of more than 30% in the last 10 years has been recorded, principally due to agricultural improvements (van Swaay *et al.* 2009c). Since threats are similar in Turkey it is possible that this decline is mirrored here, but with no monitoring data this cannot be confirmed. However, in NE Turkey there is a general trend of either mechanisation and intensification of farming, or land abandonment, both of which have a long-term negative impact on populations and ultimately result in local extinctions. The species is therefore listed as Endangered.

Due to the severely fragmented distribution no regional adjustment has been made to the threat category.



Key

Provinces with records since 1980

Provinces with only old records, before 1979

Taxonomic notes

Despite the recent proposal for the use of the senior synonym *Phengaris* for all recognised *Maculinea* taxa, an appeal for the precedence of the name *Maculinea* over *Phengaris* was submitted to the International Commission on Zoological Nomencalature in mid 2010, and published in the Bulletin of Zoological Nomenclature (Balletto *et al.* 2010). A decision is awaited.

Habitat and Ecology

The Dusky Large Blue occurs on damp, moderately nutrient-rich grassland and rough vegetation where its larval foodplant Great Burnet (*Sanguisorba officinalis*) grows. The butterflies are usually found on or near the larval foodplant, which is also the main nectar source for the adults. Females preferably deposit the eggs on large flowerheads of large plants. The egg load per flowerhead can exceed 20 which leads to high resource competition, and usually not more than three to four caterpillars per flowerhead successfully reach their final larval instar. After about three weeks they move out of the flowerheads to the ground in order to be carried by workers of the ant genus *Myrmica* to an ant nest. There, they feed on ant grubs and ant regurgitations, hibernate and pupate early the following summer. As soon as they emerge from the chrysalis, the butterflies leave the nest. The Dusky Large Blue is one of the most specialised of all the obligate myrmecophilous blues: its life cycle being adapted to only one species of host ant in most of its range. While in most of Europe *Myrmica rubra* is the main and often only host ant, some populations at the edge of the range are adapted to *Myrmica scabrinodis* but these are very rare (Tartally *et al.* 2008, Settele *et al.* 2008c). The *Myrmica* species used in Turkey is not known. This butterfly species usually has one generation a year from mid-July to mid-August (Hesselbarth *et al.* 1995) but it may also happen that caterpillars in the ant nest take two years to fully develop (Witek *et al.* 2006).

Population trend

○ Increasing ○ Decreasing ○ Stable ◉ Unknown

Population

This is a local species, restricted to (semi-) natural areas (van Swaay *et al.* 2009c). The populations in Turkey are considered fragmented. The areas of suitable habitat are small and isolated and unlikely to be connected as the longest migration so far documented for this species is 5 km (Binzenhöfer and Settele 2000) with most displacements hardly exceeding 500 m (van Langevelde and Wynhoff 2009). For the same reason, exchange of individuals with the nearest populations in Georgia is uncertain. Small and isolated patches have a lower probability of occupancy (Nowicki *et al.* 2007). However, it is known that very small populations of this species can survive for some time (Wynhoff 2001).

In Europe, this species is listed on the regional European Red List as Near Threatened due to a strong decline in distribution or population size of more than 30% in Romania, the Netherlands and Ukraine, and a decline of between 6-30% in Austria, France, Germany, Hungary, Slovenia and Switzerland (van Swaay *et al.* 2009c). Although there is no monitoring data available for Turkey, the decline observed in Europe may also be occurring in Turkey as habitat management changes and other threats are similar.

Threats

The management of the hay meadows where the larval foodplant grows is critical. Best is traditional cutting by scythe in small blocks, with some areas cut late, or left uncut for one year, to provide flowerheads where the larvae can complete their development. However, mowing large areas with a tractor in the middle of the season (as seen in Kılıçkaya, Artvin, in 2009), destroys the structural diversity, removes the foodplant while the caterpillars are in the flowerheads and damages the larger ant nests which are most valuable to the butterflies. Mechanisation at Kılıçkaya was also facilitating drainage and ploughing of the marginal habitats which provide important refuges for this butterfly.

In the long-term, abandonment is also a problem (van Swaay *et al.* 2009c) although initially abandoned meadows can support very high population densities of this butterfly. But, after 10-20 years the grassland turns to forest and populations face extinction.

In the long-term this species may be vulnerable to climate change as its distribution is well explained by climate variables (Settele *et al.* 2008c) and Turkey is a long way south of the main area of distribution.

Recommended conservation action

This species is listed in the EU Habitats Directive Annexes 2 and 4, and the Bern Convention Annex 2.

Careful control of the implementation of habitat management is needed on a site by site basis. For example, damage done by mowing with tractors can be reduced if it takes place early enough, generally before mid June to allow sufficient regrowth of the foodplant, or after mid September when the caterpillars have left the flowerheads. However, mechanisation can have a negative effect on the ant nests and this should be monitored.

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Binzenhöfer B. and Settele J. (2000) Vergleichende autökologische Untersuchungen an *Glaucopsyche* (*Maculinea*) *nausithous* Bergstr. und *G.* (*M.*) *teleius* Bergstr. (Lepidoptera, Lycaenidae) im nördlichen Steigerwald. In: Settele, J & Kleinewietfeld S (eds) P*opulationsökologische Studien an Tagfaltern 2*. UFZ-Bericht 2/2000, pp.1-98.

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Assessment date

11.08.2009

Assessors

Karaçetin, E., Welch, H.J., Sáfián, S., Wynhoff, I. & Red List Working Group participants, Ankara 10-12.08.2009

Order: LEPIDOPTERA **Family:** LYCAENIDAE

001310 ***Aricia teberdina***

(Sheljuzhko, 1934)

EN Endangered

B1ab(iii)+2ab(iii)

IUCN Global Red List category	IUCN Global Red List criteria
-	-

©Wolfgang Eckweiler

RECENT SYNONYMS

Scientific: ***Plebeius teberdinus, Polyommatus (Aricia) teberdina***

English: **Georgian False Argus, Caucasian Silvery Argus**

Turkish: **Teberda Çokgözlüsü**

DISTRIBUTION - Global:

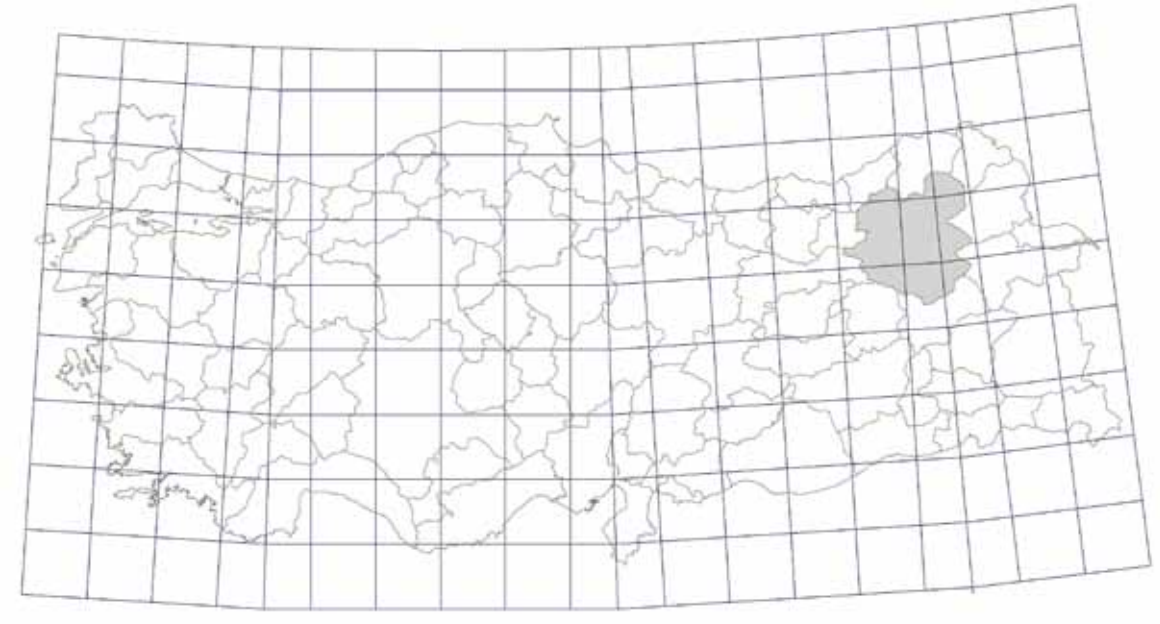
Northern slopes of the central Greater Caucasus and Turkey (Tuzov *et al.* 2000). In the Russian Caucasus there are two localities; the type locality at Teberda in the Chatipara Mts. at 2,200-2,300 m (Sheljuzhko 1934) and Itkol in the Elbrus Mts. (Eckweiler 1978).

Turkey: *Extent Of Occurrence (EOO) post* 1980 (*km²*) **<200** *Area Of Occupancy (AOO) post 1980 (km²)* **40-80**

Only recorded from the south side of the Ovit Pass (Ispir, Erzurum, Turkey) at Özlüce (=Nahizer) (Eckweiler 1978, Hesselbarth *et al.* 1995) and the Çoruh Valley (Hesselbarth *et al.* 1995), with the most recent records 2006 and 1991 respectively. Its range in Turkey is extremely restricted, with an extent of occurrence (EOO) of less than 200 km² and area of occupancy (AOO) estimated to be 40-80 km².

RED LIST ASSESSMENT JUSTIFICATION

The Caucasian Silvery Argus (*Aricia teberdina*) is a local species found only in the Russian Caucasus and Turkey. In Turkey, it has a very restricted range, recorded from two locations in Erzurum province. Its extent of occurrence (EOO) is less than 200 km² and area of occupancy (AOO) is approximately 40-80 km². The major threats are grazing pressure in Özlüce and dam construction in Güllüce. Due to its restricted range, small number of locations, and anticipated loss and/or decline in the quality of habitat at the current locations due to the threats, this species is listed as Endangered.



Taxonomic notes

In Turkey it occurs as an endemic subspecies, *A. t. nahizerica* (Eckweiler 1978, Hesselbarth *et al*. 1995).

Habitat and Ecology

The butterfly's breeding habitat in Turkey is described as steep rocky slopes at 1,700-1,900 m near Nahizer (= present-day Özlüce) (Schurian and Eckweiler 2002). In 1977, when the butterfly was first discovered in Turkey, many females were observed nectaring on *Acantholimon* plants growing between the rocks in this area. Butterflies have also been recorded on grassy flowery slopes in the same general area but away from the breeding site, nectaring selectively on *Mentha longifolia*.

The larval foodplant is an unidentified species of *Geranium* which is restricted to the region and very similar to the larval foodplant of Turkish False Argus (*Aricia torulensis*). The *Geranium* grows in rock crevices where there is moisture. The butterfly is univoltine, overwintering as an egg and hatching early in the spring. It flies from July to August (Schurian and Eckweiler 2002).

The butterfly has also been recorded at a mud-puddling site to the east, six km NE of İspir along the Çoruh Valley at 1,400 m (Hesselbarth *et al.* 1995). This is considered to be separate from the Özlüce subpopulation and authorities expect that there should be another breeding area close by, probably lower than 1,700-1,900 m.

In the Russian Caucasus, the habitat of the nominate subspecies is recorded as alpine and subalpine grasslands at 2,200-2,300 m (Sheljuzhko 1934).

Population trend

○ Increasing ○ Decreasing ○ Stable ◉ Unknown

Population

Caucasian Silvery Argus is local but not uncommon. Its habitat is very difficult to reach and W. Eckweiler considered he only reached the breeding area once, in 1977 after a difficult and dangerous near vertical climb. At that time he found many females.

In 1996, K. Schurian and W. Eckweiler (2002) visited the Özlüce area again, this time in mid July, which was somewhat early, and in suboptimal weather conditions. They were not able to reach the breeding area and recorded only three individuals. In 2006 A. Baytaş recorded only two butterflies after several hours search. Despite the lower number of butterflies recorded in recent years, experts do not believe there is any reason to consider the butterfly rarer now than it was 30 years ago. It is considered that the lack of records is more likely to be due to the fact that no entomologist has searched for it at the peak of its flight period, in August, nor managed to climb to the main area of habitat.

The butterfly is vulnerable to two major threats; grazing of its type locality and dam building in the area of the mud-puddling site NE of İspir. Therefore the butterfly is considered to occur at two locations.

Threats

The most recent records are from the type locality near Özlüce (=Nahizer) in 2006.

Grazing by sheep is considered the major threat (Schurian and Eckweiler 2002), as intensive grazing would be likely to have a detrimental impact on the butterfly's rare larval foodplant and thus the butterfly.

The mud-puddling site six km NE of İspir along Çoruh Valley is considered likely to indicate an area of breeding habitat close-by. However, this area is the site of the planned Güllübağ Dam and construction is already underway (Sucu and Dinç 2008, Akpınar *et al.* 2009, Peker Group 2010) so it is possible that the butterfly's breeding areas have already been destroyed here. Although the altitude of the dam is lower than the altitude used by the butterfly (1,400-1,600 m), due to the construction of new roads and the indirect influence of changes in climate, habitat loss and/or a decline in the quality of the habitat are expected.

Recommended conservation action

Research is required to understand the impacts of the dam-related construction work as in none of the environmental impact assessments have the butterfly and its habitat been considered.

The impacts of grazing should be quantified and, if necessary, a grazing management plan should be developed and implemented. Surveys of the region for additional breeding areas are needed. The larval foodplant should be identified. Research is needed to understand the population dynamics of this butterfly.

Selected References

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Sucu, S. and Dinç, T. (2008) Çoruh Havzası Projeleri IN: *TMMOB 2. Water Policies Congress*. pp.33-38. [Online]. Available from: http://e-kutuphane.imo.org.tr/pdf/10912.pdf. [Downloaded on November 2010].

Assessment date

15.11.2010

Assessors

Karacetin, E., Welch H., Schurian, K.G., Eckweiler, W. & Baytaş, A.

Order: LEPIDOPTERA **Family:** NYMPHALIDAE

002650 **Euphydryas orientalis**

(Herrich-Schäffer, [1845])

EN Endangered

B1ab(i,ii,iii)+2ab(i,ii,iii)

NEAR ENDEMIC

IUCN Global Red List category	IUCN Global Red List criteria
-	-

©Hilary & Geoff Welch

RECENT SYNONYMS

Scientific: -

English: **Steppe Fritillary**

Turkish: **Güzel Nazuğum**

DISTRIBUTION - Global:

South European Russia, Transcaucasia, Kazakhstan, Turkey (Tuzov *et al.* 2000).

Turkey: *Extent Of Occurrence (EOO) post* 1980 (*km²*) **2,000** *Area Of Occupancy (AOO) post 1980 (km²)* **80**

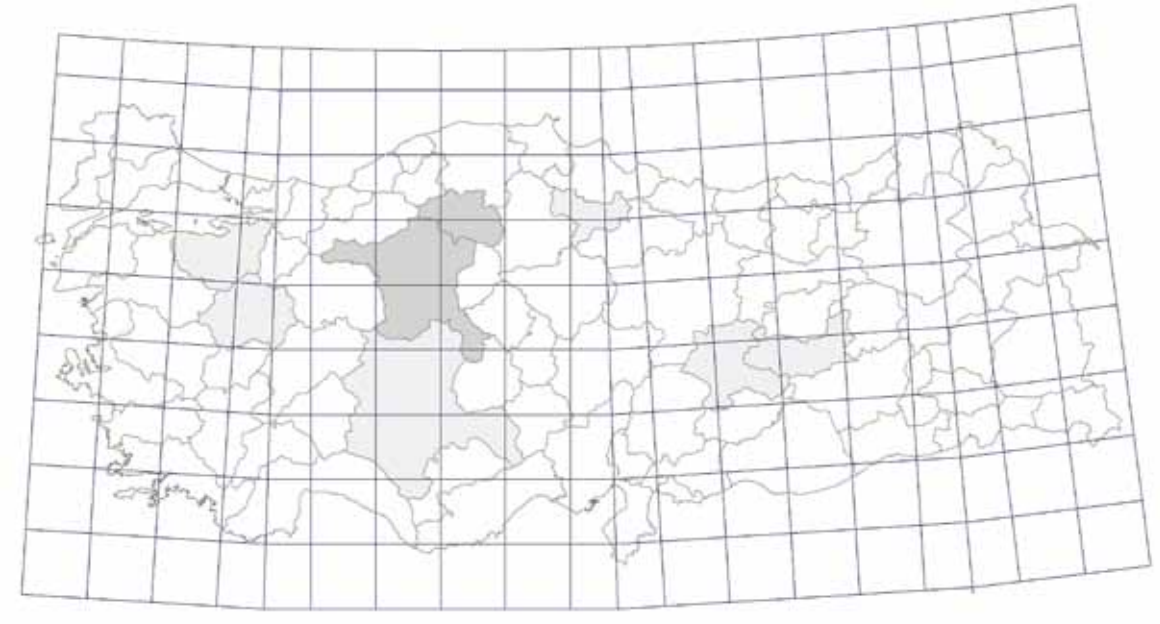
A restricted distribution, recorded from only three sites in Ankara province in the last 20 years. In the period since 1980 there was also one record from Çankırı (1988). The range appeared to reduce in the middle of the twentieth century, with no records from at least nine localities in the provinces of Amasya, Bursa, Elazığ, Konya, Kütahya or Malatya since 1935 or earlier. This equates to a 98.9% decrease in the extent of occurrence in the 50 years from 1930-1980, declining from 179,893 km² in the 1930s down to 2,000 km² in 1980. Although a new site was discovered in 2009 and more may remain to be discovered, the area of occupancy remains very small and is estimated to be no more than 20 km² at each of the four known localities.

RED LIST ASSESSMENT JUSTIFICATION

This species has a restricted range with records from only four localities since 1988. The extent of occurrence within a minimum convex polygon is just 2,000 km² and the AOO, adjusted to an occupancy of 20% in each 10x10 km², is only 80 km².

In the last 80 years much of the lowland, dry flower-rich grassland where this species occurs has been lost as marginal areas have been cultivated. The 98.9% decrease recorded in the extent of occurrence between 1930-1980, coincides with a 'boom' period in arable farming, following the arrival of the tractor in Turkey. Threats today include road building and widening, building developments, recreation, amenity afforestation, development of cultivation on land previously used for livestock rearing and a cessation of grassland management. All are steadily reducing the area of available and suitable habitat and the butterfly's small remaining subpopulations are becoming increasingly fragmented. This species thus qualifies for Endangered.

With no connection between the Turkish populations and the nearest neighbours in the South Caucasus no regional adjustment has been made.



Key

Provinces with records since 1980

Provinces with only old records, before 1979

Taxonomic notes

There are no taxonomic problems or issues with this species.

The type locality is Amasya, Turkey, a province where it has not been recorded since 1903. Tuzov *et al.* (2000) mentions three subspecies, with nominotypical subspecies (*E. o. orientalis*) occurring in Turkey and Transcaucasia. *E. o. sareptensis* (Staudinger, 1878) is found in southern Russia and *E. o. emba* (Fruhstorfer, 1917) in the steppe and semi-desert regions of north Kazakhstan.

Habitat and Ecology

Occurs between 50-1,900 m, often on limestone, in dry flower-rich grasslands in open pine plantations, or in meadows and grassy vegetation alongside woods and disturbed places (Hesselbarth *et al.* 1995).

The host plant in Turkey is unknown but is likely to be a species of scabious. In the lower reaches of the Volga River and in west Kazakhstan the caterpillars feed on *Scabiosa isetensis* (Tuzov *et al.* 2000) and overwinter as partially grown larve (probably in their 4th instar). At the Turkish stronghold in Ankara, where Steppe and Marsh Fritillary (*Euphydryas aurinia*) occur side by side, studies have confirmed that the larval foodplant of Marsh Fritillary is Teasel (*Dipsacus laciniatus*) but there is no indication that the same plant is used by Steppe Fritillary (Welch, H.J. unpublished data 2010). The sympatric occurrence of these two species is of interest as, in Hesselbarth *et al.* (1995) there were no records of Marsh Fritillary from Ankara province; now it appears to be more common than Steppe Fritillary. This raises two questions: a) is the Marsh Fritillary and its foodplant benefiting from some of the changes (such as land abandonment) which are threatening the Steppe Fritillary, and b) does the Marsh Fritillary pose a threat (in terms of competition) to Steppe Fritillary?

Steppe Fritillary is single-brooded, flying from early May-early June. The male butterflies can be conspicuous as they have a habit of defending a territory in an open area, often a stretch of path, perching on the open ground and flying up to intercept any other butterfly entering the area.

There is no further knowledge of the ecology, but it is assumed to be similar to other *Euphydryas* species.

Population trend

○ Increasing ○ Decreasing ○ Stable ◉ Unknown

Population

This is a localised butterfly but generally not difficult to see where it occurs due to the male's territorial behaviour; however, it is never numerous and sightings of more than five individuals during one visit are considered exceptional.

The 98.9% decrease in the extent of occurrence in the 50 years between 1930-1980 indicates a very large decrease in population during the same period. The remaining subpopulations are restricted to lowland natural grassland areas and, due to the pressures on this habitat, are becoming increasingly fragmented.

Currently records are restricted to three geographically separate areas and all subpopulations face the same combination of potential threats.

Threats

This is a species of lowland, flower-rich grassland, a habitat under great pressure from anthropogenic developments. Between 1930-1980 (the period which saw a large retraction in its range) the biggest threat was the expansion of land under cultivation. From the late 1940s, Turkey began to import large numbers of tractors and the cultivation of more marginal land began, especially of the rangelands traditionally used for grazing on the Anatolian Plateau. From the 1920s to 1991 the cultivated area more than trebled, from c. 8 million hectares to c. 27 million hectares (Redman and Hemmami 2008). In 60 years the area of rangeland was reduced by over 70%, from 44.2 million hectares in 1940 to 12.4 million hectares in 2000 (Karagöz 2006). Since cultivation is always preferentially in lowland areas, these developments would have destroyed large areas of Steppe Fritillary habitat. Throughout Turkey this habitat continues to be lost and the remaining remnants fragmented. Although cultivation is still a threat, today the main pressures on the remaining small areas of habitat are from road building, housing, industrial developments, recreation and amenity afforestation.

Recommended conservation action

The only locality where this species can be considered less threatened is on the university campus where it occurs in Ankara, but even here the area of available and suitable habitat is steadily reducing.

Work is needed to a) identify the larval foodplant and the threats it faces; b) precisely define the current distribution; c) understand the ecology; d) identify appropriate conservation measures which could be implemented, particularly at its Ankara stronghold.

Selected References

Karagöz, A. (2006). *Forage Resource Profile for Turkey.* Rome: Food and Agriculture Organisation. [Online]. Available from: http://www.fao. org/ag/AGP/AGPC/doc/Agri-environment Handbook for Turkey 111 Counprof/Turkey/Turkey.htm. [Downloaded on 31 July 2008].

Redman, M. and Hemmami, M. (2008) *Agri-Environment Handbook for Turkey.* İstanbul: Buğday Association for Supporting Ecological Living, p.24.

Assessment date

24.12.2010

Assessors

Welch, H.J., Karaçetin, E. & Red List Working Group participants, Ankara 10-12.08.2009.

Order: LEPIDOPTERA **Family:** HESPERIIDAE

EN Endangered

B1ab(iii)+2ab(iii)

003650 ***Spialia osthelderi***

(Pfeiffer, 1932)

IUCN Global Red List category	IUCN Global Red List criteria
-	-

©Ali Atahan

RECENT SYNONYMS

Scientific: -

English: **Osthelder's Skipper**

Turkish: **Osthelder'in Zıpzıpı**

DISTRIBUTION - Global:

Anatolia, the Middle East to Lebanon and through Iraq and Iran to Afghanistan (Tuzov *et al.* 1997).

Turkey: *Extent Of Occurrence (EOO) post* 1980 (*km²*) **2,367** *Area Of Occupancy (AOO) post 1980 (km²)* **500**

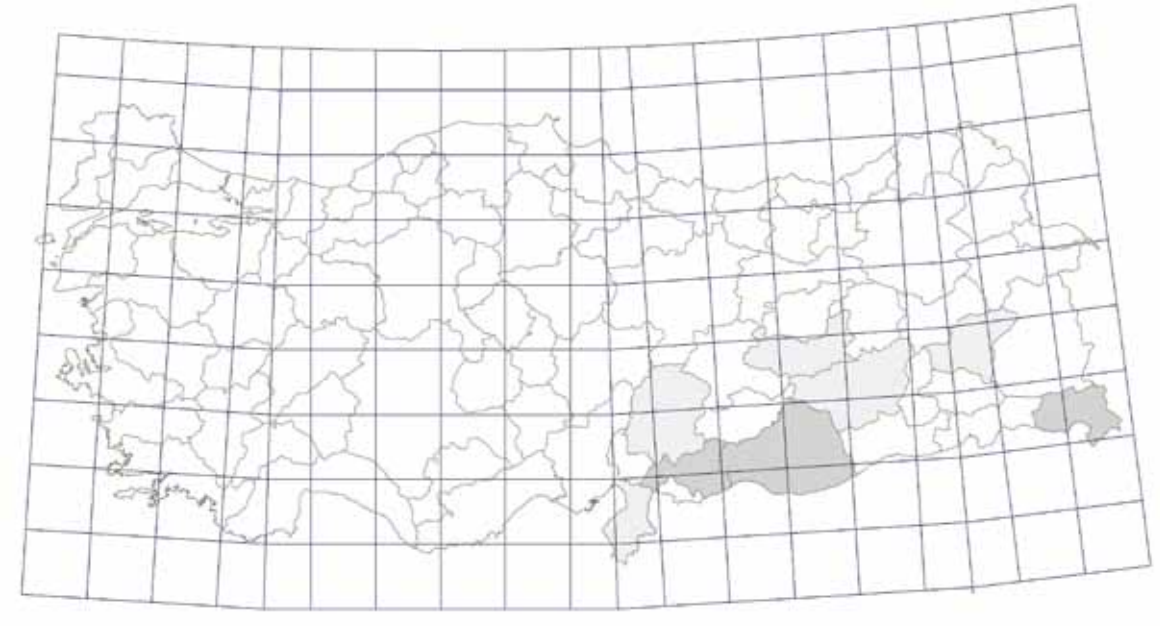
Relatively widespread in southeast Anatolia, but with a fragmented distribution and a relatively small extent of occurrence (EOO) of 2,367 km² and area of occupancy (AOO) of 500 km².

RED LIST ASSESSMENT JUSTIFICATION

Knowledge of this species has not changed greatly since it was assessed for the European Red List in 1999 (van Swaay and Warren 1999). Then it was considered to have had a 50-80% reduction in distribution based on the known threats and the data presented in Hesselbarth *et al.* (1995). In 1999 the threats cited were: agricultural intensification, chemical pollution, irrigation and land claim following the major dam projects underway on the Tigris and Euphrates Rivers. The species was categorised as Critically Endangered.

Since the 1999 assessment there have been very few new records and the amount and quality of suitable habitat has continued to decline as the dam projects have been completed and followed by irrigation and more intensive agricultural use of the whole area. However, there is no new information on subpopulations. It is considered that the butterfly's EOO is likely to be little changed (using all the data since 1980 it is 2,367 km²), but that the AOO (500 km² - with no spatial adjustment in order to allow for false negatives) is likely to be further reduced and fragmented.

With these EOO and AOO values, plus a fragmented distribution and ongoing declines in the amount and quality of suitable habitat, this species qualifies for Endangered. With no information on subpopulations in adjacent countries the assessors have decided to take a precautionary approach and have made no regional adjustment.



Key

Provinces with records since 1980

Provinces with only old records, before 1979

Taxonomic notes

There are no known taxonomic problems or issues.

Habitat and Ecology

Hot, dry, herbaceous steppes. Foodplant unknown but probably *Convolvulaceae* (van Swaay and Warren 1999). The 2009 Şanlıurfa records are from a stream bed with a small amount of running water in a rocky valley (A. Atahan pers. comm. 2010).

Population trend

○ Increasing ○ Decreasing ○ Stable ◉ Unknown

Population

Between 1980-1995 recorded from just three localities in Şanlıurfa and Hakkari. Since the publication of Hesselbarth *et al.* (1995) there have been just two records from two new localities, in Gaziantep in 2008 and Şanlıurfa in 2009. In Şanlıurfa there are two records from the same locality, on both occasions of only one individual (A. Atahan pers. comm. 2010). However, this is a species which is easily overlooked and can probably survive in quite small patches of suitable habitat.

Threats

Damming of the Tigris and Euphrates Rivers and subsequent irrigation and intensification of agriculture were cited as the major threats in the European Red List 1999 (van Swaay and Warren, 1999). Since then many more dam projects have been completed in southeast Anatolia (www.dsi.gov.tr/bolge) and the species can be expected to have declined as a result. It is likely that fragmentation is becoming a problem as the species becomes more restricted to the remaining areas of suitable steppe, though it is probably not yet as extreme as the distribution of records seems to indicate.

Recommended conservation action

Identify the areas where the butterfly still occurs and develop measures locally to ensure the localities continue to be used in a way which is sympathetic to the butterfly and other wildlife.

Selected References

A. Atahan pers. comm. (2010): E-mail from Ali Atahan to Didem Ambarlı (DKM), 9 October 2010.

DSİ (2010) Information on current and completed dam projects [Online] Available from: www.dsi.gov.tr/bolge, [Accessed October 2010].

Assessment date

29.10.2009

Assessors

Welch, H.J. & Karaçetin, E.

Order: LEPIDOPTERA **Family:** LYCAENIDAE

VU Vulnerable

A3c

ENDEMIC

001620 ***Polyommatus artvinensis***

(Carbonell, 1997)

IUCN Global Red List category	IUCN Global Red List criteria
-	-

Assessment submitted to IUCN for Global Red List: approval pending

Probable *P. artvinensis* ©Frédéric Carbonell

RECENT SYNONYMS

Scientific: -

English: **Artvin Blue**

Turkish: **Artvin Çokgözlüsü**

DISTRIBUTION - Global:

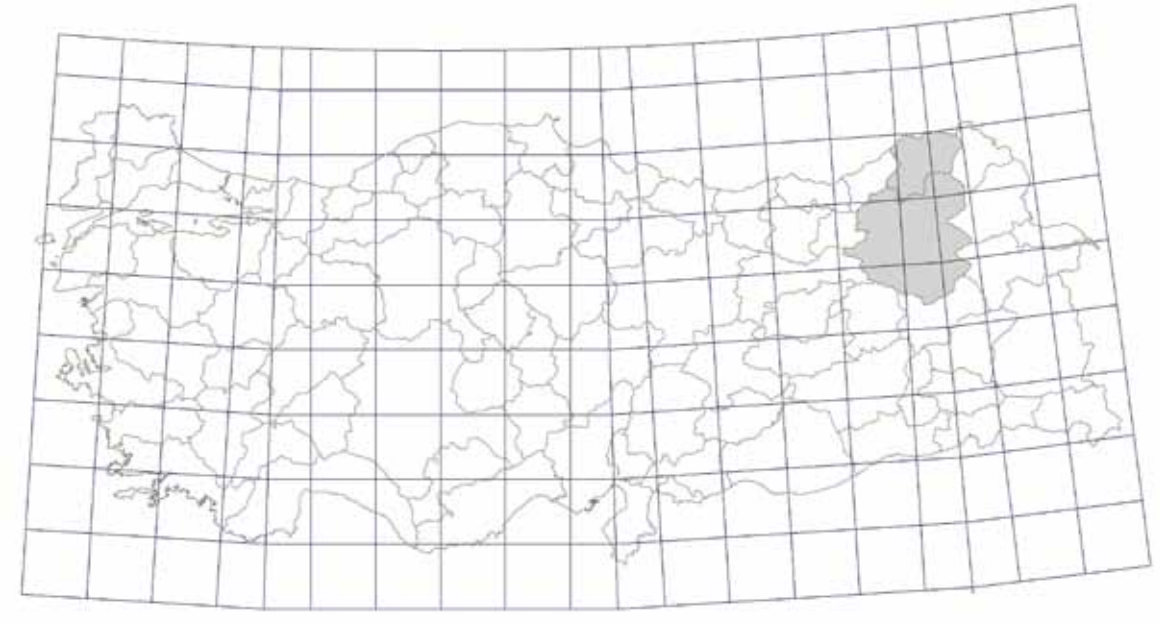
Turkey.

Turkey: *Extent Of Occurrence (EOO) post* 1980 (*km²*) **2,074** *Area Of Occupancy (AOO) post 1980 (km²)* **40**

Known from Artvin and Erzurum, in the Çoruh and Tortum River Valleys, NE Turkey (Carbonell 1997). It has been recorded from ten 10x10 km squares but experts consider that the area of each square occupied is likely to be small. A spatial adjustment has thus been made using a figure of four km² per 10x10 km square; the area of occupancy is thus calculated to be 40 km².

RED LIST ASSESSMENT JUSTIFICATION

Artvin Blue (P*olyommatus artvinensis*) is a mountain species (900-2,400 m) endemic to NE Turkey in the Çoruh River Valley, Erzurum and Artvin provinces, and the Tortum River Valley, Erzurum province (Carbonell 1997). Its extent of occurrence (EOO) is approximately 2,074 km² and area of occupancy (AOO) approximately 40 km². Experts consider that the dams along the Çoruh River, combined with the extensive hydroelectric schemes planned throughout the butterfly's range will cause a 30% or more population decline due to extensive habitat destruction. Whilst the subpopulations at high altitude may be the least affected, they risk becoming isolated as others disappear altogether and the remainder become severely fragmented. The species is therefore listed as Vulnerable.



Taxonomic notes

This taxon was originally described as a subspecies of *Polyommatus actis*, but at that point the identity and taxonomic status of *P. actis* was unclear. When Olivier *et al.* (2000) discovered the type specimen for *P. actis*, he considered that differences in the wing characteristics justified elevating *P. artvinensis* to species rank (Olivier *et al.* 2000). Conversely, Wiemers (2003) states that some populations ('*P. artvinensis*') from NE Turkey differ slightly in phenotype and chromosome number, but genetically appear almost identical to *P. pseudactis* from Armenia. The taxon *P. artvinensis* is thus not yet widely accepted, though it is included on both Koçak and Kemal's 2008 and 2009 lists. Since *P. artvinensis* is part of the *P. firdussii* group, its status cannot yet be considered firmly fixed. However, experts recommend that for now it should be accepted as a valid species.

Habitat and Ecology

In the original description of the species, Carbonell (1997) describes Artvin Blue as occurring in hot places in the Çoruh and Tortum valleys. However, Olivier *et al.* (2000), quoting Carbonell (1997) and their own observations as a source of reference, say that the butterfly can be found in flowery meadows and moderately shady places, often at humid spots.

The butterfly is single brooded and flies from mid June to early August at altitudes from 900 to 2,400 m (Carbonell 1997).

Population trend

○ Increasing ○ Decreasing ○ Stable ◉ Unknown

Population

Current records are from ten 10x10 km squares, all of which may be connected through the Çoruh and Tortum River corridors, and all of which are expected to be affected by the construction of small-scale hydroelectric schemes (HES) (*see* Threats). Although the exact locality and extent of the HES is not known, each can be expected to affect a wide area so the butterfly is considered to occur at <10 locations.

Experts predict that as the HES are completed there will be extensive fragmentation and loss of habitat resulting in a population decline of somewhere between 25-50% in the next 10 years. There is uncertainty about the amount of decline for two main reasons:

1- Timing of the HES implementation: detailed plans and dates for each project are not available so how much damage will occur in the next 10 years is not known. However, it is likely that many schemes will be implemented rapidly and that the decline will be ongoing.

2- Habitat: due to the differences in the description of the butterfly's habitat (see Habitat and Ecology) it is not clear how much overlap there will be between the HES and the areas used by the butterfly.

Threats

The major threat is extensive habitat loss and fragmentation due to construction of large-scale dams and small scale hydroelectric schemes. There are 27 dam projects planned in the Çoruh River basin; 10 on the Çoruh River itself and 17 on its tributaries (Sucu and Dinç 2008). Three of these dams, Yusufeli, Arkun and Güllübağ Dams, fall within the distribution of Artvin Blue in the Çoruh River Valley. In addition, a series of HES are planned. Currently there are 58 HES projects planned in Artvin and 55 in Erzurum (Akpınar *et al.* 2009). Detailed plans for these projects are hard to obtain, but a study by Muluk *et al.* (2009) presents maps for HES in the Barhal Valley, Yusufeli, which show the details and altitude of each project. They range from 900-3,000 m, corresponding exactly to the altitudinal band used by the butterfly. Additionally, the area above and below the current watercourses will be affected, with the channels of small streams straightened or diverted, and new roads and power lines constructed. All of this will cause widespread damage to the landscape and erosion of the steep mountain slopes (Muluk *et al.* 2009).

Recommended conservation action

Plans for current dam and hydroelectric schemes should be reviewed and efforts made to protect the habitats of this species.

Further research is needed to understand the butterfly's biology, and ecology and metapopulation structure.

Selected References

Akpınar, A., Kömürcü, M., Kankal, M. and Filiz, M.H. (2009) *Çoruh Havzası'ndaki Küçük Hidroelektrik Santrallerin Durumu*. Renewable Energy Resources Symposium. pp.249-254.

Carbonell, F. (1997) Contribution à la connaissance du genre *Agrodiaetus* Hübner (1822): *A. actis artvinensis* nouvelle sous-espèce en Turquie orientale. *Linneana Belgica*, 16(4), pp.139-142.

Muluk, Ç.B., Turak, A., Yılmaz, D., Zeydanlı, U. and Bilgin, C.C. (2009) *Hidroelektrik Santral Etkileri Uzman Raporu: Barhal Vadisi*. Kaçkar Dağları Sürdürülebilir Orman Kullanımı ve Koruması Projesi. Turkey: TEMA.

Olivier, A., van der Poorten, D., Puplesiene, J. and de Prins, W. (2000) *Polyommatus* (*Agrodiaetus*) *artvinensis* stat. nov. and . (*A.*) *sigberti* sp. nov., two vicariant species known so far only from Turkey (Lepidoptera:Lycaenidae). *Phegea*, 28(2), pp.57-74.

Sucu, S. and Dinç, T. (2008) Çoruh Havzası Projeleri IN: *TMMOB 2. Water Policies Congress*. pp.33-38. [Online]. Available from: http://e-kutuphane.imo.org.tr/pdf/10912.pdf. [Downloaded November 2010].

Assessment date

20.12.2010

Assessors

Karaçetin, E., Welch, H.J., Wiemers, M. & Carbonell, F.

Order: LEPIDOPTERA **Family:** LYCAENIDAE

001830 ***Polyommatus lycius***

(Carbonell, 1996)

VU Vulnerable

D1+2

ENDEMIC

IUCN Global Red List category	IUCN Global Red List criteria
-	-

Assessment submitted to IUCN for Global Red List: approval pending

©Frédéric Carbonell

RECENT SYNONYMS

Scientific: ***Polyommatus (Agrodiaetus) lycius***

English: **Lycian Blue**

Turkish: **Carbonell Mavisi**

DISTRIBUTION - Global:

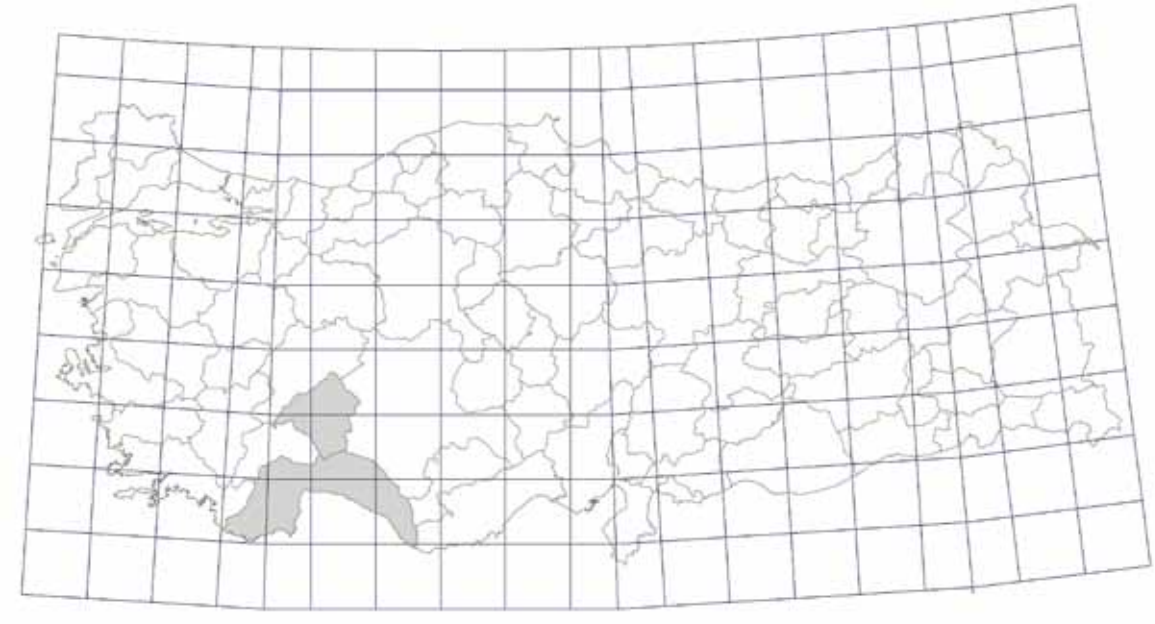
Turkey.

Turkey: *Extent Of Occurrence (EOO) post* 1980 (*km²*) **2,125** *Area Of Occupancy (AOO) post 1980 (km²)* **20/500**

Recorded from two areas c.130 km apart. On the eastern and western slopes of the Bey Mountains, Antalya (Carbonell 1996) and to the N in Isparta (M. Wiemers pers. comm. 2003). The area of occupancy (AOO) is unknown but with records from five localities lies somewhere between 20-500 km².

RED LIST ASSESSMENT JUSTIFICATION

This species has a restricted distribution occurring in two regions *c.* 130 km apart. It occurs at low density with a total population estimated to be less than 1,000 individuals (possibly no more than 100 at each of the five localities). The habitats used by the butterfly are surrounded by arable (cereals in 1998) so a major threat is that of agricultural expansion and intensification. Pesticide use in this area of Turkey is known to be very intensive so the risk of chemical pollution is also high. Due to the widespread threats from agriculture the species is considered to occur at fewer than five locations and, with its small population is classified as Vulnerable.



Key

Provinces with records since 1980

Provinces with only old records, before 1979

Taxonomic notes

No known taxonomic problems or issues.

Habitat and Ecology

Occurs on lower mountain slopes (not valley bottom or high slopes) at 1,150-1,500 m (Carbonell 1996), in lusher spots near spring water and with denser vegetation. Flies late June to early August in one generation.

In Isparta the surrounding area was cultivated with cereals in 1998 (M. Wiemers pers. comm. 2009).

Carbonell (1996) considered it likely that the larval foodplant was an *Onobrychis* sp. However, M. Wiemers reported to the Red List Working Group that in 1998 he had found a caterpillar on *Hedysarum hedysaroides*.

Population trend

○ Increasing ○ Decreasing ○ Stable ◉ Unknown

Population

Local and not abundant. Occurs in small numbers; in a single day one might expect to see c. 10 individuals so, with five known localities, the total population could be expected to be less than 1,000 and possibly no more than 500 individuals (M. Wiemers to Red List Working Group).

F. Carbonell considers the butterfly probably occurs more widely in the Bey Mountains but currently there are no records to confirm this.

Threats

The surrounding cultivation poses a threat to this species, both in terms of its potential to encroach into natural habitats and the risk of chemical pollution. Pesticide use in this area of Turkey is known to be very intensive and there is a high incidence of cancer in children (M. Telli pers comm. 2010).

On the eastern slopes of the Bey Mtns, and particularly at Saklıkent where the buttefly was been recorded, the main threat is uncontrolled urban development (Eken *et al.* 2006). Although the butterfly was common here in 1999, F. Carbonell considers that this population has probably now been destroyed by urbanisation.

Recommended conservation action

There is a need to obtain a better understanding of the species' habitat preferences and the threats it faces. For such a scarce species population monitoring is recommended.

Selected References

Carbonell, F. (1996). Contribution à la connaissance du genre *Agrodiaetus* Hübner (1822) : *A. lycius* n. sp. en Turquie méridionale. *Linneana Belgica* 15, 281-285, and Erratum in 15 (8):308.

M. Telli pers. comm. (2009): Conversation between Murat Telli and Red List Working Group, Ankara, 10-12 August 2009.

M. Wiemers pers. comm. (2009): Conversation between Martin Wiemers and Red List Working Group, Ankara, 10-12 August 2009.

Assessment date

11.08.2009

Assessors

Welch, H.J., Karaçetin, E., Carbonell, F. & Red List Working Group participants, Ankara 10-12.08.2009.

Order: LEPIDOPTERA **Family:** LYCAENIDAE

VU Vulnerable

D2

001890 ***Polyommatus iphicarmon***

Eckweiler & Rose, 1993

ENDEMIC

IUCN Global Red List category	IUCN Global Red List criteria
-	-

Assessment submitted to IUCN for Global Red List: approval pending

©Martin Wiemers

RECENT SYNONYMS

Scientific: ***Polyommatus (Agrodiaetus) iphicarmon*** (*See* Taxonomic notes)

English: **Iphicarmon Blue**

Turkish: **Çokgözlü İfikarmon**

DISTRIBUTION - Global:

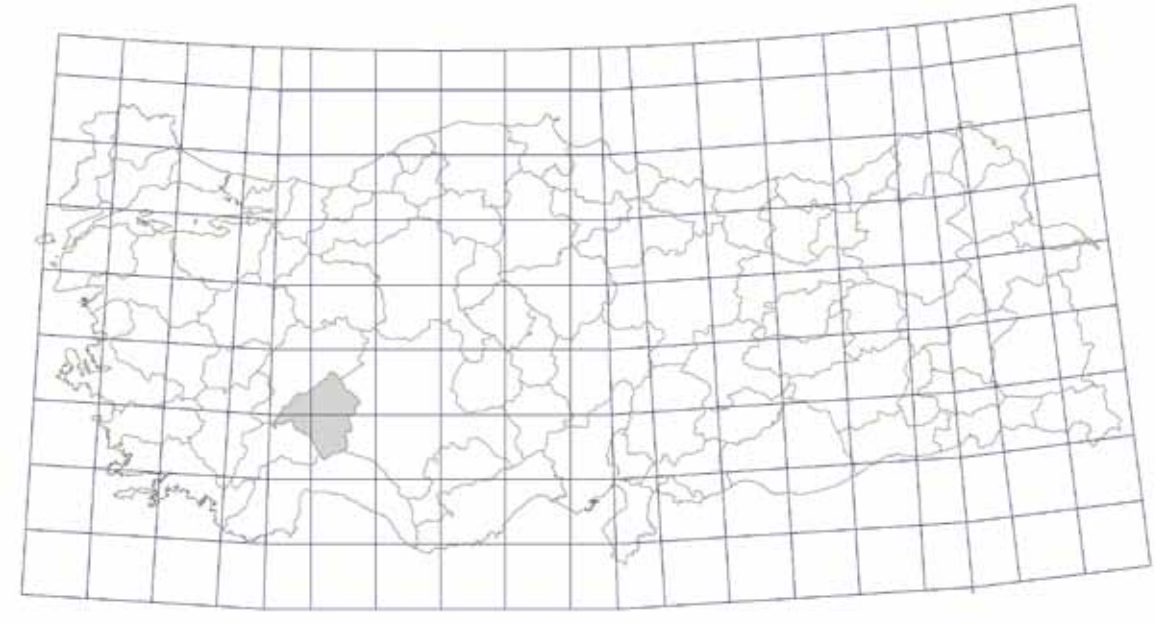
Turkey.

Turkey: *Extent Of Occurrence (EOO) post* 1980 (*km²*) **≤100** *Area Of Occupancy (AOO) post 1980 (km²)* **100/20/8**

Known only from Isparta province in the Dedegöl Mountains Key Biodiversity Area (Eken *et al.* 2006). There are few roads in the area so very little of the potential habitat has been explored. Experts consider the butterfly could prove to be more widespread, potentially occurring on other mountains above 1,700 m in the area, such as Sarp Dağı, to the southwest. There is thus uncertainty about its area of occupancy (AOO), but with current knowledge a mid range figure of 20 km² is suggested.

RED LIST ASSESSMENT JUSTIFICATION

This taxon is endemic to Turkey and is known from a single locality in Isparta, west of Lake Beyşehir, where it can be locally abundant. There is uncertainty about its AOO but a mid range figure of 20 km² is suggested. Little is known about its true distribution or ecology, and its taxonomic status, already changed once since it was described in 1993, is far from settled. Whilst it appears to face no specific threats at the type locality, the subalpine meadows in the mountains to the south, an area where experts consider it could potentially occur, are threatened by conversion to agriculture. With a small AOO and a plausible threat this taxon is categorised as Vulnerable.



Taxonomic notes

Although initially presented as a subspecies of *Polyommatus iphigenia*, a treatment supported by Hesselbarth *et al.* (1995), Wiemers (2003) demonstrated that on the basis of chromosomes and overlapping distributions *P. iphicarmon* and *P. iphigenia* must be considered separate species. Wiemers' work places *P. iphicarmon* in the *P. baytopi* group (consisting of *P. baytopi*, *P. iphicarmon*, *P. rovshani* and *P. tankeri*) and reports that more work might reveal it to be an isolated population (subspecies) of *P. baytopi*. The taxonomic status of this butterfly is thus likely to be subject to change.

Habitat and Ecology

Subalpine meadows near and above the treeline, between 1,500-2,100 m (M. Wiemers pers. comm. 2010).

Population trend

○ Increasing ○ Decreasing ○ Stable ◉ Unknown

Population

Localised but can be very abundant.

Threats

Reported threats from the Dedegöl Mountains KBA (Eken *et al.* 2006) are deforestation, active forestry and grazing pressure. Since this is primarily a grassland species deforestation is unlikely to be a threat, but active forestry would be if it involved the destruction of meadows for plantations. In the adjoining Köprüçay Vadisi KBA the mountain grasslands are being converted to agriculture, a potentially serious threat to this species.

Other plausible threats (though not reported) would be tourist developments for winter sports, road extensions/widening and overgrazing.

Recommended conservation action

More work is needed on all aspects of this butterfly, to settle its taxonomic status, establish the true extent of its distribution, and to understand its population dynamics and ecology.

Selected References

Eckweiler, W., and Rose. K. 1993. Zwei neue Lycaeniden aus der Südwesttürkei (Lepidoptera: Lycaenidae). *Nachr. ent. Ver. Apollo,* 13 (3a): 355-364.

Wiemers, M. (2003) *Chromosome differentiation and the radiation of the butterfly subgenus Agrodiaetus (Lepidoptera:Lycaenidae: Polyommatus) – a molecular phylogenetic approach.* Ph.D. Thesis. Bonn: Mathematisch-Naturwissenschaftlichen Fakultät der Rheinischen Friedrich-Wilhelms-Universität.

Assessment date

28.08.2010

Assessors

Welch, H.J., Karaçetin, E. & Wiemers, M.

Order: LEPIDOPTERA **Family:** NYMPHALIDAE

VU Vulnerable

B1ab(ii,iii)+2ab(ii,iii)

ENDEMIC

002720 ***Melanargia wiskotti***

Röber, 1896

IUCN Global Red List category	IUCN Global Red List criteria
-	-

Assessment submitted to IUCN for Global Red List: approval pending

©Fatih Köleli

RECENT SYNONYMS

Scientific: ***Melanargia titea wiskotti***

English: **Wiskott's Marbled White**

Turkish: **Wiskott'un Akdeniz Melikesi**

DISTRIBUTION - Global:

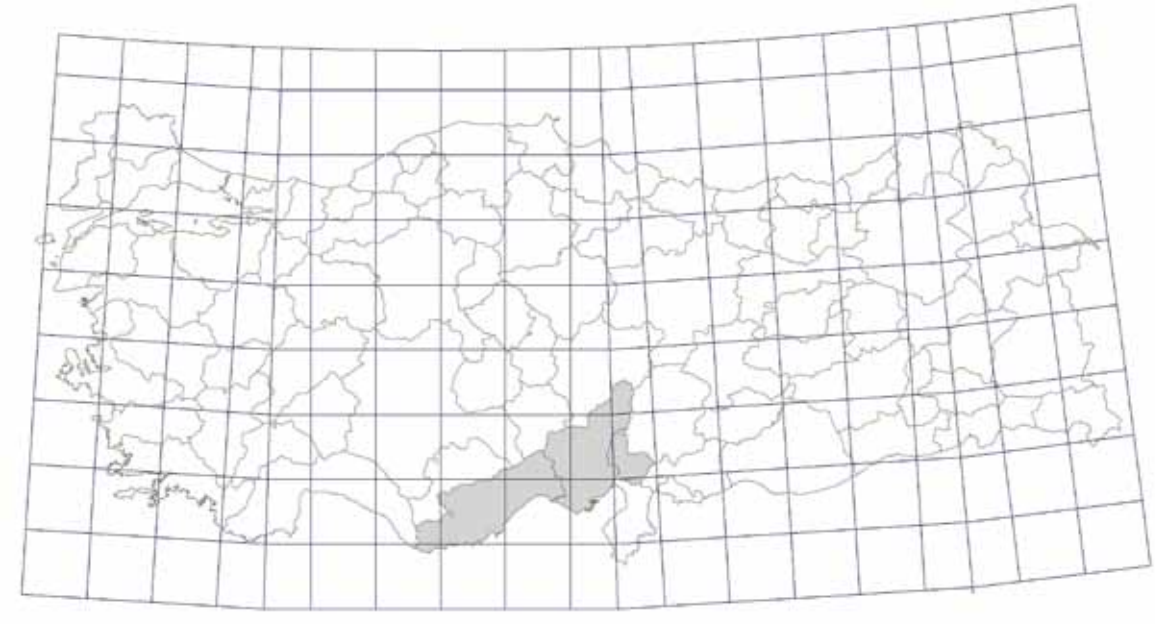
Turkey.

Turkey: *Extent Of Occurrence (EOO) post* 1980 (*km²*) **7,650** *Area Of Occupancy (AOO) post 1980 (km²)* **56-560**

Recorded only from 14 restricted localities in the heavily developed coastal regions of the SE Mediterranean provinces of Mersin, Adana and Osmaniye. Occurs from sea level in coastal areas of the Çukurova delta, to 1,000 m further inland (Hesselbarth *et al.* 1995, Nazari *et al.* 2010). Although new sites may yet be found, considering the pressures on natural habitats in this region, the maximum estimated AOO value (with spatial adjustment of 40 km² in each 100 km²) of 560 km² is considered plausible.

RED LIST ASSESSMENT JUSTIFICATION

A Turkish endemic recorded only from restricted localities in the heavily developed and populated coastal region of the SE Mediterranean, in the provinces of Mersin, Adana and Osmaniye. Major threats here are: land claim; agricultural intensification; building developments, especially along the coast; quarrying. Since 1980 there have been records from only 14 of the known 29 localities, indicating a decline in the AOO. Considering the pressures on natural habitats in this region, the maximum estimated AOO value of 560 km² is considered plausible. The EOO since 1980 is 7,650 km². Due to the relatively small range area and the widespread nature of the threats, the number of locations is likely to be 10 or fewer and a continuing decline is expected. This species is therefore classified as Vulnerable.



Key

Provinces with records since 1980

Provinces with only old records, before 1979

Taxonomic notes

Presented as an endemic subspecies in Hesselbarth *et al. (*1995), this taxon was elevated to species level following an extensive review of the *Melanargia* group by Nazari *et al.* (2010). It is thus now a Turkish endemic species.

Habitat and Ecology

In open, flower-rich places in Mediterranean maquis and forests south of the Taurus mountains - from Anamur to Osmaniye, and in the Çukurova delta. Flies from the end of May to the end of June. (Hesselbarth *et al*. 1995)

Larval foodplant unknown but probably grasses (Poaceae) (Baytaş 2007).

Population Trend

○ Increasing ○ Decreasing ○ Stable ◉ Unknown

Population

Can be abundant in some years but only ever seen at restricted localities (F. Köleli pers. comm. 2010). The population trend is unknown but, considering the pressures on the natural habitats where this species occurs, it seems likely to be decreasing. Despite this, since 1980 there have been records of this conspicuous species from 10 new localities, making a total of 14. However, in the same period there have been no records from 15 sites where it was being recorded before 1980, indicating an overall decline in the AOO.

Due to the relatively small range area and the widespread nature of the threats, particularly from agricultural intensification and building developments, the number of locations is considered to be less than 10. A continuing decline is expected.

Threats

There are many threats to the remaining areas of natural habitat throughout the whole of this species' range:

Loss of habitat to land claim for agriculture followed by irrigation, intensive use of chemical fertilizers and agricultural pollution;

Building developments, including roads and other infrastructure, particularly in coastal areas;

Quarrying, which is currently destroying islands of natural habitat on the rocky outcrops in the eastern Çukurova plain near Ceyhan.

Recommended conservation action

Population monitoring and distribution mapping to make it possible to identify the areas favoured by the butterfly and the areas where the species and its habitat could be protected. Use this information to develop a Species Action Plan.

Selected References

F. Köleli pers. comm. (2010): telephone conservation between Fatih Köleli and Evrim Karaçetin (Erciyes University, Kayseri, Turkey), 27 August 2010.

Nazari, V., Hagen, W. T., and Bozano, G. C. (2010). Molecular systematics and phylogeny of the 'Marbled Whites' (Lepidoptera: Nymphalidae, Satyrinae, Melanargia Meigen). *Systematic Entomology*, 35(1), pp.132-147.

Assessment date

27.08.2010

Assessors

Welch, H.J., Karaçetin, E. & Red List Working Group participants, Ankara 10-12.08.2009.

Order: LEPIDOPTERA **Family:** NYMPHALIDAE

VU Vulnerable

B2ab(iv)

003140 ***Hyponephele urartua***

de Freina & Aussem, [1987]

ENDEMIC

IUCN Global Red List category	IUCN Global Red List criteria
-	-

Assessment submitted to IUCN for Global Red List: approval pending

Underwings ©Hesselbarth *et al.* (1995)

RECENT SYNONYMS

Scientific: -

English: **Urartuan Steppe Brown**

Turkish: **Urartu Esmer Perisi**

DISTRIBUTION - Global:

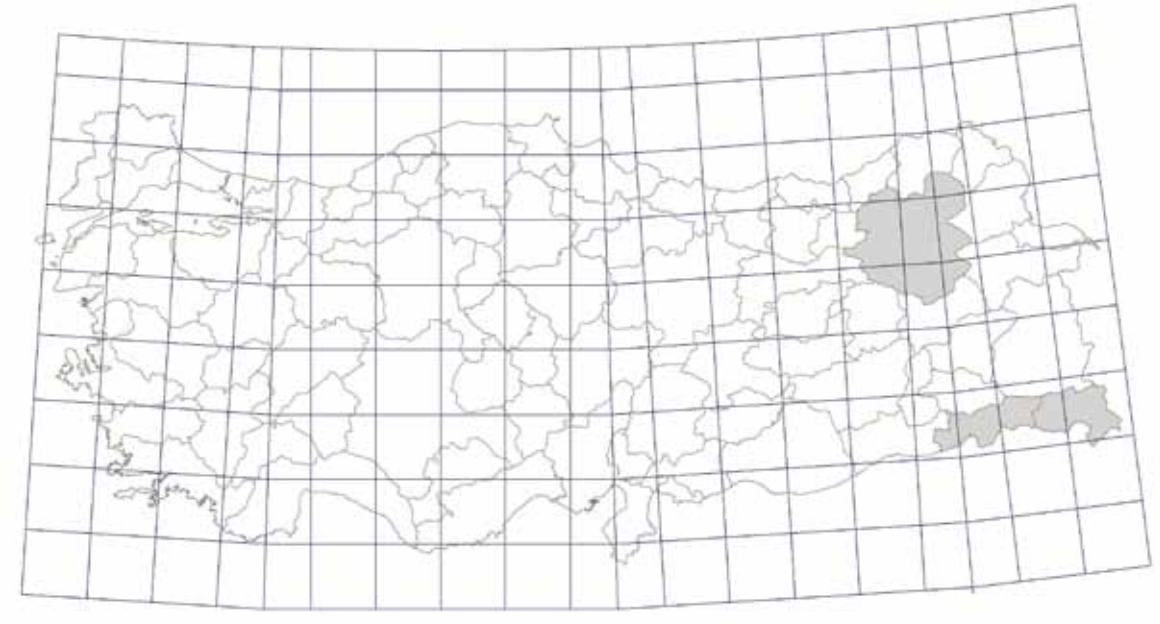
Turkey.

Turkey: *Extent Of Occurrence (EOO) post* 1980 (*km²*) **24,372** *Area Of Occupancy (AOO) post 1980 (km²)* **96**

Urartuan Steppe Brown is an endemic species known from only three provinces; Erzurum, Hakkari and Şırnak, in eastern Turkey. Currently there are no records from outside Turkey's borders but it may also occur in Iran and Iraq.

RED LIST ASSESSMENT JUSTIFICATION

Urartuan Steppe Brown (*Hyponephele urartua*) is a rare butterfly recorded from only eight localities since 1980. Despite its large extent of occurrence (24,372 km²), its area of occupancy is very restricted (96 km²). The two centres of population in Erzurum and Hakkari-Şırnak are geographically isolated and fragmented. The most recent records are 1983 from Erzurum and Şırnak, and 1992 from Hakkari. Although the Erzurum locality is visited regularly by butterfly watchers there have been no records for 27 years. There are concerns that this may indicate a decline in the number of subpopulations. The species is therefore listed as Vulnerable.



Taxonomic notes

Before this species was described in 1987 it was believed to be *Hyponephele davendra*, a widespread species from SW Iran and Pakistan. Later the specimens were recognised to belong to a new species and assigned the name *Hyponephele urartua*, endemic to Turkey (Hesselbarth *et al.* 1995).

Habitat and Ecology

Urartuan Steppe Brown occurs on dry, open scree slopes with very sparse vegetation (Hesselbarth *et al.* 1995). In this habitat the butterflies are difficult to catch and this, combined with the fact that they fly only at the hottest time of day (Hesselbarth *et al.* 1995), may partly explain why there are no recent records. Although the larval foodplant is not known (Hesselbarth *et al.* 1995) it is considered probably to be grasses (Baytaş 2007). It flies from early July to early August at 1,600-2,300 m. Larval instars are unknown (Hesselbarth *et al.* 1995).

Population Trend

○ Increasing ○ Decreasing ○ Stable ◉ Unknown

Population

This species is very rare. Its population is split between two geographically separate regions - Erzurum (two sites) and Hakkari Şırnak (six sites) - with no records from the region in between. Experts thus consider these two subpopulations to be isolated and fragmented. Nothing further is known about its population size or structure. Urartuan Steppe Brown has not been recorded from Erzurum and Şırnak since 1983 and Hakkari since 1992. The site in Erzurum is regularly visited by experienced butterfly watchers and scientists, yet there are no recent records; this may indicate a decline in the number of subpopulations.

Threats

Despite the fact that this is a conspicuous butterfly, not easily confused with other species, and the Erzurum locality is regularly visited, there are no recent records and there is concern that this may indicate a decline in population. However, there is no information on the biology, ecology or behaviour and, without more understanding of the butterfly, it is not possible to identify threats with any certainty.

Recommended conservation action

The sites where this species has been recorded need to be visited to learn if it is still present and to identify any potential threats.
Research is needed to understand more about its biology, ecology and population structure.

Selected References

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Assessment date

18.10.2010

Assessors

Karaçetin, E., Welch, H.J. & Red List Working Group participants, Ankara 10-12.08.2009.

Karaçetin, E. and Welch, H.J. (2011). Red Book of Butterflies in Turkey. Ankara, Turkey: Doğa Koruma Merkezi. Available from: [www.dkm.org.tr]

Order: LEPIDOPTERA **Family:** PAPILIONIDAE

VU Vulnerable
B1ab(iii)+2ab(iii)

000010 # *Zerynthia caucasica*

(Lederer, 1864)

IUCN Global Red List category
VU Vulnerable

IUCN Global Red List criteria
A1ac, B1+2ac

Last assessed for IUCN by van Swaay and Warren in 2000, needs updating

©Hilary & Geoff Welch

RECENT SYNONYMS

Scientific: ***Zerynthia (Allancastria) caucasica***
English: **Caucasian Festoon**
Turkish: **Kafkas Fisto Kelebeği**

DISTRIBUTION - Global:

South and east coast of the Black Sea, on the southern slopes of the Caucasus (Tshikolovets 2003); in Armenia, Azerbaijan, Georgia and Turkey (www.iucnredlist.org).

Turkey: *Extent Of Occurrence (EOO) post* 1980 (*km²*) **13,625** *Area Of Occupancy (AOO) post 1980 (km²)* **200**

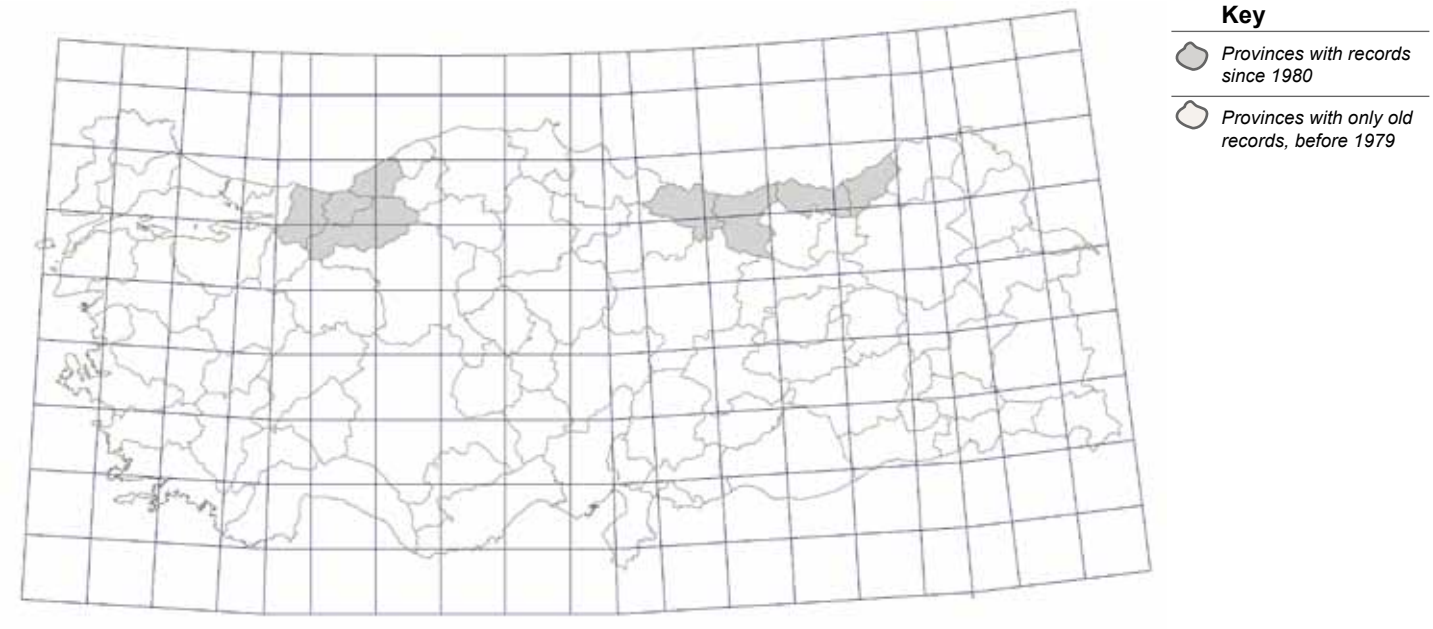
In Turkey the Caucasian Festoon has a fragmented distribution in the Black Sea coastlands, from *c.*800-1,700 m, though the lack of records from the mixed forests of the central Black Sea, around Kastamonu, requires further study. As the butterfly flies early in the year, from March-June, it is considered likely to be under-recorded. Reports of recent records from other provinces require confirmation. The current AOO (calculated from records since 1980) is 200 km² (estimating the area of each 10x10 km² occupied to be 20 km²).

RED LIST ASSESSMENT JUSTIFICATION

The Caucasian Festoon (*Zerynthia caucasica)* appears to be a rare butterfly in Turkey. The Turkish subpopulation was last assessed 10 years ago (van Swaay and Warren 1999) for the first European Red List. Although the current extent of occurrence of 13,625 km² is larger than was known then, this is still small enough to be of concern. Its distribution is divided into western and eastern subpopulations, and is severely fragmented in the east. There are records from only 10 localities since 1980, giving an area of occupancy of just 200 km².

Principally this is a mixed forest species occurring in moist rides and glades. For the last 30-35 years it has faced a range of ongoing threats to its habitat including changes in forestry and agricultural practises, but the new widespread plans for small-scale hydroelectric schemes (HES) and all their associated infrastructure development are now considered the greatest concern. In the western part of the species' range most of the areas of forest where the butterfly occurs will be affected, fragmenting what is currently the most intact area of distribution. The butterfly is thus classified as Vulnerable.

Due to the severely fragmented distribution no regional adjustment has been made to the threat category.



Taxonomic notes

No known taxonomic problems or issues.

Habitat and Ecology

Moist bushy clearings in open mixed and deciduous woodland; wet meadows from sea level to 1,700 m. The butterfly flies early in the year, from April-June (Hesselbarth *et al.* 1995) with the earliest record from Rize, 7 March in 2010 (www.kelebek-turk.com).

The caterpillars feed, hidden in the undergrowth, on Birthworts (*Aristolochia*). In Turkey the following species are used: *Aristolochia pontica* (Bolu), *Aristolochia pallida* (Bolu), *Aristolochia iberica* (Rize) and *Aristolochia pontica* (Rize) (Hesselbarth *et al.* 1995).

Population Trend

○ Increasing ○ Decreasing ○ Stable ◉ Unknown

Population

Caucasian Festoon occurs in western and eastern subpopulations, with the eastern subpopulation severely fragmented. There have been new records from three new localities in the west and at least one in the east since this species was last assessed in 1999 which, combined with the fact that it flies early in the year, indicate that it is probably under-recorded. However, the new records have not changed the overall picture of distribution and fragmentation.

In the 1999 European Red List (van Swaay and Warren 1999) it was reported that the species' distribution in Turkey had probably declined by 20-50% in the past 25 years (equivalent to a 20% population reduction over the last ten years) due to a loss of habitat. The status in the rest of the Caucasus, then and now, remains poorly known.

Threats

In the Black Sea mountains, two ongoing and opposing threats are land abandonment, which could lead to loss of the forest clearings the butterfly requires, and agricultural change and intensification. Both of these threats would result in loss and isolation of habitat, further fragmenting the population. Recreational pressure could also result in habitat loss in localised areas. These threats were all cited in the 1999 red list assessment (van Swaay and Warren 1999).

Now there is the new, more damaging and widespread threat of small-scale hydroelectric schemes (HES) as part of the national drive for renewable energy. There are several planned in the western, most intact part of this species' range (construction dates unknown) in areas of forest where it occurs (Doğa Derneği 2010). The hydroelectric schemes themselves are small, but the associated infrastructure of electricity pylons and roads will erode and fragment the habitat over a much wider area, as well as facilitating access for further damaging activities in the future. If all the HES currently planned are implemented, habitat damage and loss can be expected at at least half of the nine localities where Caucasian Festoon is known to occur.

Recommended conservation action

Surveys in the central Black Sea region to improve understanding of the distribution and threats, and to discover whether the western and eastern populations are likely to be connected. A study of the species' ecology is needed to identify the links between this species and both forest management and traditional (High Nature Value) farming techniques, and to develop a Species Action Plan which can be used to inform and guide the development of butterfly-friendly forest and landscape management practises.

Selected References

Doğa Derneği (2010): Map comparing Key Biodiversity Areas and hydroelectric power plant plans prepared as part of the Hasankeyf Campaign.

Assessment date

11.08.2009

Assessors

Welch, H.J., Karaçetin, E. & Red List Working Group participants, Ankara 10-12.08.2009.

Karaçetin, E. and Welch, H.J. (2011). Red Book of Butterflies in Turkey. Ankara, Turkey: Doğa Koruma Merkezi. Available from: [www.dkm.org.tr]

Order: LEPIDOPTERA **Family:** LYCAENIDAE

VU Vulnerable

B2ab(iii)

000820 ***Lycaena ottomana***

(Lefèbvre, 1830)

IUCN Global Red List category	IUCN Global Red List criteria
VU Vulnerable	A1ac

Last assessed for IUCN in 2000 by van Swaay and Warren

©Bahar Bilgen

RECENT SYNONYMS

Scientific: -

English: **Ottoman's Copper, Grecian Copper**

Turkish: **Osmanlı Ateşi**

DISTRIBUTION - Global:

Turkey & the southern Balkans: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Greece, Macedonia, the former Yugoslav Republic of Montenegro. Extinct in Hungary (van Swaay and Warren 2000).

Turkey: *Extent Of Occurrence (EOO) post* 1980 (*km²*) **n/a** *Area Of Occupancy (AOO) post 1980 (km²)* **380-570**

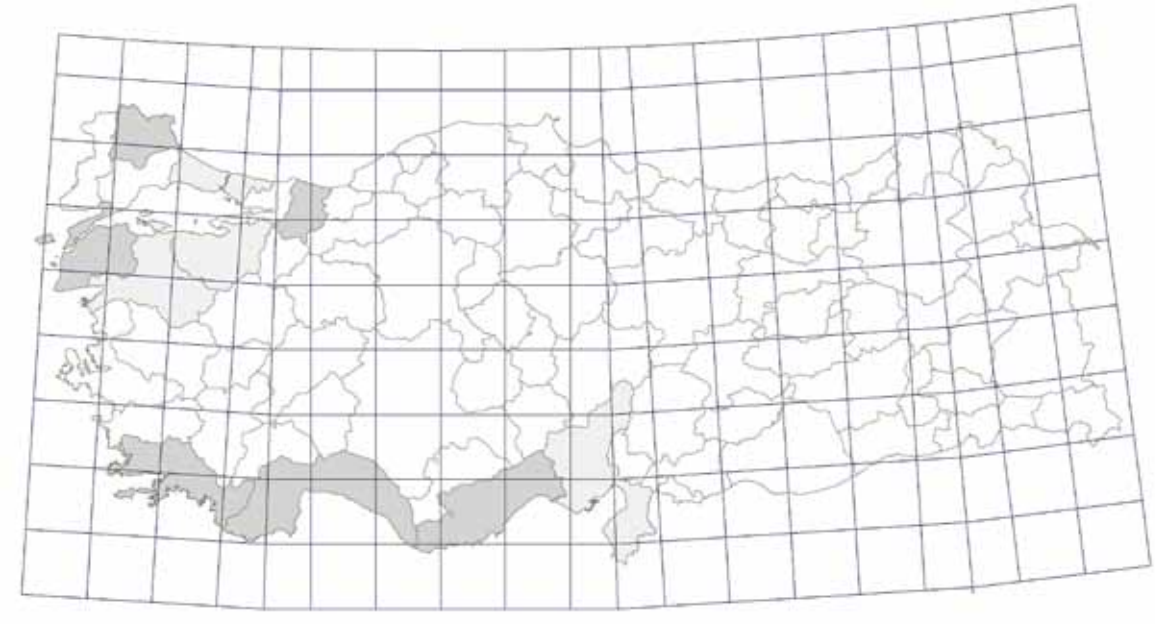
Recorded from a minimum of 19 localities (six provinces) in Thrace and around the coast of western Anatolia since 1980. In Greece occurs in the Evros River Valley on the Greece-Turkey border but currently there are no records from the adjoining area (Edirne province) in Turkey.

Due to the new records from five new localities in three years (2008-2010), it is considered likely that the area of occupancy (AOO) is larger than the data suggest. For this reason the uppermost figure of 30% occupancy per 10x10 km² has been used. This gives an area of occupancy of 570 km².

RED LIST ASSESSMENT JUSTIFICATION

Ottoman's Copper (*Lycaena ottomana*) is widespread but localised with, after scale correction, a small area of occupancy of around 570 km². Although the current trend of finding new localities for this butterfly is encouraging, the still severely fragmented distribution and ongoing threat of coastal developments indicate a continuing decline in the area of suitable habitat. This information qualifies the species for Vulnerable.

Due to the severely fragmented distribution no regional correction has been made, despite the apparent proximity of the Thrace localities to European subpopulations.



Key

Provinces with records since 1980

Provinces with only old records, before 1979

Taxonomic notes

No known taxonomic problems or issues.

Habitat and Ecology

It prefers wetlands with rich vegetation at low altitudes in the coastal zone, sometimes in the vicinity of deciduous forests and Mediterranean maquis. Also richly structured vegetation and openings in deciduous forests, sometimes further inland (Hesselbarth *et al.* 1995). There are two broods a year (Settele *et al.* 2008d).

The butterflies are often observed on white Cistus (*Cistus* sp.) where they search for nectar. Males defend territories in which they do not tolerate any other male (Hesselbarth *et al.* 1995).

Larval foodplant is sorrel, especially Sheep's Sorrel (*Rumex acetosella*). The eggs hatch after five days. The early instar caterpillars feed only on the lower epidermis of the foodplant's leaves, later instars can produce big holes. Caterpillars are first yellow and later green with a brown head capsule. In comparison with other copper species, ants are very interested in them and visit them frequently though there is no species specific ant association. After five weeks the caterpillars of the first generation attach themselves to leaves or the soil with a silk belt and pupate and the ants lose interest. The pupal period lasts 10 to 14 days (Hesselbarth *et al.* 1995).

Outside Turkey males of the summer brood are especially attracted to flowers of Dwarf Elder (*Sambucus ebulus)*. Females appear to retire to a different part of their habitat after pairing. This behaviour, coupled with relatively subdued female activity, may account for the commonly reported 'rarity' of females, even in colonies where males are abundant. (Tolman and Lewington 1997).

Population Trend

○ Increasing ○ Decreasing ○ Stable ◉ Unknown

Population

Very localised (Hesselbarth *et al.* 1995). No records from Balıkesir, Bursa or İstanbul for more than 140 years, nor Hatay for more than 40 years support the decline observed by Hesselbarth *et al.* (1995). However, since 2008 there have been records from three new provinces: Sakarya, Çanakkale and Kırklareli, indicating that the species has been overlooked in the past and is likely still to be more widespread than the records suggest. Despite this the distribution remains severely fragmented, divided into isolated subpopulations.

Threats

The butterfly's preferred habitat - generally damp, low-lying coastal areas - has long been under threat from tourism and other building developments. Some meta-populations along the Mediterranean and Aegean coast and in Marmara had already been lost when the Turkish subpopulations of this species were last assessed for IUCN in 2000 (van Swaay *et al.* 2000). Throughout its range the remaining small and isolated subpopulations continue to face the same threat of habitat loss (Hesselbarth *et al.* 1995).

Recommended conservation action

Surveys to identify remaining areas of habitat still used by the butterfly, followed by working together with local decision makers to develop measures which will provide effective local protection.

In Sakarya, this species has been found in the same area (though not the same habitat) as *Lycaena dispar*, indicating that conservation action here could benefit both species.

Selected References

Settele, J., Kudrna, O., Harpke, A., Kühn, I., van Swaay, C.A.M., Verovnik, R., Warren, M., Wiemers, M., Haspanch, J., Hickler, T., Kühn, E., van Halder, I., Velling, K., Vliegenthart, A., Wynhoff, I. and Schweiger, O. (2008d) *Lycaena ottomana* IN: *Climatic Risk Atlas of European Butterflies*. Sofia, Moscow: Pensoft, pp.194-195.

van Swaay, C.A.M. and Warren, M.S. (2000) *Lycaena ottomana* IN: *IUCN Red List of Threatened Species*. IUCN 2010. Version 2010.4. [Online]. Available from: www. iucnredlist.org. [Downloaded 22 December 2010].

Assessment date

12.08.2009

Assessors

Welch, H.J., Karaçetin, E. & Red List Working Group participants, Ankara 10-12.08.2009

Order: LEPIDOPTERA **Family:** LYCAENIDAE

VU Vulnerable
D2

001580 **Polyommatus ciloicus**

de Freina & Witt, 1983

IUCN Global Red List category -

IUCN Global Red List criteria -

Assessment submitted to IUCN for Global Red List: approval pending

P. ciloicus alamuticus ©Alireza Naderi

RECENT SYNONYMS

Scientific: -

English: **Cilo Blue**

Turkish: **Çokgözlü Cilo Mavisi**

DISTRIBUTION - Global:

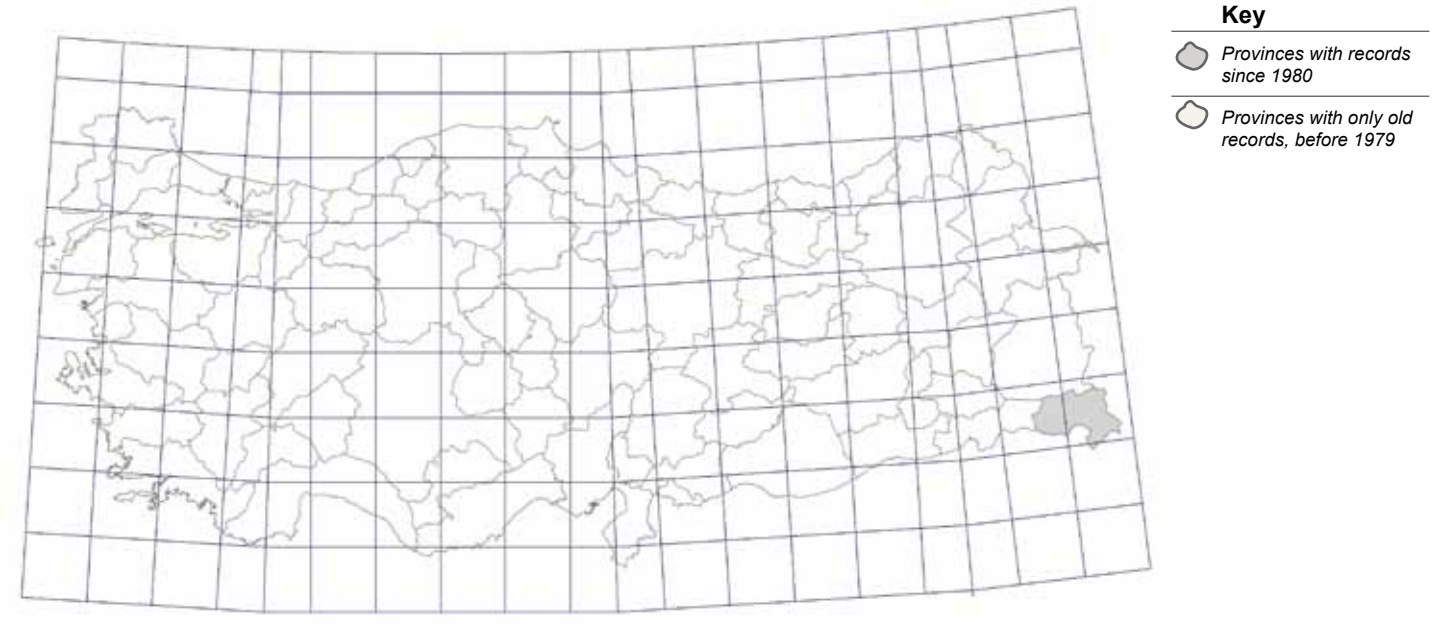
SE Turkey and NW Iran, currently known from five separate areas. In Iran it is known from the provinces of Azarbayjan-e Gharbi, Kordestan, Zanjan, and Qazvin. (The photo is of *P. c. alamuticus* from Iran.)

Turkey: *Extent Of Occurrence (EOO) post* 1980 (*km²*) **102** *Area Of Occupancy (AOO) post 1980 (km²)* **12**

SE Turkey, Hakkari; recorded from the lower slopes and steep sided valleys of Cilo Mountain, at three localities lying between 1,400-1,950 m.

RED LIST ASSESSMENT JUSTIFICATION

Cilo Blue (*Polyommatus ciloicus*) has a fragmented distribution, globally occurring in five separate areas in small, localised subpopulations. There are three subspecies; one in SE Turkey, and two in NW Iran. Naderi and ten Hagen (2006) consider that due to the isolation of the butterfly's high mountain refuges, gene exchange is not likely to occur between the subspecies. No regional adjustment has therefore been made in this assessment. In SE Turkey the butterfly is known from three localities on Cilo Mountain, Hakkari, with an estimated AOO of 12 km². It occurs in small subpopulations where the larval foodplant, a rare and very local species of vetch (*Vicia* sp.), grows in areas which are traditionally cut for hay. The butterfly and its larval foodplant are very vulnerable to change. Plausible threats are a change in the traditional management (it is considered grazing could be particularly damaging) or, since all known localities are near roads, road widening or building work. Because the population is considered prone to the effects of human activities or stochastic events within a very short time period (e.g., within 1 or 2 generations) in an uncertain future, it is thus capable of becoming Critically Endangered or even Extinct in a very short time period. For this reason it is categorised as Vulnerable.



Taxonomic notes

In Hesselbarth *et al.* (1995) *Polyommatus ciloicus* was presented as an endemic species. Later it was reduced to an endemic subspecies following the identification of two new subspecies in Iran, *P. c. azarisorum* described in 2002 and *P. c. alamuticus* described in 2006 (Naderi and ten Hagen 2006).

In their paper, Naderi and ten Hagen (2006) considered that the spread of ice and severe cold during the last glaciation period would have divided and isolated the favoured habitats of *P. ciloicus,* so gene exchange is no longer likely to occur between the three subspecies.

The authors also considered that the taxonomy of *P. ciloicus* might need to be revised in the future.

Habitat and Ecology

Occurs at middle altitudes (1,400-2,300 m, maximum 1,950 m in Turkey) in higher mountain chains. In Turkey it is described as occurring in humid, partly irrigated meadows rich in herbs and flowers (Hesselbarth *et al.* 1995). However, this description does not match the observations from Iran.

In Iran the butterfly is found exclusively in the vicinity of its larval foodplant, a rare and local vetch (*Vicia* sp.) covered with long dense hair; this is also used by the butterfly in Turkey (C. Castelain pers. comm. 2010). The plant grows on stony and somewhat steep slopes in small dry patches, never in wet areas. The butterflies have not been recorded using any other more common *Vicia* species.

At all known localities the taller, denser vegetation is cut by scythe once a year, in July, when the butterfly's flight period is largely over. However, the Cilo Blue-*Vicia* patches themselves are not cut, probably because they are sparse and of little value as hay. The protection this traditional management provides to the butterfly and its larval foodplant is probably significant. W. ten Hagen (pers. comm. 2010) considers that, at these middle altitudes, just one year of intensive grazing by sheep or goats would be enough to destroy the *Vicia* and Cilo Blue populations. As long as people have livestock and these localities are valued for hay, grazing/overgrazing will be prevented. Interestingly all known localities are near roads and it may be that their accessibility makes them favoured for hay production.

The butterfly has a short 10-14 day flight period with a simultaneous emergence of males and females, and closely tied to the growing period of its foodplant (in Iran only 10-30 plants per locality).

Population Trend

○ Increasing ○ Decreasing ○ Stable ◉ Unknown

Population

A very localised species, recorded from three localities on the slopes of Cilo Mountain in SE Turkey and four areas in NW Iran. Since the localities are small and the main plausible threat, a change of use to grazing, would affect the whole of each locality, in Turkey there are considered to be three locations.

It is not considered to be rare, but populations are small and fragmented, and the short flight period shifts according to season so the butterfly can readily be missed, making it appear rare.

Threats

The butterfly and its foodplant are very vulnerable to change. Plausible threats are a change in the traditional management (it is considered grazing could be particularly damaging) or, since all known localities are near roads, road widening or building work.

Additionally, since Cilo Blue retreated to pockets of suitable habitat during the last Ice Age, its now fragmented population is likely to be vulnerable to further changes in climate. However, without more understanding of the butterfly's ecology and climate models for this region there is too much uncertainty about the expected effects of climate change to make any predictions.

Recommended conservation action

Ecological information on the distribution, larval foodplant, early stages and life cycle are needed to understand the relationship between the three subspecies (recommendation in Naderi and ten Hagen, 2006).

More information is also needed on the habitats the butterfly uses and how these are managed, in order to identify areas where it could effectively be conserved and to develop a Species Action Plan.

Selected References

C. Castelain pers. comm. (2010): E-mails between Christian Castelain and Hilary Welch (Doğa Koruma Merkezi, Ankara, Turkey), September 2010.

Naderi, A. and W. ten Hagen. (2006) Description of a new subspecies of *Polyommatus ciloicus* de Freina & Witt, 1983: *alamuticus* ssp. n. from North Iran (Alburz Mts.) (Lepidoptera:Lycaenidae). *Nachr. entomol. Ver. Apollo*, 27(3), pp.171 -175.

Assessment date

25.11.2010

Assessors

Welch, H.J., Karaçetin, E., ten Hagen, W. & Naderi, A.

Order: LEPIDOPTERA **Family:** LYCAENIDAE

001290 # *Aricia hyacinthus*

(Herrich-Schäffer, [1847])

NT Near Threatened

B2a

ENDEMIC

IUCN Global Red List category	IUCN Global Red List criteria
-	-

Assessment submitted to IUCN for Global Red List: approval pending

©Münir Hançer

RECENT SYNONYMS

Scientific: ***Plebeius hyacinthus, Polyommatus (Aricia) hyacinthus***

English: **Anatolian False Argus**

Turkish: **Anadolu Çokgözlüsü**

DISTRIBUTION - Global:

Turkey.

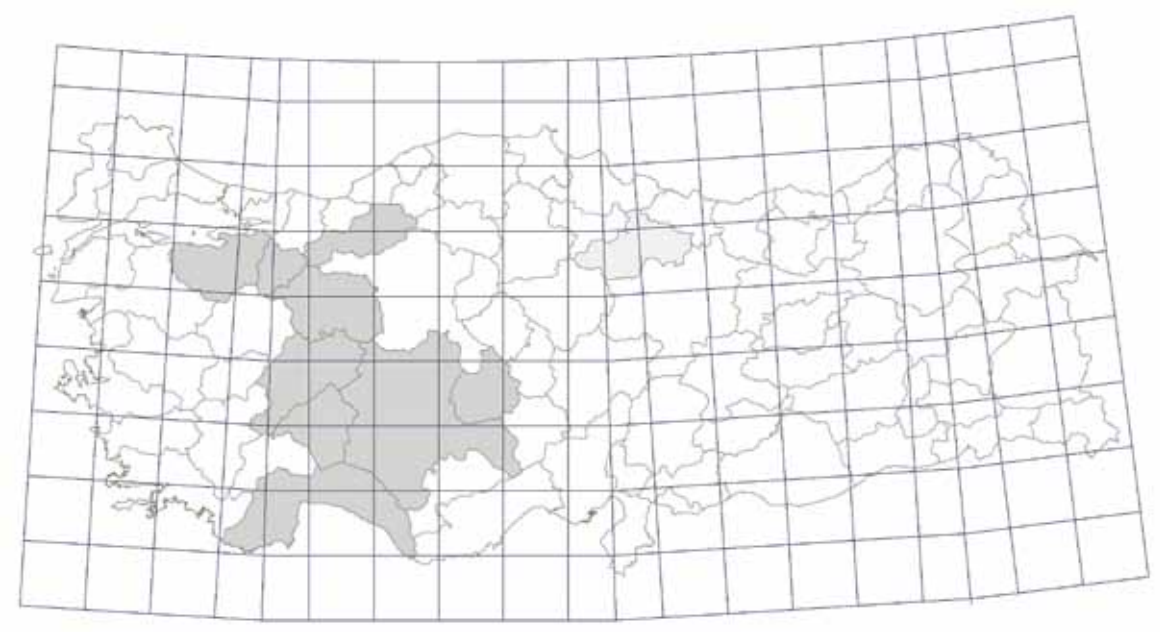
Turkey: *Extent Of Occurrence (EOO) post* 1980 (*km²*) **48,197** *Area Of Occupancy (AOO) post 1980 (km²)* **192**

Historically this species occurred in SW Romania and Turkey. However, since there have been no records in Romania since 1908-1913, it is now assumed to be extinct there (van Swaay *et al.* 2009d). In Turkey it is recorded from Antalya, Isparta, Konya and Aksaray in the south, and Afyon, Eskişehir, Bilecik and Bursa in the northwest (DKM data set). There have been no records from Tokat since 1855 (Hesselbarth *et al.* 1995), but around Mt. Uludağ in Bursa, the butterfly is frequently recorded (Kovancı *et al.* 2009).

Koçak and Kemal (2009) include Tokat and Bolu in the distribution area for this species (see map) but give no information on localities or dates; these provinces have thus not been included in the analysis for this assessment.

RED LIST ASSESSMENT JUSTIFICATION

Anatolian False Argus (*Aricia hyacinthus*), is an endemic butterfly observed in mid-west Turkey. Despite its large extent of occurrence (48,192 km²), it has a restricted area of occupancy (AOO) of approximately 192 km². The butterfly is small and inconspicuous, but recent reports suggest that it is likely to be more widespread than records indicate. Even so experts still consider that the AOO is likely to be smaller than 500 km². Its populations are small, local and extremely fragmented (Hesselbarth *et al.* 1995). Some populations of the species are influenced by heavy grazing (Kovancı *et al.* 2009) but currently this threat does not lead to a more than 30% decrease in population size in 10 years. The species is therefore listed as Near Threatened.



Key

Provinces with records since 1980

Provinces with only old records, before 1979

Taxonomic notes

There are no known taxonomic problems or issues.

Habitat and Ecology

Anatolian False Argus is found in vegetation-rich woodland glades, open woodland and mountain stream sides or in local damp patches with geraniums. The butterflies are very inconspicuous, flying close to the ground or among the herbaceous ground cover so are easily overlooked. The species has been reared on geraniums (*Geranium* spp.) in a laboratory so larval instars have been studied (Hesselbarth *et al*. 1995). Kovancı *et al.* (2009) report the endemic *Erodium olympicum* as its larval foodplant. In the wild, the butterfly may hibernate as eggs or early instars (Hesselbarth *et al*. 1995). It occurs at altitudes between 1,150-2,450 m (Hesselbarth *et al*. 1995, Kovancı *et al.* 2009), with butterflies reported restricted to the subalpine and alpine zones on Uludağ (Kovancı *et al*. 2009).

Population Trend

○ Increasing ○ Decreasing ○ Stable ◉ Unknown

Population

Most subpopulations are local and small. A few subpopulations with higher butterfly densities are known, but they are also very localised (Hesselbarth *et al.* 1995). The population of this species is thus considered severely fragmented and the subpopulations isolated.

Threats

Throughout its range the butterfly has been recorded in a variety of habitats. The only recorded threat is heavy grazing: Kovancı *et al.* (2009) states that on Uludağ its foodplant is under pressure from sheep grazing and that this is putting the species in danger.

Recommended conservation action

The species has no conservation status or legal protection. Development and implementation of management plans for existing colonies of this butterfly might be necessary, especially in sites which are heavily grazed (Kovancı *et al.* 2009). Further research needs to be carried out to understand its biology, ecology and behaviour.

Selected References

Kovanci, O.B., Gencer, N.S. and Kovanci, B. (2009) Lycaenid butterflies (lepidoptera: Lycaenidae) of northwestern Turkey with notes on their ecology and current status. *Revista Colombiana de Entomologia*. 35(20), pp. 275-282.

van Swaay, C., Wynhoff, I., Verovnik, R., Wiemers, M., López Munguira, M.,Maes, D., Šašic, M., Verstrael, T., Warren, M. and Settele, J. (2009d.) *Aricia hyacinthus* IN: *IUCN Red List of Threatened Species*. IUCN 2010. Version 2010.3. [Online]. Available from: www.iucnredlist.org. [Downloaded on 18 October 2010].

Assessment date

11.08.2009

Assessors

Karaçetin, E., Welch, H.J. & Red List Working Group participants, Ankara, 10-12.08.2009.

Order: LEPIDOPTERA **Family:** LYCAENIDAE

NT Near Threatened

B1a+2a

001980 ***Polyommatus guezelmavi***

Olivier, Puplesiene, van der Poorten, de Prins & Wiemers, 1999

ENDEMIC

IUCN Global Red List category	IUCN Global Red List criteria
-	-

Assessment submitted to IUCN for Global Red List: approval pending

©Wolfgang Eckweiler

RECENT SYNONYMS

Scientific: ***Polyommatus (Agrodiaetus) guezelmavi***

English: **Beautiful Blue**

Turkish: **Çokgözlü Güzelmavi**

DISTRIBUTION - Global:

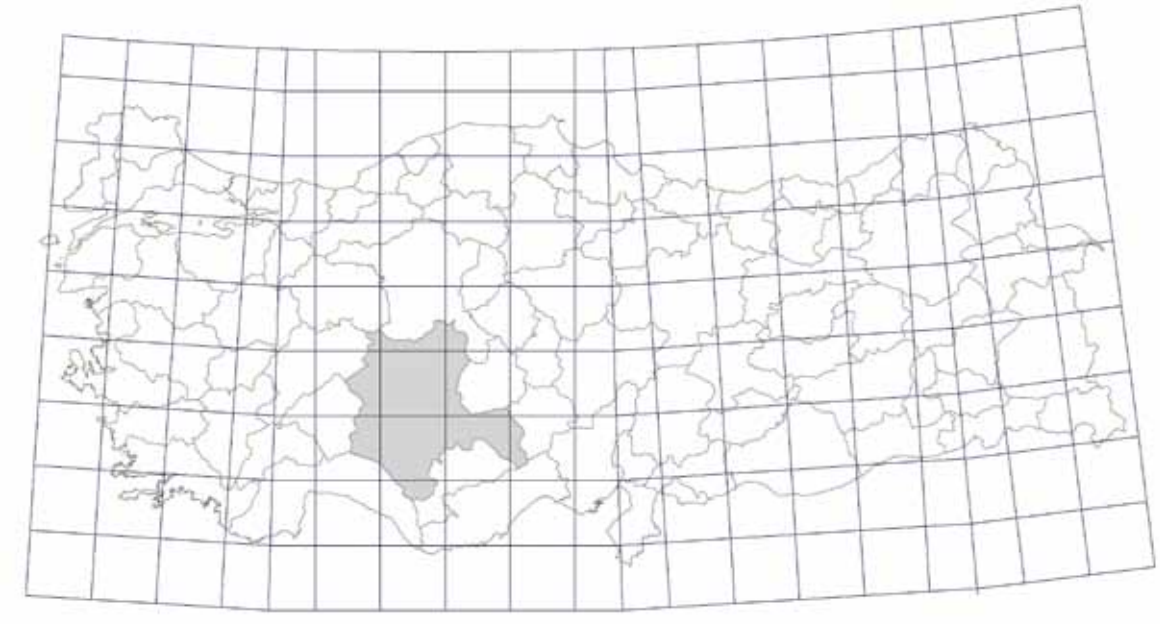
Turkey.

Turkey: *Extent Of Occurrence (EOO) post* 1980 (*km*^{2}) **300** *Area Of Occupancy (AOO) post 1980 (km*^{2}*)* **20**

Five localities in the south of Konya province, Turkey, all within and along the NE boundary of Geyik Mountains Key Biodiversity Area (Eken *et al.* 2006), between Kuruçay and Taşkent.

RED LIST ASSESSMENT JUSTIFICATION

Beautiful Blue (*Polyommatus guezelmavi*), is a Turkish endemic with a restricted range: the extent of occurrence (EOO) and area of occupancy (AOO) are very small. There is one plausible threat: changes in land use following extensive agricultural intensification if the height of the existing dam at Bozkır-Çağlayan is raised. However, currently hydraulic engineers insist there is insufficient water in the catchment to provide the extra volume of water demanded by local people. For now this thus appears to be a possible but not probable threat and the butterfly is therefore listed as Near Threatened.



Key

Provinces with records since 1980

Provinces with only old records, before 1979

Taxonomic notes

This species was described in 1999, after the publication of Hesselbarth *et al*. (1995), as the result of a thorough review of all the specimens of Theresia's Blue (*Polyommatus theresiae*). Olivier *at al*. (1999) found that the specimens of *P. theresiae* from the type locality in Adana had different karyotype and chromosome values from individuals in the Konya population. They thus described the Konya population as a new species, *Polyommatus guezelmavi*. The specimens of *P. theresiae* from Konya, presented in Hesselbarth *et al.* (1995) as paratypes, are thus actually *P. guezelmavi*.

Habitat and Ecology

Occurs at 1,135-1,600 m on limestone, preferring small, open rocky plateaus on steep hill slopes that are quite humid in spring, but dried out at the time of emergence of the butterflies in mid July. Also seen at humid spots on sandy roadsides and among tall grasses in the shade of trees. Larval host-plant and early stages unknown. Flies mid July-mid August (Olivier *et al.* 1999).

The type locality consists of steep rocky slopes around a village. The surrounding area is forested.

Population Trend

○ Increasing ○ Decreasing ○ Stable ◉ Unknown

Population

Frédéric Carbonell found the butterfly to be common at three previously unknown sites (north-west of the type locality) in 2002 and he observed a total of more than 20 individuals. In 2010 a fourth site, a little further north along the same river valley was found (O. Yeğin pers. comm. 2010). Since all five localities lie in the same valley system, to the NE of the Geyik Mountains, it seems likely that the butterfly will be found at more localities in this region and that all of these subpopulations are connected.

Threats

A dam has recently been built in the Bozkır-Çağlayan area of Beautiful Blue's range with the capacity to irrigate 713 ha. Since the river valley is already extensively cultivated and the reservoir will provide additional water for only a small area, the assessors do not consider this development to be of significant concern for the butterfly. However, local people are lobbying the government for the dam to be raised by 10 metres in order to provide water for an additional 10 villages. Currently engineers insist there is no water available to provide this extra capacity and arguments have been presented against all the solutions presented (Eroğlu 2008). However, if public pressure remains high and a solution can be found, the extra irrigation capacity may start to have an effect on the butterfly's habitat.

The preferred habitat at the type locality appears to be restricted by the landscape and probably local climatic conditions and may thus be sensitive to the effects of climate change.

Recommended conservation action

Surveys are needed to learn whether the butterfly is widely distributed within the current extent of occurrence; to understand more about its population size and ecology; to identify/confirm threats; to develop conservation actions.

Selected References

Devlet Su İşleri Genel Müdürlüğü. Bozkır-Çağlayan Göleti. [Online]. Available from: http://www.dsi.gov.tr/bolge/dsi4/konya.htm#goletinsa. [Accessed on 27 October 2010].

Eroğlu, V. (2008) Konya Milletvekili Sayın Atilla Kart'ın 7/4537 esas numaralı yazılı soru örnergesi hakkında Çevra Orman Bakanlığı'nın cevabı. [A letter dated 1 September 2008 with questions from the Minister of the Environment, Prof. Dr Veysal Eroğlu, answered by Atilla Kart from the Turkish Parliament.]

Olivier, A., van der Poorten, D., Puplesiene, J. and de Prins, W. (1999) On the identity of *Polyommatus* (*Agrodiaetus*) *dama*, with lectotype designation and redescription of its karyotype. *Nota Lepidopterologica*, 22(3), pp.197-211.

O. Yeğin pers. comm. (2010): Photographs uploaded to the Butterflies of Iran Yahoo Group, identified by Martin Wiemers and Frédéric Carbonell, August 2010.

Assessment date

27.10.2010

Assessors

Welch H.J., Karaçetin, E., Wiemers M. & Carbonell, F.

Order: LEPIDOPTERA **Family:** NYMPHALIDAE

002870 ***Erebia melancholica***

Herrich-Schäffer, [1846]

NT Near Threatened

B2b(iii)

NEAR ENDEMIC

IUCN Global Red List category	IUCN Global Red List criteria
-	-

©Szabolcs Sáfián

RECENT SYNONYMS

Scientific: -

English: **Alpine Ringlet**

Turkish: **Mecnun Güzelesmeri**

DISTRIBUTION - Global:

NE Turkey, the Caucasus and Transcaucasia (Tuzov *et al.* 1997). Tshikolovets (2003) describes the distribution outside Turkey as Azerbaijan, Russian Federation and Georgia.

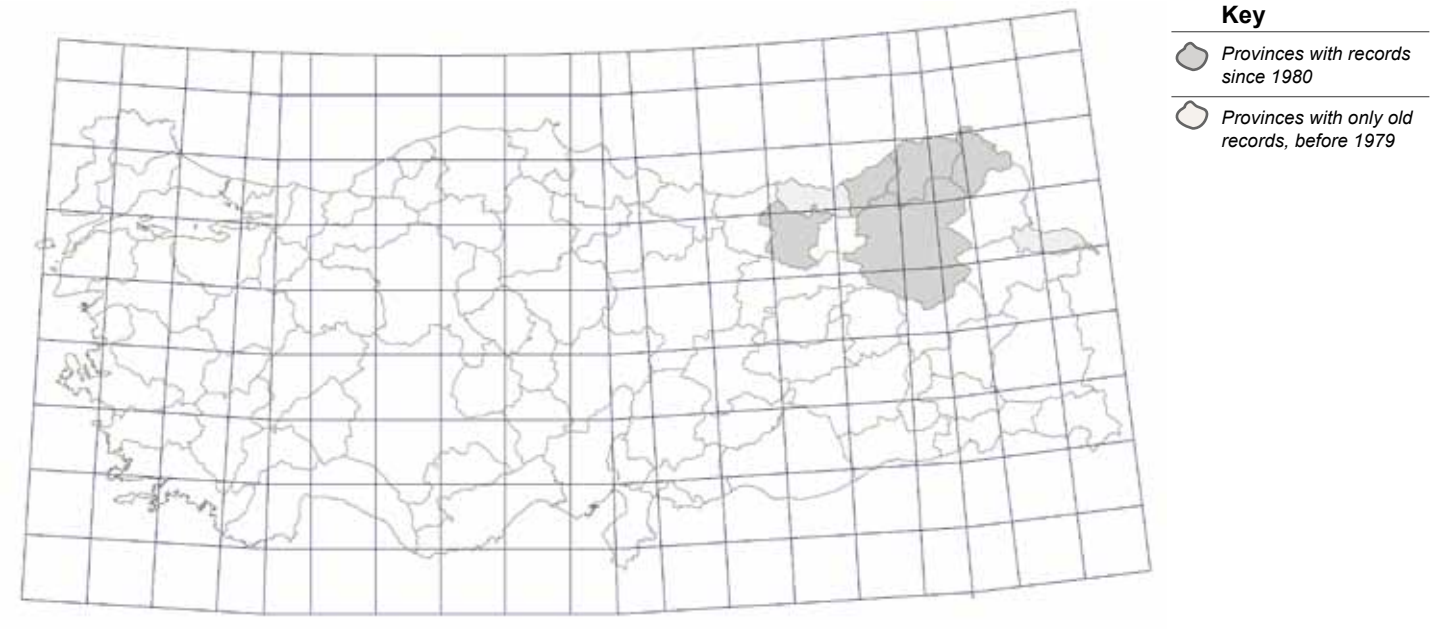
Turkey: *Extent Of Occurrence (EOO) post* 1980 (*km²*) **9,724** *Area Of Occupancy (AOO) post 1980 (km²)* **880**

This species is near endemic to Turkey occurring in the Black Sea mountains of NE Anatolia, from Gümüşhane to Ardahan. There are also old records, from 1901 and earlier, from Iğdır.

RED LIST ASSESSMENT JUSTIFICATION

Alpine Ringlet (*Erebia melancholica*), is a restricted range near endemic species found only in the southern parts of the Caucasus. Its extent of occurrence (EOO) in Turkey is 9,724 km² and area of occupancy (AOO) is 880 km². The species is commonly observed in humid grasslands and subalpine meadows in NE Anatolia. However, these habitats are threatened by small scale hydroelectric schemes (HES), planned on almost all streams in the region. Due to the butterfly's preference for humid areas, it is anticipated that each scheme will cause immediate losses due to destruction of habitat and change of water regimes, followed by fragmentation and slow but steady declines of the remaining butterfly subpopulations as more schemes are implemented. This species is therefore listed as Near Threatened.

As nothing is known about the status of, or threats to subpopulations outside Turkey, no regional adjustment has been made to this assessment.



Erebia melancholica

Taxonomic notes

No taxonomic problems or issues.

Habitat and Ecology

This butterfly is observed in subalpine meadows and humid grasslands with tall herb communities. It flies from July to August at 1,800-2,500 m (Hesselbarth *et al.* 1995). Its larval foodplant is probably grasses (Tuzov *et al.* 1997, Hesselbarth *et al.* 1995). Although common where it occurs, there is very little information available on its biology or ecology.

Population Trend

○ Increasing ○ Decreasing ○ Stable ◉ Unknown

Population

Within its limited range the Alpine Ringlet is a common species. However, there is no information on its population structure and thus no understanding of how it will respond to the rapid environmental changes expected within its area of distribution.

Threats

The major threat to this butterfly is extensive habitat loss across its range caused by construction of small scale hydroelectric schemes (HES) in NE Anatolia. Some construction work for these has already begun. Although the amount of electricity from the HES will be small, the impact of the construction on the environment will be high. Whilst the sites most obviously affected will be the valley bottoms and the watercourses, some sections of which are likely to be completely dry at certain times of year, the surrounding landscape will also be affected as rivers are canalised following the contours along mountainsides, tunnels are dug to pipe water through mountains, electricity generating stations are built, pylons are installed to carry the electricity generated and service roads are built to facilitate the construction and future maintenance work (Muluk *et al.* 2009). These will destroy areas of the butterfly's habitat over a much wider area and cause immediate butterfly subpopulation losses, especially since this butterfly prefers humid grasslands fed by these stream systems. But more insidious will be the fragmentation effect on subpopulations and the resulting local isolation and slow but steady subpopulation declines.

Recommended conservation action

Further research is needed to understand the butterfly's biology, ecology and behaviour so as to be able to predict more precisely how the current HES will influence the species. This understanding would make it possible to recommend how the HES plans should be revised in order to reduce their damaging impacts on this and other butterflies.

Selected References

Muluk, Ç.B., Turak, A., Yılmaz, D., Zeydanlı, U. and Bilgin, C.C. (2009) *Hidroelektrik Santral Etkileri Uzman Raporu: Barhal Vadisi.* Kaçkar Dağları Sürdürülebilir Orman Kullanımı ve Koruması Projesi. Turkey: TEMA.

Assessment date

07.11.2009

Assessors

Karaçetin, E. & Welch, H.J.

Karaçetin, E. and Welch, H.J. (2011). Red Book of Butterflies in Turkey. Ankara, Turkey: Doğa Koruma Merkezi. Available from: [www.dkm.org.tr]

Order: LEPIDOPTERA **Family:** NYMPHALIDAE

NT Near Threatened

B2b(iii)

003300 ***Coenonympha symphyta***

Lederer, 1870

NEAR ENDEMIC

IUCN Global Red List category	IUCN Global Red List criteria
-	-

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RECENT SYNONYMS

Scientific: -

English: **Lederer's Heath**

Turkish: **Kafkasya Zıpzıp Perisi**

DISTRIBUTION - Global:

NE Turkey and SW Georgia, between Akhaltsikhe and the Turkish border (Tuzov *et al.* 1997).

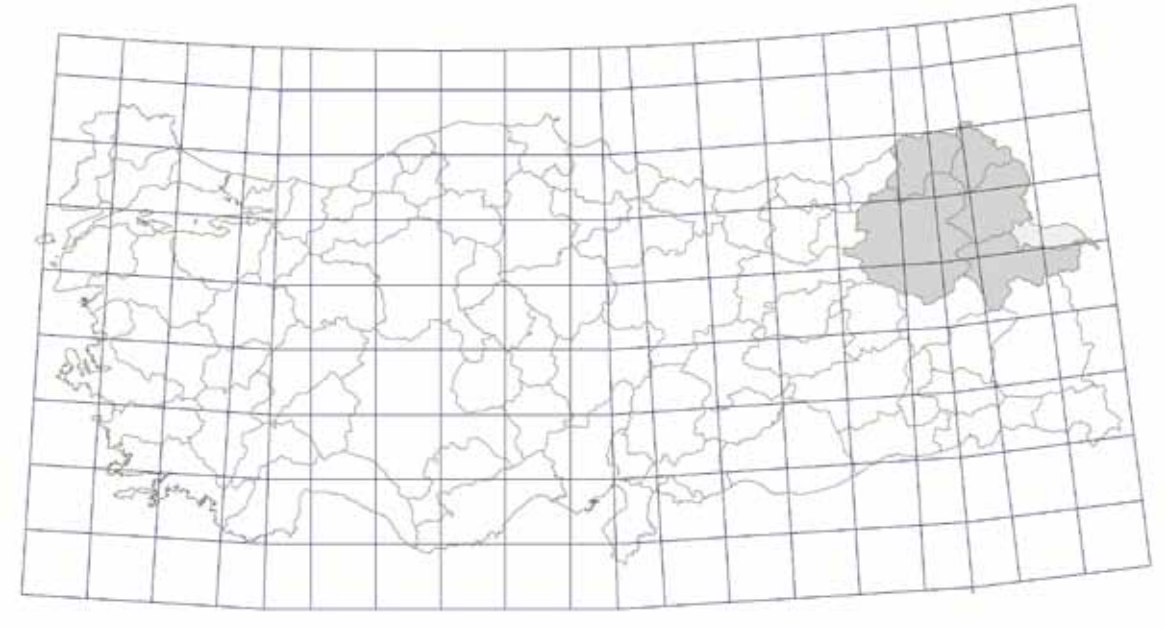
Turkey: *Extent Of Occurrence (EOO) post* 1980 (*km²*) **16,892** *Area Of Occupancy (AOO) post 1980 (km²)* **520**

Lederer's Heath is a very localised species restricted to the Lesser Caucasus and the Kars Plateau (Tuzov *et al.* 1997), with records from the provinces of Erzurum, Artvin, Ardahan, Kars and Ağrı since 1980, and with older (1976) records from Iğdır. From the information available its distribution outside Turkey is restricted to a small area of SW Georgia, making it a Turkish near endemic.

RED LIST ASSESSMENT JUSTIFICATION

Lederer's Heath (*Coenonympha symphyta*), is a near endemic species, observed only in NE Turkey and SW Georgia and with a very limited distribution outside Turkey. Its extent of occurrence (EOO) in Turkey is 16,892 km² and area of occupancy (AOO) is 520 km². The species is commonly observed in humid grasslands and subalpine meadows in NE Anatolia. However, these habitats are threatened by small scale hydroelectric schemes (HES), planned on almost all streams in the region. Due to the butterfly's preference for humid areas, it is anticipated that each scheme will cause immediate losses due to destruction of habitat and change of water regimes, followed by fragmentation and slow but steady declines of the remaining butterfly subpopulations as more schemes are implemented. This species is therefore listed as Near Threatened.

As nothing is known about the status of, or threats to subpopulations outside Turkey, no regional adjustment has been made to this assessment.



Key

Provinces with records since 1980

Provinces with only old records, before 1979

Taxonomic notes

No known taxonomic problems or issues.

Habitat and Ecology

Occurs locally, flying from early July to mid-August, in humid midmontane and subalpine meadows of the Lesser Caucasus and Kars Plateau, usually above 2,000 m (Tuzov *et al.* 1997).

The only reference to the larval foodplant is in Hesselbarth *et al.* (1995) which reports successful rearing of larvae on Annual Bluegrass (*Poa annua*).

Population Trend

○ Increasing ○ Decreasing ○ Stable ◉ Unknown

Population

This butterfly is local but fairly common wherever it is observed (Baytaş 2007). There is no information on its population structure.

Threats

The major threat to this butterfly is extensive habitat loss across its range caused by construction of small scale hydroelectric schemes (HES) in NE Anatolia. Some construction work for these has already begun. Although the amount of electricity from the HES will be small, the impact of the construction on the environment will be high. Whilst the sites most obviously affected will be the valley bottoms and the watercourses, some sections of which are likely to be completely dry at certain times of year, the surrounding landscape will also be affected as rivers are canalised following the contours along mountainsides, tunnels are dug to pipe water through mountains, electricity generating stations are built, pylons are installed to carry the electricity generated and service roads are built to facilitate the construction and future maintenance work (Muluk *et al*. 2009). These will destroy areas of the butterfly's habitat over a much wider area and cause immediate butterfly subpopulation losses, especially since this butterfly prefers humid grasslands fed by stream systems. But more insidious will be the fragmentation effect on subpopulations and the resulting local isolation and slow but steady subpopulation declines.

Recommended conservation action

Revision of plans for current dam and hydroelectric schemes to take account of the needs of this and other butterfly species in order to avoid widespread damage to important areas of habitat.

Further research is needed to understand the butterfly's biology, ecology and behaviour so as to be able to predict more precisely how the current HES will influence this species.

Selected References

Muluk, Ç.B., Turak, A., Yılmaz, D., Zeydanlı, U. and Bilgin, C.C. (2009) *Hidroelektrik Santral Etkileri Uzman Raporu: Barhal Vadisi.* Kaçkar Dağları Sürdürülebilir Orman Kullanımı ve Koruması Projesi. Turkey: TEMA.

Assessment date

1.11.2009

Assessors

Karaçetin, E. & Welch, H.J.

Order: LEPIDOPTERA **Family:** PIERIDAE

NT Near Threatened

A3c

000520 ***Zegris eupheme***

(Esper, 1804)

IUCN Global Red List category	IUCN Global Red List criteria
-	-

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RECENT SYNONYMS

Scientific: -

English: **Sooty Orange Tip**

Turkish: **Zegris**

DISTRIBUTION - Global:

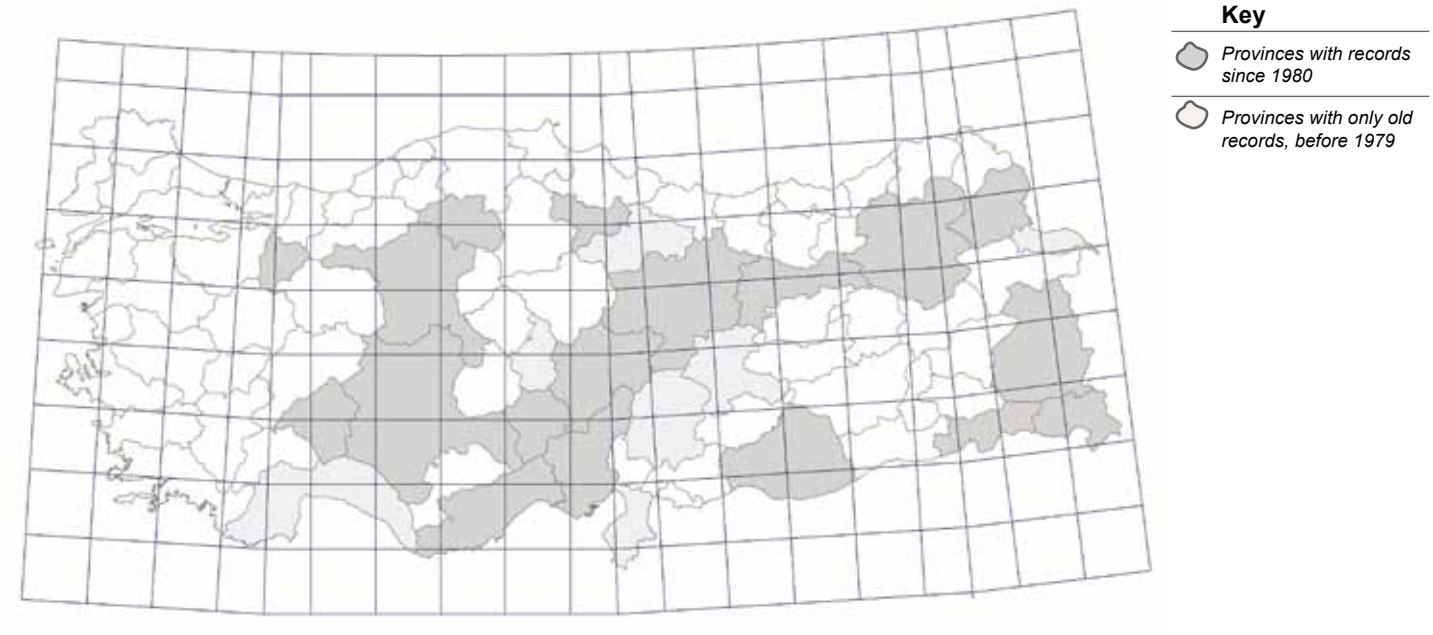
Morocco, S Spain, Turkey, Saudi Arabia, Iran, Caucasus, Ukraine, Volga, S Urals, E Kazakhstan, Altai (Tolman and Lewington 1997), N Iraq, Syria and northern Transjordan (Hesselbarth *et al.* 1995).

Turkey: *Extent Of Occurrence (EOO) post* 1980 (*km²*) **459,239** *Area Of Occupancy (AOO) post 1980 (km²)* **1,640**

The map shows a widespread but fragmented distribution in Turkey, with the species absent only from the Aegean, Marmara and Black Sea coast regions and, possibly SE Anatolia. After spatial adjustment (to an occupancy of 20 km² per 100 km²) the area of occupancy (AOO) is 1,640 km², though experts believe there are likely to be many false negatives. However, despite this there is a large difference between the AOO and the extent of occurrence (459,239 km²), indicating that although widespread, the species is local.

RED LIST ASSESSMENT JUSTIFICATION

Sooty Orange Tip (*Zegris eupheme*) has a widespread but local distribution in Turkey. The Climatic Risk Atlas of European Butterflies (Settele *et al.* 2008c) calculates a possible decline of >98% of this species' climate envelope in Europe by 2080 based on the most pessimistic of the three climate change models used. Due to the close correlation between the species' current distribution and the climate envelope (mapped for Europe and including western Turkey) experts consider that this scenario could well apply to the Turkish population too. Applying the precautionary principle this species is thus classified as Near Threatened because observed rates of CO_2 emissions and temperature increases already exceed those foreseen in the worst-case scenario models meaning that this species may well be endangered in the long-term by climate change (van Swaay *et al.* 2009e). As this species is considered to be facing the same threats in Europe no regional adjustment has been made to the threat category.



Taxonomic notes

Occurs as the subspecies *Z. e. menestho* in Turkey, which is distributed from Anatolia through Transcaucasia, NW Iran, northern Iraq, Syria and northern Transjordan.

Habitat and Ecology

In Turkey the habitat is described as hot, stony slopes and damp valleys in mountains; also near streams in steppes (Baytaş 2007) from sea level to 2,000 m (Hesselbarth *et al.* 1995).

In Europe the Sooty Orange Tip is mostly seen in dry, flower-rich places, waste ground, and abandoned agricultural land.

Crucifers, such as London Rocket (*Sisymbrium irio*), Buckler Mustard (*Biscutella auriculata*), Hoary Mustard (*Hirschfeldia incana*), and radishes (*Raphanus* spp.), are usually abundant in its habitat. They are used by the butterflies for their nectar and as larval foodplants. The butterflies have a quick, zigzagging flight.

The Sooty Orange Tip hibernates as a pupa. The pupal stage may last for one, two, or three years. It is single-brooded (Settele *et al.* 2008c).

Population Trend

○ Increasing ○ Decreasing ○ Stable ◉ Unknown

Population

Local, in widely separated colonies (Tolman and Lewington 1997).

Threats

Work by Settele *et al.* (2008c) indicates that in the long-term this species is at extremely high risk from climate change in Europe. Further, Settele considers that the model which was developed for Europe (Spain) could also fit well in Turkey because the climate niche developed and mapped for Europe fits almost perfectly not only with the species' known distribution in Spain, but also with that in the area of western Anatolia included on the same map. All the climate change scenarios presented for Sooty Orange Tip in Settele *et al.* (2008c) predict that more than 95% of the grids with currently suitable climate may no longer be suitable in 2080. It therefore seems likely that a huge contraction in range can be expected in Turkey in the medium- to long-term.

In Europe this species is classified as Near Threatened because (i) observed rates of CO_2 emissions and temperature increases already exceed those foreseen in the worst-case scenario models, and (ii) it is appropriate to take a precautionary approach. It is thus considered that in the long-term the species may be endangered by climate change.

Recommended conservation action

Surveys to obtain a more complete picture of the distribution and identify any other more direct threats. Population monitoring.

Selected References

Settele, J., Kudrna, O., Harpke, A., Kühn, I., van Swaay, C.A.M., Verovnik, R., Warren, M., Wiemers, M., Haspanch, J., Hickler, T., Kühn, E., van Halder, I., Velling, K., Vliegenthart, A., Wynhoff, I. and Schweiger, O. (2008c) *Zegris eupheme* IN: *Climatic Risk Atlas of European Butterflies*. Sofia, Moscow: Pensoft, pp.134-135.

van Swaay, C., Wynhoff, I., Verovnik, R., Wiemers, M., López Munguira, M.,Maes, D., Šašic, M., Verstrael, T., Warren, M. and Settele, J. (2009e) *Zegris eupheme* IN: *IUCN Red List of Threatened Species.* IUCN 2010. Version 2010.3. [Online]. Available from: www.iucnredlist.org. [Downloaded on 19 October 2010].

Assessment date

19.10.2010

Assessors

Welch, H.J., Karaçetin, E. & Settele, J.

Order: LEPIDOPTERA **Family:** LYCAENIDAE

NT Near Threatened

B2b(iii)

000860 ***Lycaena dispar***

(Haworth, 1802)

IUCN Global Red List category	IUCN Global Red List criteria
NT Near Threatened	-

Last assessed for IUCN by Gimenez Dixon in 1996, needs updating.

©Bahar Bilgen

RECENT SYNONYMS

Scientific: -

English: **Large Copper**

Turkish: **Büyük Bakır**

DISTRIBUTION - Global:

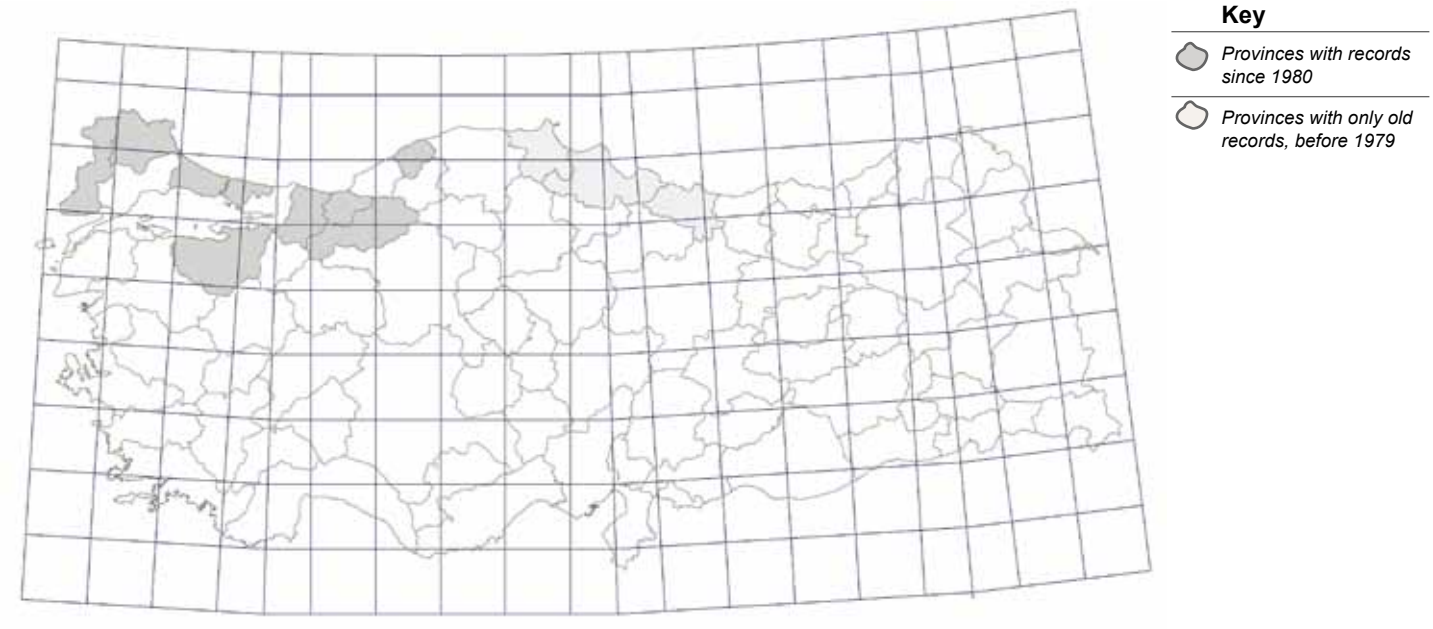
Locally but widely distributed in central Europe - as far north as southern Finland and south to western Italy and northern Greece - and eastwards across the northern Black Sea to Central Asia (Kudrna 2002).

Turkey: *Extent Of Occurrence (EOO) post* 1980 (*km²*) **72,334** *Area Of Occupancy (AOO) post 1980 (km²)* **260**

Recent records at province level (2007-2010) have added five new provinces (Bolu, Kırklareli, Bartın, Düzce, Kocaeli), 13 new localities, and extend the distribution in the west. There have been no records from eastern provinces for 40+ years (Sinop 1969, Ordu 1907, Samsun 1866) but this may be due to a lack of observers. However, although the extent of occurrence is large, the area of occupancy remains small at 260 km².

RED LIST ASSESSMENT JUSTIFICATION

The damp lowland habitats preferred by the Large Copper (*Lycaena dispar*) are threatened everywhere by land claim, ground water extraction and the spread and intensification of agriculture. The species has a large extent of occurrence (72,334 km²) but the area of occupancy is just 260 km². Thirteen of the 15 localities with records since 1980 are new since the publication of Hesselbarth *et al.* (1995), filling gaps in the known distribution and indicating that the species may be commoner than previously thought. However, there are concerns that due to the pressures on the species' habitat, populations may actually be declining in the same way that monitoring schemes are revealing them to be in many countries in Europe (van Swaay *et al.* 2009). With the small AOO and widespread threats to the species' habitat, this species is thus listed as Near Threatened. The assessors consider that, due to the ongoing threats, this species should be assigned a threat category. Thus, applying the precautionary principle, no regional adjustment has been made.



Taxonomic notes

The subspecies occurring in Turkey is *Lycaena dispar rutila*. The same subspecies occurs locally in France, Central and Eastern Europe, Northern Italy and the Balkans.

Habitat and Ecology

The Large Copper occurs in lowland areas, from 0-300 m, in wet meadows, swampy places (Hesselbarth *et al.* 1995) and on the peaty banks of lakes, rivers and streams. In the east it is also found on wasteland (Settele *et al*. 2008e).

Nectar plants are important, especially for the females. Eggs are laid on large non-acidic sorrels (*Rumex* spp.) and it seems that in Turkey a variety of species are used though the main larval foodplant seems to be *Rumex crispus*. *Rumex hydrolapathum* has been recorded in Istanbul and Bursa (Hesselbarth *et al.* 1995), *Rumex obtusifolius subalpinus* in the Black Sea coastlands (Hesselbarth *et al.* 1995) and *Rumex olympicus* again in Bursa (Kovancı *et al.* 2009). The young caterpillars first eat from the underside of the leaves, making the characteristic 'windows'. Later, as the caterpillars get larger they feed on the whole leaf.

The caterpillars hibernate when half-grown between withered leaves at the base of the larval foodplant. They are sometimes associated with ants (*Myrmica rubra* and *Lasius niger*).

Population Trend

○ Increasing ○ Decreasing ○ Stable ◉ Unknown

Population

This species always occurs at low density and in dispersed colonies (Tolman and Lewington 1997). There are only 13 records in the Hesselbarth *et al.* (1995) data set, eight of them more than 40 years old. It is thus significant that in just four years (2007-2010) this species has been recorded from five new provinces including at least 13 new localities, indicating a much greater area of occupancy than previously thought.

Although widespread in Europe, this species is local and restricted to areas with sufficient habitat of good quality. Declines in distribution or population size have been reported from Bosnia and Herzegovina, Luxembourg, Ukraine, Greece, Italy and Romania (van Swaay *et al.* 2009).

Threats

The damp lowland habitats preferred by the Large Copper are threatened by land claim, ground water extraction and the spread and intensification of agriculture. The population in Bursa was reported as threatened by spreading urbanisation and increasing development of land for orchards by Hesselbarth *et al.* (1995), and they considered that it might already be extinct there. In fact recent records have found it still to be present in Bursa, though at different localities, but the extent and quality of the remaining available habitat continues to reduce throughout the species' range in Turkey.

Recommended conservation action

The species is listed on the Habitats Directive Annexes 2 and 4 and Bern Convention Annex 2. More research is needed on the species' distribution and ecology, together with population monitoring. Appropriate conservation measures need to be developed at a local level. In Sakarya, this species has been found in the same area (though not the same habitat) as *Lycaena ottomana*, indicating that conservation action here could benefit both species.

Selected References

Kovanci, O.B., Gencer, N.S. and Kovanci, B. (2009) Lycaenid butterflies (Lepidoptera:Lycaenidae) of northwestern Turkey with notes on their ecology and current status. *Revista Colombiana de Entomologia*, 35(20), pp.275-282.

Settele, J., Kudrna, O., Harpke, A., Kühn, I., van Swaay, C.A.M., Verovnik, R., Warren, M., Wiemers, M., Haspanch, J., Hickler, T., Kühn, E., van Halder, I., Velling, K., Vliegenthart, A., Wynhoff, I. and Schweiger, O. (2008e) *Lycaena dispar* IN: *Climatic Risk Atlas of European Butterflies*. Sofia, Moscow: Pensoft, pp.190-191.

Tolman, T. and Lewington, R. (1997) *Butterflies of Britain and Europe*. London: HarperCollins.

van Swaay, C., Wynhoff, I., Verovnik, R., Wiemers, M., López Munguira, M.,Maes, D., Šašic, M., Verstrael, T., Warren, M. and Settele, J. (2009a) *Lycaena dispar* IN: *IUCN Red List of Threatened Species*. IUCN 2010. Version 2010.3. [Online]. Available from: www.iucnredlist.org. [Downloaded on 19 October 2010].

Assessment date

1.11.2009

Assessors

Welch, H.J. & Karaçetin, E.

Order: LEPIDOPTERA **Family:** LYCAENIDAE

NT Near Threatened

B2a

001110 ***Scolitantides orion***

(Pallas, 1771)

IUCN Global Red List category	IUCN Global Red List criteria
-	-

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RECENT SYNONYMS

Scientific: -

English: **Chequered Blue**

Turkish: **Karamavi**

DISTRIBUTION - Global:

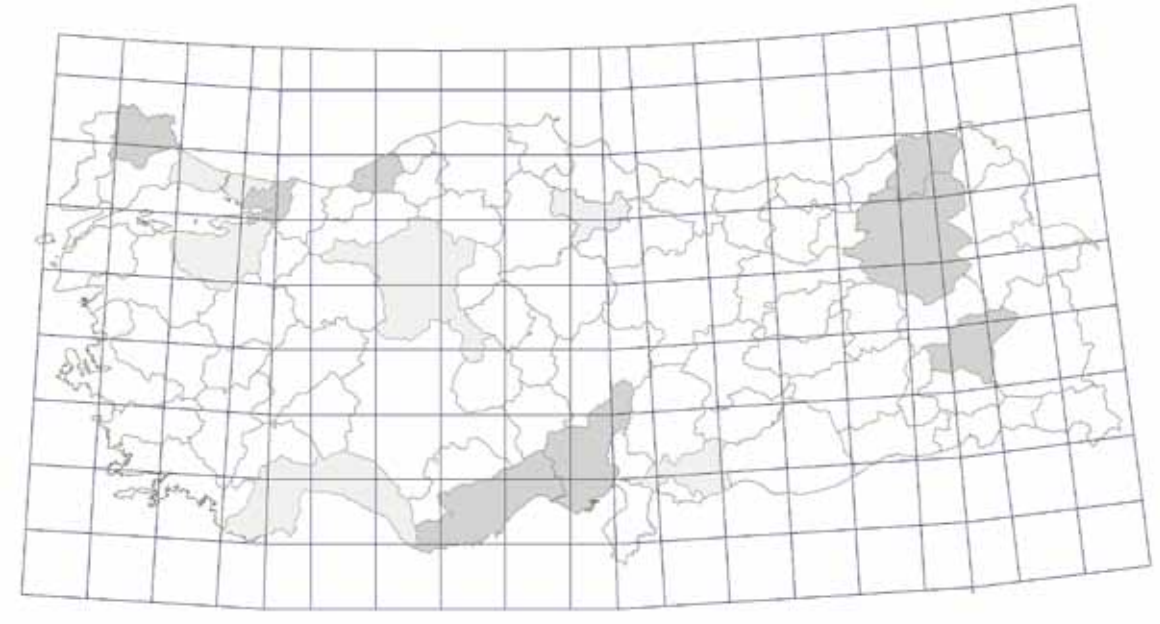
Very widespread, occurring in the temperate belt of the Palearctic Region from the Atlantic to the Pacific (Tuzov *et al.* 2000). In Europe it occurs in Spain, S France, N Italy, E and SE Europe to the Black Sea and S Fennoscandia (Kudrna 2002).

Turkey: *Extent Of Occurrence (EOO) post* 1980 (*km²*) **n/a** *Area Of Occupancy (AOO) post 1980 (km²)* **144**

In Turkey it has a wide but scattered and fragmented distribution, with a small area of occupancy (at 12 km² per 10x10 km²) of 144 km². Since 1980 there have been records from at least 12 localities in eight provinces (see map). Although some of the gaps in distribution may be explained by lack of observer coverage, in other areas it may have disappeared. For example, despite targeted visits to the Antalya locality (in Hesselbarth *et al*. 1995) on four occasions in recent years, the butterfly has not been seen here since 1975 (O. Yeğin pers. comm. 2010).

RED LIST ASSESSMENT JUSTIFICATION

Chequered Blue (*Scolitantides orion*), has an extensive worldwide distribution, but in Turkey the distribution is fragmented and the area of occupancy is very small (approximately 144 km²). Since 1980, there have been records from only 12 sites which experts consider to be isolated. Although the species does not seem to face specific threats, it is listed as Near Threatened due to its small AOO and severely fragmented distribution.



Key

Provinces with records since 1980

Provinces with only old records, before 1979

Taxonomic notes

No known taxonomic problems or issues.

Threats

There are no known threats associated with this species in Turkey.

Habitat and Ecology

The Chequered Blue can be seen on warm rocky slopes and narrow ledges where there is little vegetation apart from stonecrops (*Sedum* sp.) on which its larvae feed. The females lay their eggs on the stonecrop leaves, near the stem. The caterpillars are often found with ants.

The species overwinters as a pupa and hides under stones or in small hollows in the ground near the larval foodplant.

The Chequered Blue has one or two generations a year, according to geographical location (van Swaay *et al.* 2009f). It is seen in habitats similar to those used by Apollo (*Parnassius apollo*) but Apollo has a less fragmented distribution.

Recommended conservation action

New records indicate that this species may be present at more localities but, as it is easily overlooked, research is required to understand the gaps in its distribution. With recent records from only 12 sites there is concern that the butterfly's distribution is reducing.

Due to the isolation of subpopulations and lack of information on their status, long-term monitoring is recommended. If a widespread decline is confirmed, habitat protection and management of the remaining sites will be essential.

Selected References

van Swaay, C., Wynhoff, I., Verovnik, R., Wiemers, M., López Munguira, M.,Maes, D., Šašic, M., Verstrael, T., Warren, M. and Settele, J. (2009f) *Scolitantides orion* IN: *IUCN Red List of Threatened Species*. IUCN 2010. Version 2010.4. [Online]. Available from: www.iucnredlist.org. [Downloaded on 26 November 2010].

O. Yeğin pers. comm. (2010): E-mails between Olcay Yeğin and Hilary Welch (Doğa Koruma Merkezi, Ankara, Turkey), 31 December 2010.

Population Trend

○ Increasing ○ Decreasing ○ Stable ◉ Unknown

Population

Chequered Blue is declining in northern and central Europe, but more or less stable in southern Europe. Strong declines in distribution or population size of more than 30% have been reported from Germany, Norway, Poland and Ukraine. Declines in distribution or population size of 6-30% have been reported from Austria, Romania, Russia, Slovakia and Sweden (van Swaay *et al.* 2009f).

In Turkey there is no information available on the population trend. Although this species has a wide distribution, the records since 1980 come from just 12 widely separated localities. These sites are not believed to be connected and thus the species has a severely fragmented distribution. Nonetheless, it is known that this butterfly can survive for a long time in small and isolated patches (van Swaay *et al.* 2009f).

Assessment date

29.11.2010

Assessors

Karaçetin, E., Welch, H.J. & Verovnik, R.

Order: LEPIDOPTERA **Family:** LYCAENIDAE

NT Near Threatened

B2b(iii)

002620 ***Melitaea aurelia***

Nickerl, 1850

IUCN Global Red List category	IUCN Global Red List criteria
-	-

©Ahmet Baytaş

RECENT SYNONYMS

Scientific: -

English: **Nickerl's Fritillary**

Turkish: **Güzel Amannisa**

DISTRIBUTION - Global:

Extending from W France and S. Europe in a band north of the Black Sea through the Caucasus and N. Kazakhstan eastwards to the Tian-Shan and W. Siberia (Tuzov *et al.* 2000, Kudrna 2002). Turkey lies on the southern edge of this range.

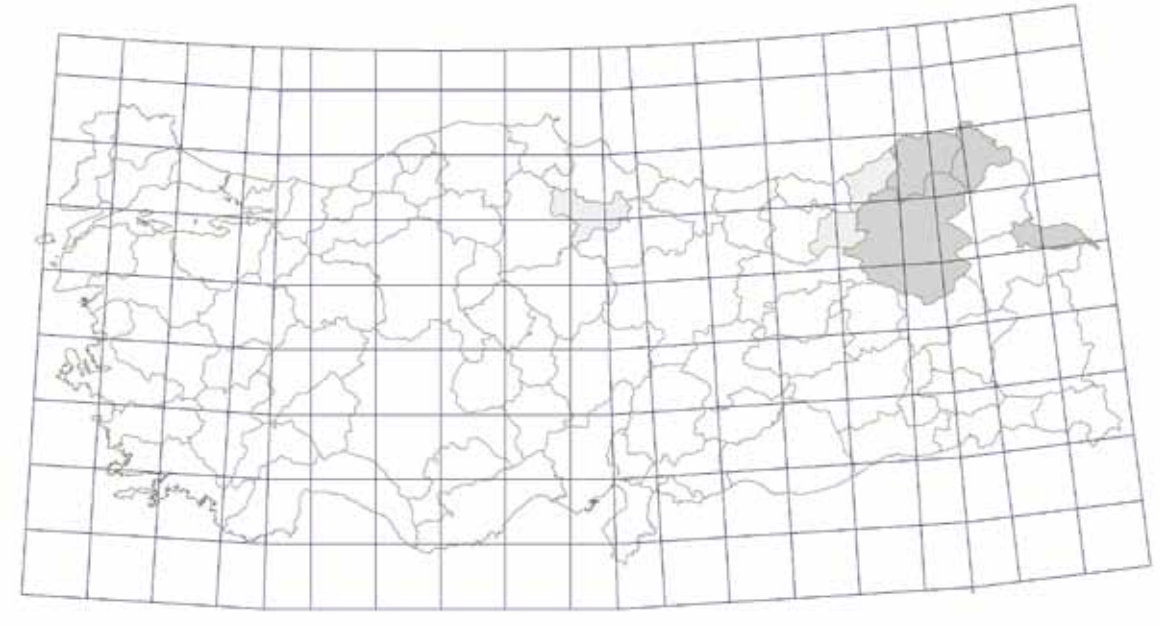
Turkey: *Extent Of Occurrence (EOO) post* 1980 (*km²*) **22,571** *Area Of Occupancy (AOO) post 1980 (km²)* **200**

In Turkey, it has been recorded from 10 localities in the provinces of Artvin, Ardahan, Erzurum and Iğdır since 1980. Its extent of occurrence is 22,571 km² but area of occupancy, with spatial adjustment to 20 km² in each 10x10 km², is small at 200 km².

RED LIST ASSESSMENT JUSTIFICATION

Nickerl's Fritillary (*Melitaea aurelia*), is a local species with a small area of occupancy (200 km²) found in NE Turkey. The quality of its habitat is inferred to be declining due to agricultural intensification and abandonment, both of which are both known to have a negative impact on the semi-natural grasslands it prefers. Changes such as these have resulted in declines in distribution or population size of more than 30% in Europe, and experts thus consider that declines of similar magnitude may also be taking place in Turkey. The species is therefore listed as Near Threatened.

Due to the lack of information from Transcaucasia on both threats and the proximity and connectivity of subpopulations there, no regional adjustment has been made to the threat category.



Taxonomic notes

No known taxonomic problems or issues.

Habitat and Ecology

Found at 1,326-2,500 m in grassy openings in oak-pine forest and pure pine forest, most frequently in dry-warm, subalpine to alpine calcareous grassland which is cut once a year or extensively grazed.

The adults have a fast, whirring flight and preferentially take nectar at various Compositae. Although sedentary, they patrol a larger area than the similar and more common Heath Fritillary (*Melitaea athalia*). The larval foodplant has not been confirmed in Turkey, but elsewhere, although a variety of species has been recorded such as figworts (*Scrophulariaceae* sp.), cow-wheats (*Melampyrum* sp.), speedwells (*Veronica* sp.) and foxgloves (*Digitalis* sp.), plantains (*Plantago* sp.) are most frequently used. Eggs are laid in groups or clusters and the young caterpillars overwinter together in a cocoon. The species is univoltine. (Hesselbarth *et al.* 1995.)

Population Trend

○ Increasing ○ Decreasing ○ Stable ◉ Unknown

Population

Although widespread and often abundant in the Caucasus and Transcaucasus, this species is very local in northeast Turkey (Hesselbarth *et al.* 1995).

There is no monitoring data for Turkey to provide information on population size or trends, but in Europe declines in distribution or population size of more than 30% have been reported (van Swaay *et al.* 2009g). Due to the widespread changes in grassland management which have been happening in Turkey experts consider the species may also be declining here.

Threats

This species is especially threatened by changes in the management of semi-natural grasslands. Both intensification of use (e.g. through overgrazing) and abandonment would have a negative impact on this butterfly (van Swaay *et al.* 2009g). In northeast Turkey, where the species occurs, both of these threats are possible. For example, overgrazing is a widespread problem in Palandöken (Erzurum) but in Artvin abandonment is more of an issue.

Recommended conservation action

Monitoring studies are essential for understanding the population trends in Turkey. Further research is required to understand its ecology, behaviour, population structure and conservation needs.

Selected References

van Swaay, C., Wynhoff, I., Verovnik, R., Wiemers, M., López Munguira, M.,Maes, D., Šašic, M., Verstrael, T., Warren, M. and Settele, J. (2009g) *Melitaea aurelia* IN: *IUCN Red List of Threatened Species*. IUCN 2010. Version 2010.3. [Online]. Available from: www.iucnredlist.org. [Downloaded on 22 October 2010].

Assessment date

30.01.2010

Assessors

Karaçetin, E. & Welch, H.J.

Order: LEPIDOPTERA **Family:** LYCAENIDAE

NT Near Threatened

B2a

002880 ***Erebia ottomana***

Herrich-Schäffer, 1847

IUCN Global Red List category	IUCN Global Red List criteria
-	-

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RECENT SYNONYMS

Scientific: -

English: **Ottoman Ringlet**

Turkish: **Harem Güzelesmeri**

DISTRIBUTION - Global:

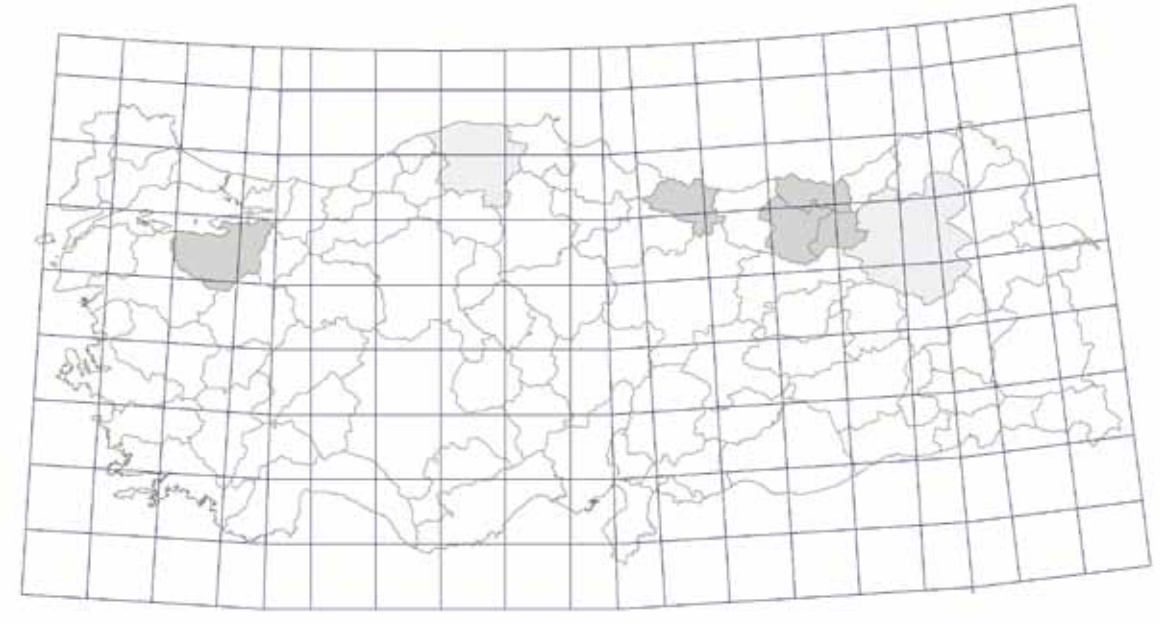
France, NE Italy, S Balkans, N and C Greece and N Turkey (Kudrna 2002).

Turkey: *Extent Of Occurrence (EOO) post* 1980 (*km²*) **12,750** *Area Of Occupancy (AOO) post 1980 (km²)* **84**

Since 1980 there have been records from only seven 10x10 km squares in the provinces of Ordu, Bayburt, Bursa, Gümüşhane and Trabzon. It has a large but fragmented extent of occurrence of 12,750 km² and a small area of occupancy which, with a spatial adjustment to 12 km² in every 10x10 km square is just 84 km².

RED LIST ASSESSMENT JUSTIFICATION

Ottoman Ringlet (*Erebia ottomana*), has a very restricted range in Turkey. Since 1980 it has been recorded from only seven squares giving an area of occupancy of approximately 84 km². The subpopulations are small, local, isolated and severely fragmented. Although the species is listed as Least Concern in Europe, the subpopulations in Turkey are considered to be isolated from European subpopulations. There are no specific threats associated with this butterfly but, because its range is extremely restricted and subpopulations are severely fragmented, it is classified as Near Threatened.



Taxonomic notes

The nominate subspecies, *E. o. ottomana*, is endemic to west and east Anatolia (Hesselbarth *et al.* 1995).

Habitat and Ecology

In Turkey, this butterfly is recorded from grassy slopes in the mountains (Baytaş 2007) between 1,100 and 2,500 m (Hesselbarth *et al.* 1995). It flies from late July to late August and feeds on grasses including *Festuca* sp (Hesselbarth *et al.* 1995). It has one generation per year (Settele *et al.* 2008f).

Population Trend

○ Increasing ○ Decreasing ○ Stable ◉ Unknown

Population

Ottoman Ringlet occurs in small, local and isolated colonies (Hesselbarth *et al.* 1995), from Mt Uludağ in the west to the eastern Black Sea mountains in the east. Thus the Turkish subpopulations are considered severely fragmented and isolated from European subpopulations. However, it is possible the butterfly is overlooked and may also be present at other localities within its range.

Threats

This species is not believed to face major threats at the European level (van Swaay *et al*. 2009h). Some subpopulations fall within national park boundaries (e.g. Uludağ National Park, Bursa and Ilgaz Mountains National Park, Kastamonu), where expansion of tourist facilities, particularly for winter sports, is reported (Eken *et al.* 2006). However, there is no information whether these pose a threat to the butterfly.

Recommended conservation action

Research is needed to obtain a more complete understanding of the distribution and to identify and understand the threats.

Selected References

Settele, J., Kudrna, O., Harpke, A., Kühn, I., van Swaay, C.A.M., Verovnik, R., Warren, M., Wiemers, M., Haspanch, J., Hickler, T., Kühn, E., van Halder, I., Velling, K., Vliegenthart, A., Wynhoff, I. and Schweiger, O. (2008f) *Erebia ottomana* IN: *Climatic Risk Atlas of European Butterflies*. Sofia, Moscow: Pensoft, pp.544-545.

van Swaay, C., Wynhoff, I., Verovnik, R., Wiemers, M., López Munguira, M.,Maes, D., Šašic, M., Verstrael, T., Warren, M. and Settele, J. (2009h) *Erebia ottomana* IN: *IUCN Red List of Threatened Species*. IUCN 2010. Version 2010.4. [Online]. Available from: www.iucnredlist.org. [Downloaded on 2 November 2010].

Assessment date

01.02.2010

Assessors

Karaçetin, E. & Welch, H.J.

Order: LEPIDOPTERA **Family:** NYMPHALIDAE

NT Near Threatened

B2a

003110 ***Satyrus parthicus***

Lederer, 1869

IUCN Global Red List category	IUCN Global Red List criteria
-	-

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RECENT SYNONYMS

Scientific: -

English: **Caspian Satyr**

Turkish: **Hazer Piri Reisi**

DISTRIBUTION - Global:

NE Iran (from the southern Caspian eastwards) and E Turkey (Hesselbarth *et al.* 1995, Nazari 2003).

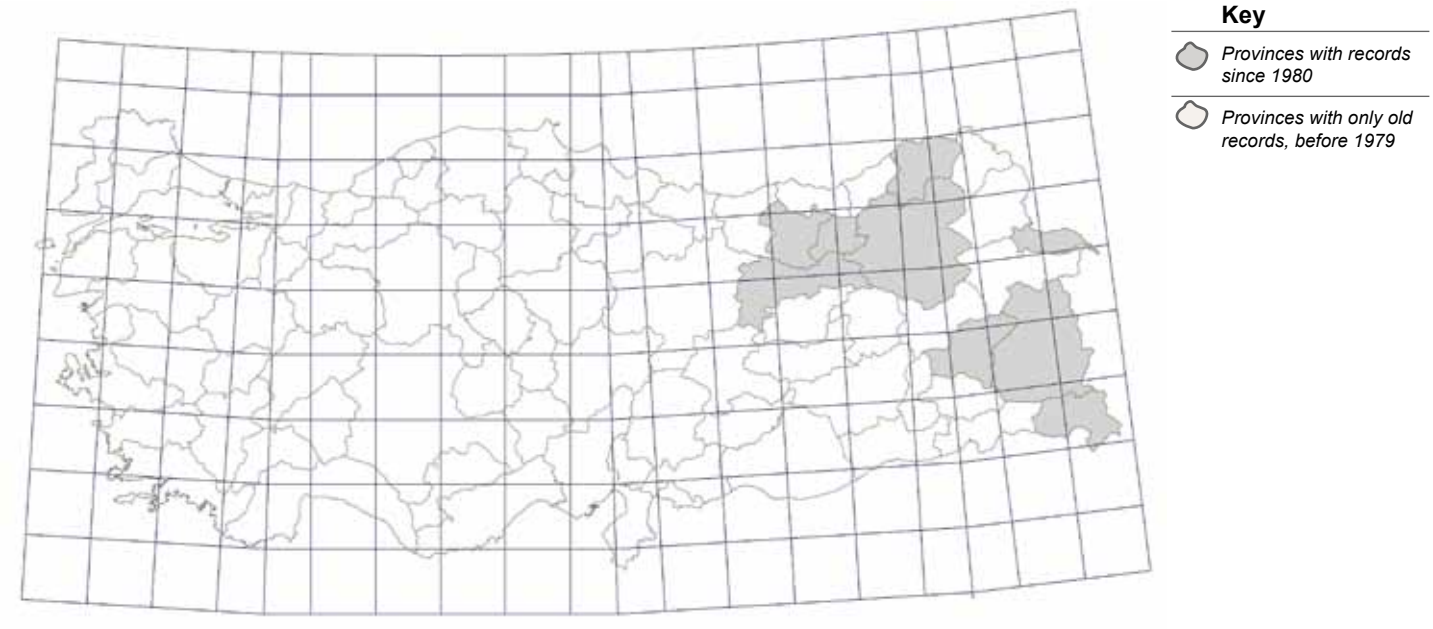
Turkey: *Extent Of Occurrence (EOO) post* 1980 (*km²*) **54,376** *Area Of Occupancy (AOO) post 1980 (km²)* **400**

In Turkey, it has been recorded from 11 localities in nine provinces since 1980, from Erzincan to Artvin and Bitlis to Hakkari. Its extent of occurrence is 54,376 km² and area of occupancy (with a spatial adjustment to 40 km² in each 10x10 km square) is approximately 400 km².

RED LIST ASSESSMENT JUSTIFICATION

Caspian Satyr (*Satyrus parthicus*) is a localised species with an area of occupancy in Turkey of approximately 400 km². It has a scattered and severely fragmented distribution in E Turkey, occurring as small isolated subpopulations. There are no specific threats associated with this butterfly but, due to its small AOO and severely fragmented distribution, it is listed as Near Threatened.

Due to the severely fragmented distribution no regional adjustment has been made to the threat category.



Taxonomic notes

No known taxonomic problems or issues.

Habitat and Ecology

Observed on grass-covered rocky or loose gravel slopes between 1,700 and 3,000 m, usually above 2,200 m. It is univoltine, flying from late July to mid-August. Its larval foodplant is unknown; in captivity caterpillars fed on Annual Bluegrass (*Poa annua*) failed to pupate (Hesselbarth *et al.* 1995).

Population Trend

○ Increasing ○ Decreasing ○ Stable ◉ Unknown

Population

Since 1980 it has been recorded from 11 localities in nine provinces, everywhere it is very local. Nothing is known about its population structure.

Threats

Among the localities where this butterfly has been observed are the Palandöken Mountains, Keşiş Mountains, Zap River Valley, Çatak Valley, Mt. Artos and Mt. Ispiriz Key Biodiversity Areas (KBAs). Threats associated with these KBAs are overgrazing for the Palandöken and Keşiş Mountains, Çatak Valley, Mt. Artos and Mt. Ispiriz; and dam construction in the Zap River Valley (Eken *et al.* 2006). At Güzeldere Pass (within Ispiriz KBA) there are also mining activities.

Since Caspian Satyr occurs naturally on poorly vegetated stoney habitats, overgrazing is not considered a major threat. However, mining is potentially a serious threat if it coincides with the restricted areas used by this butterfly.

Recommended conservation action

Further research is needed, particularly to understand the population structure and gaps in its distribution. Knowledge of its biology, ecology and behaviour would provide insight to how the species may be influenced by human activities such as grazing and mining.

Selected References

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Assessment date

2.11.2010

Assessors

Karaçetin, E., Welch, H.J. & Verovnik, R.

Karaçetin, E. and Welch, H.J. (2011). Red Book of Butterflies in Turkey. Ankara, Turkey: Doğa Koruma Merkezi. Available from: [www.dkm.org.tr]

Order: LEPIDOPTERA **Family:** HESPERIIDAE

NT Near Threatened

B2a

003470 ***Muschampia plurimacula***

(Christoph, 1893)

IUCN Global Red List category	IUCN Global Red List criteria
-	-

©Hesselbarth *et al.* (1995)

RECENT SYNONYMS

Scientific: -

English: **Maculated Skipper**

Turkish: **Benekli Zıpzıp**

DISTRIBUTION - Global:

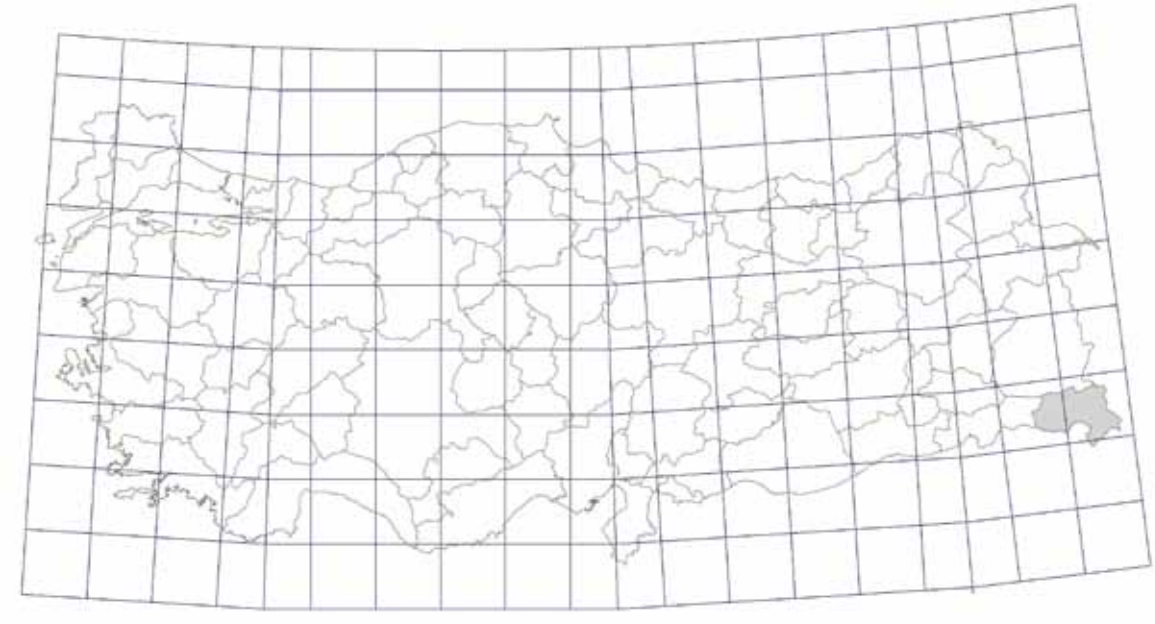
Turkey and Iran at three widely spaced localities. In Iran recorded from the SE Caspian and the NE Arabian Gulf (Nazari 2003). It is considered possible that it could also occur in NW Iran and NE Iraq in the area adjoining the Turkey localities but no information is available.

Turkey: *Extent Of Occurrence (EOO) post* 1980 (*km²*) **360** *Area Of Occupancy (AOO) post 1980 (km²)* **240-360**

In Turkey recorded from only six 10x10 km squares in Hakkari; WNW of Yüksekova in the Nehil Çayı Valley, and S of Hakkari in the Dez Valley. The ten records available are all from the period since 1980. The extent of occurrence (360 km²) and area of occupancy (estimated to be between 240-360 km²) are both small.

RED LIST ASSESSMENT JUSTIFICATION

This species occurs as small isolated subpopulations and is known from a handful of localities in two countries and three disparate regions: Hakkari in eastern Turkey, SE of Caspian Sea and north of the Arabian Gulf. It seems highly unlikely that there is any genetic exchange between these three known regions. There are no specific threats associated with this butterfly but, due to its small area of occupancy and isolation from populations in Iran, it is listed as Near Threatened and no regional adjustment has been made.



Key

Provinces with records since 1980

Provinces with only old records, before 1979

Taxonomic notes

First described in 1893 as a subspecies of *Muschampia staudingeri.* Elevated to full species in 1981. This relatively recent taxonomic change may in part account for the paucity of records.

Habitat and Ecology

Found in irrigated clover fields and flower-rich meadows at 1,200 -1,800 m. Nothing is known about its ecology (Hesselbarth *et al.* 1995).

Population Trend

○ Increasing ○ Decreasing ○ Stable ◉ Unknown

Population

This species is likely to be under-recorded as a) it has only recently been recognised as a full species, b) it is restricted to an area little visited by butterfly watchers, and c) it belongs to a group of butterflies which are difficult to differentiate. Further, W. ten Hagen has seen Maculated Skipper twice in Iran where he describes it as very localised. In Turkey this species has been recorded from six contiguous 10x10 km squares in valleys connected by rivers and roads. It thus seems possible that these subpopulations, though small and localised, are connected. Authorities also speculate that the butterfly could occur in NW Iran and NE Iraq in areas connected to the Turkey localities by continuations of the same valleys but thus far there are no records. Using the information currently available and following the precautionary principle the Turkish subpopulations are thus considered localised and genetically isolated from those in Iran. Globally the population is thus fragmented.

Threats

In the region where the butterfly occurs the State Hydraulic Works (DSİ) has plans for dams: the Dilimli Dam on the Büyük Stream NE of Yüksekova, and the Çukurca Dam on the Güzeldere Stream (a branch of the Zapsu River). However, considering the approximate positions of the dams and where the butterflies have been recorded it seems unlikely that the dams will have any direct impact.

Recommended conservation action

Research to better understand the species' distribution, population structure, habitat preferences, larval foodplant and population biology.

Selected References

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Assessment date

13.12.2010

Assessors

Welch, H.J., Karaçetin, E., ten Hagen, W. & Red List Working Group participants, Ankara 10-12.08.2009.

Karaçetin, E. and Welch, H.J. (2011). Red Book of Butterflies in Turkey. Ankara, Turkey: Doğa Koruma Merkezi. Available from: [www.dkm.org.tr]

All DD species assessments were carried out and written by Evrim Karaçetin and Hilary Welch. Where additional assessors were involved the full list of assessors is given at the end of the assessment.

Data Deficient Species

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Overgrazing of steppe grasslands in Sivas. This is a major problem in some regions, both for the local people who use these natural rangelands for their livestock, and the butterflies and other wildlife whose survival depends on these vegetation communities.

Family: LYCAENIDAE

000560 *Callophrys herculeana*

Pfeiffer, 1927 stat. nov.

English: -

Turkish: -

DD Data Deficient

ENDEMIC

RED LIST ASSESSMENT JUSTIFICATION

Callophrys herculeana was previously known as '*C. rubi* var *herculeana* m.' Pfeiffer 1927, and Hesselbarth *et al.* (1995) treated this as a synonym of Green Hairstreak (C. *rubi*). Following DNA analysis of a specimen from Yassıgüme, Burdur, and the name *herculeana* has been resurrected and the taxon raised to a full species (ten Hagen and Miller 2010). It is considered probable that *C. herculeana* occurs throughout the SW Anatolian Taurus Mountains (Antalya, Burdur, Eğridir, Mersin, Malatya) but, because available specimens are too old for DNA analysis, this cannot be confirmed. Additionally, similar but unidentified butterflies are reported from the area south of Lake Van which, if they prove to be *C. herculeana*, raises further questions. This butterfly is therefore listed as Data Deficient.

References

ten Hagen, W. and Miller M.A. (2010) Molekulargenetische Untersuchungen der paläarktischen Arten des Genus *Callophrys* Billberg, 1820 mit Hilfe von mtDNACOI-Barcodes und taxonomische Überlegungen (Lepidoptera:Lycaenidae*). Nachr. entomol. Ver. Apollo,* 30 (4), pp.177–197.

Family: LYCAENIDAE

001420 *Polyommatus dezinus*

(de Freina & Witt, 1983)

English: **Hakkari Chalk-hill Blue**

Turkish: **Çokgözlü Hakkari Çillisi**

DD Data Deficient

ENDEMIC

RED LIST ASSESSMENT JUSTIFICATION

Hakkari Chalk-hill Blue (*Polyommatus dezinus*) looks very similar to Anatolian Chalk-hill Blue (*Polyommatus ossmar*) but the two species are geographically separate (Hesselbarth *et al.* 1995). However, although most authorities accept this as a separate species, its taxonomy remains unclear and may change with further study (M. Wiemers pers. comm. 2009). It is endemic to Turkey and has only been recorded from two localities in the Dez Valley in Hakkari. Its area of occupancy is thus extremely small. It can be found on hot, dry rocky slopes of valleys with sparse vegetation. The males gather at mud-puddling sites whilst the females tend to stay in irrigated flower-rich meadows where the vegetation can be shoulder-high (Hesselbarth *et al.* 1995). Its possible larval foodplant is *Coronilla varia* (Schurian 1993, 1994). Research is needed to resolve the taxonomic uncertainties associated with this taxon, and to obtain information on its population and ecology in order to understand if there are any threats. Without this information it is listed as Data Deficient.

References

M. Wiemers pers. comm. (2009): Red List Working Group, 10-12 August 2009.

Schurian, K.G. (1993) Description of the hitherto unknown female of *Polyommatus dezinus* (de Freina & Witt, 1983) (Lepidoptera:Lycaenidae). *Linneana Belgica*, 14(1), pp.55-60.

Schurian, K.G. (1994) Zur Biologie von *Polyommatus* (*Lysandra*) *dezinus* (de Freina & Witt) (Lepidoptera:Lycaenidae). *Nachr. entomol. Ver. Apollo,* 14(4), pp.339-353.

Family: LYCAENIDAE

001450 *Polyommatus buzulmavi*

Carbonell, [1992]

English: **Ice Blue**

Turkish: **Çokgözlü Buzulmavi**

DD Data Deficient

ENDEMIC

RED LIST ASSESSMENT JUSTIFICATION

Ice Blue (*Polyommatus buzulmavi*) is an endemic species, recorded from 10 localities in the provinces of Van and Hakkari, eastern Turkey. After a period of discussion following its description in 1992, recent taxonomic studies have confirmed *P. buzulmavi* to be a valid species and genetically different from *Polyommatus icarus* (Wiemers *et al.* 2010). Its area of occupancy and extent of occurrence are extremely small and there is no information on its biology or ecology so potential threats cannot be assessed. It is thus listed as Data Deficient.

References

Wiemers, M., Stradomsky, B.V. and Vodolazhsky, D.I. (2010) A molecular phylogeny of *Polyommatus* s. str. and *Plebicula* based on mitochondrial COI and nuclear ITS2 sequences (Lepidoptera:Lycaenidae). *Eur. J. Entomol.,* 107, pp.325-336.

Family: HESPERIIDAE

003520 *Pyrgus aladaghensis*

de Prins & van der Poorten, 1995

English: **Aladag Skipper**

Turkish: **Aladağ Zıpzıpı**

DD Data Deficient

ENDEMIC

RED LIST ASSESSMENT JUSTIFICATION

Aladag Skipper (*Pyrgus aladaghensis*) is a Turkish endemic species restricted to the mountains of Aladağlar, Niğde. Morphologically it is very difficult to distinguish from similar taxa and, perhaps because of this, there have been only four records since its description in 1995, all from barren alpine and subalpine slopes between the altitudes of 1,600 and 2,800 m. So far only males have been recorded; females are unknown (Hesselbarth *et al.* 1995). There is no information on its biology, ecology, exact distribution and potential threats. This species is thus listed as Data Deficient.

Family: HESPERIIDAE

003550 *Pyrgus bolkariensis*

de Prins & van der Poorten, 1995

English: **Bolkar Skipper**

Turkish: **Bolkar Zıpzıpı**

DD Data Deficient

ENDEMIC

RED LIST ASSESSMENT JUSTIFICATION

Bolkar Skipper (*Pyrgus bolkariensis*) is a Turkish endemic species restricted to the Bolkar Mountains, (Niğde and Konya). It is very difficult to distinguish from similar species morphologically. There have been only three records since its description and these are all from very small dry and rocky sites with sparse vegetation but rich in flowers between the altitudes of 2,900 and 3,150 m. The larval foodplant and larval instars have not been recorded (Hesselbarth *et al.* 1995). Its biology, ecology and potential threats are not known. This species is thus listed as Data Deficient

Karaçetin, E. and Welch, H.J. (2011). Red Book of Butterflies in Turkey. Ankara, Turkey: Doğa Koruma Merkezi. Available from: [www.dkm.org.tr]

Family: PIERIDAE

000380 *Pieris bowdeni*

Eitschberger, [1984]

English: **Bowden's White**

Turkish: **Bowden'in Beyaz Meleği**

DD Data Deficient

NEAR ENDEMIC

RED LIST ASSESSMENT JUSTIFICATION

This species is very difficult to differentiate from *P. bryoniae* so, while some taxonomists accept it as a full species (Hesselbarth *et al.* 1995, Tuzov *et al.* 1997), others consider it a synonym of the subspecies *P. bryoniae goergneri* (Nazari 2003). There are very few recent records and this might be due either to a range contraction or to the lack of specific research, as most *Pieris* species are overlooked during fieldwork. Research is required to resolve the taxonomic uncertainty and to understand the reasons for the lack of recent records. This species is thus listed as Data Deficient.

Family: LYCAENIDAE

000840 *Lycaena euphratica*

Eckweiler, 1989

English: **Anatolian Turan Copper**

Turkish: **Fırat Bakırı**

DD Data Deficient

NEAR ENDEMIC

RED LIST ASSESSMENT JUSTIFICATION

Anatolian Turan Copper (*Lycaena euphratica*) is a Turkish near endemic occurring only in eastern Turkey and NW Iran (Nazari 2003). In Turkey it has been recorded in small local subpopulations from eight provinces (Adıyaman, Bingöl, Bitlis, Erzurum, Hakkari, Muş, Şırnak and Van). There are reports of at least four new localities since the publication of Hesselbarth *et al.* (1995), but even so the area of occupancy remains extremely small at 64 km^2. It is a species of wetlands in arid areas, occurring in damp places by brooks and on grassy slopes at 1,200-2,500 m (Hesselbarth *et al.* 1995); these small humid areas are often the most threatened types of habitats. However, with little understanding of the species' ecology and no knowledge of the status of its populations the species is listed as Data Deficient.

Family: NYMPHALIDAE

003120 *Hyponephele kocaki*

Eckweiler, 1978

English: **Koçak's Steppe Brown**

Turkish: **Koçak'ın Esmer Perisi**

DD Data Deficient

NEAR ENDEMIC

RED LIST ASSESSMENT JUSTIFICATION

Koçak's Steppe Brown (*Hyponephele kocaki*) is restricted to Turkey and NW Iran. In Turkey it occurs in two geographically separated areas; in Antalya in the SW, and Van/Hakkari in the SE. There have been no records from Hakkari since 1978 but there is no reason to suppose it is not still present in this relatively little visited province. However, the complete absence of records from Antalya since 1986 is of concern. Though it may just be due to the identification difficulties associated with this species it could also indicate a decline in the population. Surveys are thus required to understand its current distribution and population status before it can be evaluated. For now this species is listed as Data Deficient.

Family: PIERIDAE

000210 *Colias thisoa*

Ménetriés, 1832

DD Data Deficient

English: **Menetries's Clouded Yellow**

Turkish: **Turan Mavisi**

RED LIST ASSESSMENT JUSTIFICATION

Menetries's Clouded Yellow (*Colias thisoa)* is found in the mountains of SW and Central Asia from the Caucasus and Turkey to W China, E Kazakhstan and the Altai (Gorbunov 2001). While its extent of occurrence in Turkey is large (55,307 km^2), it has a very small area of occupancy (approximately 168 km^2), recorded from only seven sites. However, because it is a strong flyer, catching, photographing or identifying this butterfly is difficult, and thus authorities believe that it may be present at more localities. With this uncertainty, it is not known whether or not its subpopulations are fragmented. It occurs at 2,000 and 3,000 m where potential threats are overgrazing and collecting of the larval foodplant, milkweed (*Astragalus* sp.) (Hesselbarth *et al*. 1995). Without understanding of its population structure, distribution patterns and ecology, it is not possible to assess the influence these, and possibly other threats, may have on its status. This species is therefore listed as Data Deficient.

Assessors

Karaçetin, E., Welch, H.J. & Sáfián, S.

References

Gorbunov, P.Y. (2001) *The Butterflies of Russia: classification, genitalia, keys for identification*. Ekaterinburg: Thesis.

Menetries' Clouded Yellow (*Colias thisoa*)

Family: PIERIDAE

000240 *Colias chlorocoma*

Christoph, 1888

DD Data Deficient

English: **Christoph's Clouded Yellow**

Turkish: **Azeri Azamet**

RED LIST ASSESSMENT JUSTIFICATION

Christoph's Clouded Yellow (*Colias chlorocoma)* is distributed across Transcaucasia, Turkey and Iran (Tuzov *et al*. 1997). It has a wide distribution in Turkey but a small area of occupancy. However, it also seems likely to be under-recorded as it is morphologically very similar to other *Colias* species. The greatest concern is the fragmented nature of the distribution with the Niğde population apparently isolated. With very little information available to assess the status of this species, it is listed as Data Deficient.

Assessors

Karaçetin, E., Welch, H.J. & Sáfián, S.

Karaçetin, E. and Welch, H.J. (2011). Red Book of Butterflies in Turkey. Ankara, Turkey: Doğa Koruma Merkezi. Available from: [www.dkm.org.tr]

Family: PIERIDAE

000360 *Leptidea morsei*

(Fenton, 1881)

DD Data Deficient

English: **Fenton's Wood White**

Turkish: **Fenton'un Narin Orman Beyazı**

RED LIST ASSESSMENT JUSTIFICATION

Fenton's Wood White (*Leptidea morsei*) has a range extending from E Europe across Siberia to the Magadan and Ussuri regions, Mongolia, Korea, N China and Japan (Tuzov *et al.* 1997). In Turkey there is one claimed record from Bitlis in June 1993 (Leestmans and Mazel 1996) but, although the record has not actually been rejected, there is much discussion among experts regarding the identity of the specimen. There is thus uncertainty whether or not this species occurs in Turkey and, if it does, its distribution and status are not well enough known to assign it a threat status. This species is therefore listed as Data Deficient.

Assessors

Karaçetin, E., Welch, H.J., Verovnik, R., Wiemers, M. & van Swaay, C.

References

Leestmans, R. and Mazel, R. (1996) Sur la répartition géographique et l'écologie de *Leptidea morsei* (Fenton, 1882) espèce nouvelle pour la faune de Turquie (Lepidoptera, Pieridae). *Linneana Belgica*, 15(7), pp.293-300.

Family: PIERIDAE

000450 *Pieris persis*

Verity, 1922

DD Data Deficient

English: -

Turkish: **İran Beyaz Meleği**

RED LIST ASSESSMENT JUSTIFICATION

Pieris persis is a species whose taxonomic status is still under debate; some taxonomists accept it as a full species (Tuzov *et al.* 1997, Koçak and Kemal 2009) and others as a subspecies of *P. pseudorapae* (Nazari 2003). This, combined with the fact that morphologically it is very similar to *P. pseudorapae*, means that its distribution in Iran, Iraq and Turkey is not clearly understood. Although it is known to have established subpopulation(s) in Van which have been studied (Özkol and Sefali 2009), the species is listed as Data Deficient due to its unclear distribution, unknown population structure, and the lack of agreement about its taxonomy.

Assessors

Karaçetin, E., Welch, H.J., Verovnik, R., Wiemers, M. & van Swaay, C.

References

Özkol, H. and Sefali, A. (2009) New data on the biology of *Pieris (Artogeia) persis* Verity (Pieridea, Lepidoptera). *Cesa News*, 42, pp.39-45.

Family: LYCAENIDAE

000540 *Thecla betulae*

(Linnaeus, 1758)

DD Data Deficient

English: **Brown Hairstreak**

Turkish: **Huş Kelebeği**

RED LIST ASSESSMENT JUSTIFICATION

Brown Hairstreak (*Thecla betulae*) occurs from Europe to Korea, with northern Turkey lying on the southern edge of this range (Tuzov *et al.* 2000). In Turkey there have been less than 10 records from six disparate localities in Artvin, Erzurum, Kırklareli, Kütahya and Trabzon since 1980, so the species appears to have a severely fragmented distribution here. However, studies in Europe have found this to be a species which flies high in the tree canopy, making adults very difficult to observe, and this may be the reason for the gaps in its Turkish distribution. Nevertheless, the ecology and biology of this species are well-known and it has been identified as a species highly dependent on silvicultural management, so it is possible that current forest management practices pose a threat in Turkey. In order to assess this species it is thus necessary to understand the gaps in its distribution and discover whether forest management is having a negative influence. This species is thus listed as Data Deficient.

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Brown Hairstreak (*Thecla betulae*)

Family: LYCAENIDAE

000570 *Callophrys danchenkoi*

Zdhanko, 1998

DD Data Deficient

English: -

Turkish: -

RED LIST ASSESSMENT JUSTIFICATION

Previously, this species was referred to as Alpine Green Hairstreak (*Callophrys suaveola*). However, molecular level studies show that *C. suaveola* is not a species observed in Turkey but has a more eastern distribution, and the populations in Turkey are a separate species, *Callophrys danchenkoi* (ten Hagen and Miller 2010). However, the distribution of this taxon in Turkey is not clear. As not every specimen previously assigned to *C. suaveola* could be checked, further study is required to fully understand its distribution in Turkey. This species is thus listed as Data Deficient.

References

ten Hagen, W. and Miller M. A. (2010) Molekulargenetische Untersuchungen der paläarktischen Arten des Genus *Callophrys* Billberg, 1820 mit Hilfe von mtDNACOI-Barcodes und taxonomische Überlegungen (Lepidoptera:Lycaenidae*). Nachr. entomol. Ver. Apollo,* 30 (4), pp.177–197.

Family: LYCAENIDAE

000640 *Satyrium marcidum*

(Riley, 1921)

DD Data Deficient

English: **Riley's Hairstreak**

Turkish: **İranlı Sevbeni**

RED LIST ASSESSMENT JUSTIFICATION

Riley's Hairstreak (*Satyrium marcidum*) is thinly distributed from SE Turkey across W Iran to the Arabian Gulf (Nazari 2003). It has a small extent of occurrence and area of occupancy in Turkey (which would potentially qualify it for threat category) but with no understanding of its population structure nor of potential threats no assessment can be carried out. Therefore, it currently is listed as Data Deficient.

Family: LYCAENIDAE

000750 *Tomares callimachus*

(Eversmann, 1848)

DD Data Deficient

English: **Caucasian Vernal Copper**

Turkish: **Kafkasya Gelinciği**

RED LIST ASSESSMENT JUSTIFICATION

Caucasian Vernal Copper (*Tomares callimachus*) has a range extending from S. European Russia and Kazakhstan to SE Turkey and Iran (Tuzov *et al*. 2000). In SE Turkey there have been records from 10 localities in six provinces since 1980, but there are a further five provinces (Amasya, Iğdır, Kahramanmaraş, Malatya and Mardin) from which there have been no records for more than 80 years. The lack of records may indicate a contraction in the area of occupancy (which would be of concern), but could also be due to this being an early butterfly, flying from March-May, a time when few butterfly watchers are in the field. Without more information on its current distribution this species is listed as Data Deficient.

Family: LYCAENIDAE

000770 *Tomares desinens*

Nekrutenko & Effendi, 1980

DD Data Deficient

English: -

Turkish: **Azeri Gelincik**

RED LIST ASSESSMENT JUSTIFICATION

Tomares desinens was first described in 1980 (Nekrutenko and Effendi 1980) and, until recently was only known from the type locality, the Talysh Mountains in Azerbaijan. However, in 2005, Kemal and Koçak described a new subspecies, *T. d. mebep*, from Van, the occurrence of which has since been confirmed from Iranian Kordestan (V. Nazari pers. comm. 2010). There is also an unconfirmed record from Iğdır. With such incomplete information on the distribution, and no understanding of the population structure or ecology, this species is listed as Data Deficient.

References

Kemal, M. and Koçak, A. Ö. (2005) Annotated Checklist of the Lepidoptera of Çatak Valley (Van Province, Turkey). *Priamus*, 11(3), 53.

V. Nazari pers. comm. (2010): E-mail from Vazrick Nazari to Hilary Welch (DKM), 27 July 2010.

Nekrutenko, Y. P. and Effendi, R.M. (1980) A new species of *Tomares* from Talysh Mountains (Lycaenidae). *Nota lepidopterologica*, 3(1-2), pp.69-72.

Family: LYCAENIDAE

000890 *Lycaena lampon*

(Lederer, 1870)

DD Data Deficient

English: **Persian Fiery Copper**

Turkish: **İran Ateşi**

RED LIST ASSESSMENT JUSTIFICATION

Persian Fiery Copper (*Lycaena lampon*) is a high altitude species occurring in Iran and SE Turkey (Tuzov *et al*. 2000). Although it is widespread in Iran, in Turkey it has a very small extent of occurrence and area of occupancy. Since 1980 there are records from only four localities in three provinces; Bitlis, Hakkari and Van. It is reported to occur at low density and every record probably relates to only one individual. The most recent records are from the Kuzgunkıran Pass (Bitlis) and Güzeldere Pass (Van) in 1989. Both of these localities are regularly visited by butterfly watchers so the lack of recent records is of concern and may indicate a decline in the population. However, since this species is difficult to detect, only focused surveys can provide the information needed on distribution, population and potential threats to assess its threat status. Until such information is available it is listed as Data Deficient.

Family: LYCAENIDAE

000980 *Cupido decoloratus*

(Staudinger, 1886)

DD Data Deficient

English: **Eastern Short-tailed Blue**

Turkish: **Balkan Everesi**

RED LIST ASSESSMENT JUSTIFICATION

This species has a relatively restricted global distribution extending from Austria and Greece eastwards – north of the Black Sea – to W. Russia and the Crimea (Tshikolovets 2003). It is thus interesting that the only observation in Turkey is from Central Anatolia, in a damp and grassy poplar grove in Akşehir, Konya in 1979 (Hesselbarth *et al.* 1995). With no further information or records this species is listed as Data Deficient.

Family: LYCAENIDAE

001010 *Cupido staudingeri*

(Christoph, 1873)

DD Data Deficient

English: -

Turkish: **Staudinger'in Minikmavisi**

RED LIST ASSESSMENT JUSTIFICATION

Cupido staudingeri is recorded from the highlands of Armenia, Turkey and Iran (Tuzov *et al*. 2000). Its main area of distribution falls within the borders of Iran. In Turkey, the only record is of three specimens from the Güzeldere Pass in Van (ten Hagen 2008). No other information is available to assess the status of this species in Turkey and therefore it is listed as Data Deficient.

References

ten Hagen, W. (2008) Taxonomie von *Cupido staudingeri* (Christoph, 1873) in Iran (Lepidoptera:Lycaenidae). *Nachr. entomol. Ver. Apollo*, 28(3/4), pp.165-171.

Family: LYCAENIDAE

001350 *Aricia bassoni*

Larsen, 1974

DD Data Deficient

English: **Steely Argus**

Turkish: **Çokgözlü Lübnan Mavisi**

RED LIST ASSESSMENT JUSTIFICATION

Steely Argus (*Aricia bassoni*) has a very small global distribution of which the Turkish range in the Amanos is the northern limit. It has been recorded from just one locality in Turkey and thus has an extent of occurrence of less than 100 km^2, but its area of occupancy is not known. Experts believe that Turkish and Lebanese populations are likely to be connected yet the butterfly has not been recorded from Turkey since 1976. The gaps in its distribution are thus not understood and nothing is known about the impact of human activities. The species is thus listed as Data Deficient.

Assessors

Karaçetin, E., Welch, H.J. & ten Hagen, W.

Family: NYMPHALIDAE

002660 *Euphydryas iduna*

(Dalman, 1816)

DD Data Deficient

English: **Lapland Fritillary**

Turkish: **Kuzeyli Nazuğum**

RED LIST ASSESSMENT JUSTIFICATION

Lapland Fritillary (*Euphydryas iduna*) is a polar or mountain tundra species, occurring in the Arctic regions of northern Europe and Siberia, southwards to high altitude regions in the Caucasus and Mongolia. There is just one record of this species from Turkey, a male caught in 1970 on Mt Ararat at 4,000 m. Experts consider this likely to represent a relict 'out-post' population due to the species' restricted habitat and climatic preferences. Nothing further is known about this butterfly's occurrence here. There seems no reason to suppose that the butterfly is no longer present but, if it does still occur it is predicted to be endangered in the long-term by climate change; Settele *et al.* (2008a) demonstrate that the current distribution of the European population can be very well explained by climatic variables. In order to assess the threat status of this butterfly, surveys are needed to discover whether it is still present on Mt Ararat, to understand the limits of its habitat and climatic niche and to obtain information on its population structure. Without this information the species is listed as Data Deficient.

References

Settele, J., Kudrna, O., Harpke, A., Kühn, I., van Swaay, C., Verovnik, R., Warren, M., Wiemers, M., Hanspach, J., Hickler, T., Kühn, E., van Halder, I., Velling, K., Vliegenthart, A., Wynhoff, I. and Schweiger, O. (2008a) *Euphydryas iduna* IN: *Climatic Risk Atlas of European Butterflies*. Biorisk 1 (Special Issue), Sofia, Moscow: Pensoft, pp.410-411.

Family: NYMPHALIDAE

002850 *Erebia iranica*

Groum-Grshimailo, 1895

DD Data Deficient

English: **Persian Ringlet**

Turkish: **Acem Güzelesmeri**

RED LIST ASSESSMENT JUSTIFICATION

Persian Ringlet (*Erebia iranica*) is a local and rare species occurring from the Caucasus to N Iran at 2,000-3,400 m (Nazari 2003, Tuzov *et al*. 1997). It has only been recorded once in Turkey, in August 1844, from the subalpine zone of Mt. Ararat (Hesselbarth *et al.* 1995). There seems no reason to suppose that this species is not still present but, with no further records, research is required to confirm its presence or absence. This species is thus listed as Data Deficient.

Family: NYMPHALIDAE

003050 *Pseudochazara schakuhensis*

(Staudinger, 1881)

DD Data Deficient

English: **Persian Tawny Rockbrown**

Turkish: **İran Yalancı Cadısı**

RED LIST ASSESSMENT JUSTIFICATION

Persian Tawny Rockbrown (*Pseudochazara schakuhensis*) is found only in SE Anatolia and N Iran. There is only one record from Turkey, from Mt Cilo, Hakkari, on 1 August 1982, and it is not known whether the Turkish subpopulation is separate from the main subpopulation in the Middle Elburz Mountains, Iran. Nothing is known about the species' habitat preferences or ecology (Hesselbarth *et al.* 1995). Mt Cilo is listed as an Important Plant Area (IPA) (Özhatay *et al.* 2005) and Key Biodiversity Area (KBA) (Eken *et al.* 2006) but these publications mention no threats likely to affect this butterfly. Without more information on the species' distribution in Turkey, its population structure and potential threats, this species is listed as Data Deficient.

Assessors

Karaçetin, E., Welch, H.J., & Verovnik, R.

Family: NYMPHALIDAE

003060 *Pseudochazara guriensis*

(Staudinger, [1878])

DD Data Deficient

English: **Georgian Tawny Rockbrown**

Turkish: **Gürcistan Yalancı Cadısı**

RED LIST ASSESSMENT JUSTIFICATION

Georgian Tawny Rockbrown (*Pseudochazara guriensis*) is a rare species occurring in the Greater and Lesser Caucasus (Tuzov *et al*. 1997). There is only one record of this species in Turkey, from Artvin in 1999 (Baytaş 2003, Baytaş 2007). Further research is required to clarify its current distribution and population structure in Turkey, to discover if there are established populations and to identify any potential threats. Until this information is available the species is listed as Data Deficient.

Assessors

Karaçetin, E., Welch, H.J., Baytaş, A. & Verovnik, R.

References

Baytaş, A. (2003) Yer ve Gök: Yeni Cadımız. *Atlas*, 128, pp.28.

Family: NYMPHALIDAE

003190 *Pyronia cecilia*

(Vallantin, 1894)

DD Data Deficient

English: **Southern Gatekeeper**

Turkish: **Sesilya**

RED LIST ASSESSMENT JUSTIFICATION

Southern Gatekeeper (*Pyronia cecilia*) is a western and central Mediterranean species recorded from Spain and Morocco eastwards as far as NE Libya and NW Turkey. There are only five records from Turkey: Bursa (1851), Amasya (1855) and three records from Istanbul with the most recent from Belgrade Forest in 1973. Despite regular visits to this area by butterfly watchers there are no recent records. The species' habitat in Europe is described as 'dry grasslands, rocky slopes with grassy vegetation, open scrub, and now and then woodland clearings' (Settele *et al.* 2008b) which seems to emphasize that the forest habitats of NW Turkey where it has been recorded are at the edge of its range. Since Settele *et al.* (2008b) consider that its present distribution can be well explained by climatic variables it is also very possible that its range has contracted and the species is no longer present in Turkey. This 'edge of range effect' may also explain why records of this species have always been rare. Research is required to ascertain whether this species is still present and where. Until this information is available it is listed as Data Deficient.

References

Settele, J., Kudrna, O., Harpke, A., Kühn, I., van Swaay, C., Verovnik, R., Warren, M., Wiemers, M., Hanspach, J., Hickler, T., Kühn, E., van Halder, I., Velling, K., Vliegenthart, A., Wynhoff, I. and Schweiger, O. (2008b) *Pyronia cecilia* IN: *Climatic Risk Atlas of European Butterflies*. Biorisk 1 (Special Issue), Sofia, Moscow: Pensoft, pp.498-499.

Family: NYMPHALIDAE

003310 *Coenonympha phryne*

(Pallas, 1771)

DD Data Deficient

English: **Siberian Brown**

Turkish: **Sibirya Perisi**

RED LIST ASSESSMENT JUSTIFICATION

Siberian Brown (*Coenonmypha phryne*) is a species of steppe and semi-desert habitats on plains and in the mountains (up to 3,000 m) from the north Caspian eastwards to the Altai Mountains, Mongolia (Tuzov *et al.* 2000). The old records from four localities in the volcanic mountains of eastern Turkey are thus of interest and may indicate a relict population. The records are from Iğdır (most recent record, 1934) and Ağrı (1956). Research is required in this relatively little visited area of Turkey to ascertain whether this species is still present and where. Until this information is available it is listed as Data Deficient.

Family: HESPERIIDAE

003580 *Pyrgus cirsii*

(Rambur, 1839)

DD Data Deficient

English: **Cinquefoil Skipper**

Turkish: **Beşparmakotu Zıpzıpı**

RED LIST ASSESSMENT JUSTIFICATION

Until recently Cinquefoil Skipper (*Pyrgus cirsii*) has been considered to occur as two separate subpopulations, one in western Europe and the other in eastern Turkey and NW Iran (Kudrna 2002, Hesselbarth *et al.* 1995, Nazari 2003). In Europe it is largely a lowland grassland species occurring between 300-1,300 m, whilst in Turkey it occurs at 1,300-2,700 m (Hesselbarth *et al.* 1995). However, the recently revised European Red List (van Swaay *et al.* 2009j) has decided on a different treatment; it presents *P. cirsii* as a European endemic and suggests that the status of the species in Turkey be revised.

In Iran, Nazari (2003) uses the name *P.* (*carlinae*) *cirsii* for this species. Carline Skipper (*P. carlinae*) also occurs in western Europe – in the western Alps at altitudes up to 2,200 m – but, since *P. cirsii* and *P. carlinae* occur side-by-side in Europe, with many apparent cases of hybridization and no detectable differences morphologically or in genitalia, in the past there was much discussion about whether they represent one or two species (e.g. Hesselbarth *et al.* 1995). Apparently resolving the taxonomic uncertainty, the revised European Red List (van Swaay *et al.* 2009i) also presents *P. carlinae* as a European endemic. However, this leaves the Turkish-Iranian population as a Turkish near endemic with no name.

Despite searches in suitable habitat (S. Ekşioğlu pers. comm. 2009) there have been no confirmed records of this taxon in Turkey since 1993.

This species is thus listed as Data Deficient.

References

Ekşioğlu, S. (2009): Red List Working Group Seminar, 10-12 August 2009.

van Swaay, C., Wynhoff, I., Verovnik, R., Wiemers, M., López Munguira, M., Maes, D., Šašic, M., Verstrael, T., Warren, M. and Settele, J. (2009i) *Pyrgus carlinae* IN: *IUCN Red List of Threatened Species*. IUCN 2010. Version 2010.4. [Online]. Available from: www.iucnredlist.org. [Downloaded on 14 January 2011].

van Swaay, C., Wynhoff, I., Verovnik, R., Wiemers, M., López Munguira, M., Maes, D., Šašic, M., Verstrael, T., Warren, M. and Settele, J. (2009j) *Pyrgus cirsii* IN: *IUCN Red List of Threatened Species*. IUCN 2010. Version 2010.4. [Online]. Available from: www.iucnredlist.org. [Downloaded on 14 January 2011].

Family: HESPERIIDAE

003680 ***Eogenes lesliei***

Evans, 1926

DD Data Deficient

English: **Pakistani Skipper**

Turkish: **Pakistan Zıpzıpı**

RED LIST ASSESSMENT JUSTIFICATION

Pakistani Skipper (*Eogenes lesliei*) is recorded from Pakistan, Iraq and Turkey (Hesselbarth *et al*. 1995), with additional possible records from the N Arabian Gulf in 1943 (Nazari 2003). In Turkey, between 1983-1990 there were four records from two localities in Siirt, both described as 'hot habitats' (Hesselbarth *et al*. 1995). Hululuk: a valley with open *Quercus brantii* shrubland on the slopes of the enclosing mountains, and Baykan: a recently (in 1990) afforested area on valley slopes (Hesselbarth *et al.* 1995). No more is known about this species in Turkey. In order to assess its threat status, research is required to better understand its distribution, population dynamics and the effects of afforestation. Without this information this species is listed as Data Deficient.

Family: HESPERIIDAE

003690 ***Gegenes nostrodamus***

(Fabricius, 1793)

DD Data Deficient

English: **Mediterranean Skipper**

Turkish: **Nostrodamus**

RED LIST ASSESSMENT JUSTIFICATION

Mediterranean Skipper (*Gegenes nostrodamus*) is a local and rare species recorded from the Mediterranean coastal region, across Arabia to Afghanistan, Pakistan and N India (Tuzov *et al*. 1997). In Turkey, the species is largely restricted to the country's western and southern borders. Since 1980 there have been records from 11 localities in seven provinces: Aydın, İzmir, Adıyaman, Batman, Gaziantep, Şırnak and Şanlıurfa, plus Koçak and Kemal (2009) record it as occurring in Hatay, Tekirdağ, Malatya and Siirt. However, although new provinces have been added to its distribution range in recent years, there are nine provinces from which it has not been recorded for 30 years or more (Adana [1963], Antalya [1974], Bursa [1851], Çanakkale [1921], Erzincan [1977], İstanbul [1922], Kahramanmaraş [1932], Manisa [1878] and Mersin [1895]). The lack of records from these provinces might indicate a range contraction, but it might also indicate a lack of research and/or misidentification of the species due to its similarity with the more common *Gegenes pumilio*. In order to assess the species' threat status a better understanding of its current distribution and population are needed, together with information on threats. Without this information it is listed as Data Deficient.

Data Deficient *Agrodiaetus* Blues

Wagner's Blue (*Polyommatus wagneri*)

Approximately 20% of species in Turkey belong to the genus *Polyommatus* Latreille, 1804, and more than 50 of these are placed in the subgenus *Agrodiaetus* Hübner, 1822. *Agrodiaetus* is a species-rich group of blues extensively distributed in the Palaearctic, and particularly well-represented in Turkey and Iran. It is also the only Palaearctic group of butterflies in which a high number of new species is still being discovered (Wiemers 2003), and it has the most problematic taxonomy. There are two main reasons for this.

Firstly, many species of *Agrodiaetus* look extremely similar. Secondly, and conversely, the same *Agrodiaetus* species can look different at geographically separate locations. To resolve the taxonomy of this subgenus, scientists have turned to genetic markers, such as chromosome numbers and structures as well as molecular markers. Surprisingly, chromosome numbers turned out to be extremely variable among different species of this subgenus and appear valuable to delimit species. Unfortunately, karyological preparations are difficult to carry out and analyze, which limits their practical value. More recent molecular work also helped to delimit species and understand their relationships. However, discrepancies not only exist between wing pattern characters and genetic markers, but also among different genetic markers, which prevents easy interpretation.

Currently there are 51 species of *Agrodiaetus* on the Turkish list. Of these, 27 are listed as Data Deficient, largely because of their uncertain taxonomy. More details of the taxonomic problems associated with each species will be published in the Annotated Checklist, to be available from www.dkm.org.tr.

Karaçetin, E. and Welch, H.J. (2011). Red Book of Butterflies in Turkey. Ankara, Turkey: Doğa Koruma Merkezi. Available from: [www.dkm.org.tr]

Table 7. Data Deficient (DD) species in the subgenus *Agrodiaetus*

Scientific name	Date described	Endemic (E)	Distribution	DD status justification
P. eriwanensis	1960		Armenia and NE Anatolia, though some results indicate it may not occur in Turkey at all.	Possibly not present in Turkey. Requires genetic study.
P. antidolus	1901	**(E)**	Records based on field observations not certain, only reliably recorded from Hakkari.	Genetically very similar to other taxa. Morphological identification problems. Distribution and status thus unclear.
P. kurdistanicus	1961	**(E)**	Van, Bitlis and Hakkari.	Genetically very similar to other taxa. Morphological identification problems. Distribution and status thus unclear.
P. pierceae	2002	**(E)**	Van and Hakkari.	Apparently a distinct species; ecology unknown.
P. schuriani	1978	**(E)**	Nevşehir and Antalya.	Genetically very similar to other taxa.
P. surakovi	1994		S Armenian highlands and E Turkey (centred on Van).	Requires genetic study to differentiate from *P. schuriani*. Work needed on distribution and ecology.
P. turcicolus	1977		NW Iran, Van and Hakkari.	Morphologically and genetically very similar to other taxa.
P. zapvadi	1993		NW Iran and SE Turkey.	Previous confusion with *P. elbursicus* is resolved but work needed on distribution and ecology.
P. aroaniensis	1976		Greece (where considered endemic) and Kırklareli.	Newly recorded in Turkey. Genetic confirmation of identity required.
P. dantchenkoi	2003	**(E)**	Van.	Unknown ecology. Very difficult to identify morphologically.
P. interjectus	1960	**(E)**	NE Turkey, from Sivas to Erzurum.	Unclear taxonomy. Status as a species doubtful.
P. karacetinae	2002		NW Iran and Hakkari.	Differing expert opinions on its species status. Confirmation of taxonomic status required.
P. anticarmon	1983	**(E)**	Eastern Anatolia.	Taxonomy under review, possibly a synonym of *P. turcicus*. Requires clarification.
P. actis	1851	**(E)**	The type locality, Tokat, is the only confirmed record.	Taxonomy under review.
P. altivagans	1956		E. Greater Caucasus, Transcaucasia and E Turkey.	Requires genetic study, may represent several species.
P. bilgini	2002	**(E)**	Erzincan and Gümüşhane.	Experts have different opinions on its species status.
P. firdussii	1956		Armenian highlands, N Iran, Central and Eastern Anatolia.	Experts have different opinions on its species status. Clarification of taxonomic status required.
P. haigi	2002	**(E)**	E. Turkey: Bitlis and Van.	Experts have different opinions on its species status. Requires clarification.
P. damocles	1844		S European Russia to the S Urals; reported from Erzincan.	Taxonomy unsettled which makes occurrence in Turkey unclear.
P. mithridates	1878	**(E)**	Apparently widespread in Anatolia.	Unclear taxonomy. Genetically very similar to other taxa so distribution not certain.
P. putnami	2002	**(E)**	Ağrı and Erzurum.	Probably a separate species but genetically very similar to other taxa.
P. sertavulensis	1979	**(E)**	South central Mediterranean provinces.	Genetically very similar to other taxa. Needs taxonomic revision.
P. sigberti	2000	**(E)**	Central Anatolia, but confusion with old and new *P. actis* records.	Genetically very similar to other taxa; needs taxonomic revision.
P. wagneri	1956	**(E)**	Apparently widespread in Anatolia, though absent in the NW and SE.	Taxonomy under review. Confusion with some taxa so distribution not certain.
P. aserbeidschanus	1956		Genetic studies on a specimen from type locality indicates that it is only found in Azerbaijan.	Possibly not present in Turkey.
P. cilicius	1998	**(E)**	South Central Anatolia.	Requires genetic study to confirm species status.
P. erzindjanensis	2002	**(E)**	Erzincan, one locality.	Requires genetic study to confirm species status.

NA (Not Applicable) Species

Table 8. The species categorized as Not Applicable (NA)

Scientific name	English	Justification
Papilio demoleus	Lime Swallowtail	<1% of range in Turkey.
Belenois aurota	Pioneer	Migrant.
Catopsilia florella	African Emigrant	Migrant.
Colias erate	Eastern Pale Clouded Yellow	A common wanderer, Turkey at edge of range.
Colotis fausta	Large Salmon Arab	Migrant.
Euchloe belemia	Green-striped White	<1% of range in Turkey.
Lycaena phoenicurus	Caucasian Turan Copper	<1% of range in Turkey.
Chilades galba	Small Desert Blue	<1% of range in Turkey.
Plebejus christophi	Christoph's Blue	<1% of range in Turkey.
Polyommatus coridon	Chalk-hill Blue	<1% of range in Turkey.
Polyommatus escheri	Escher's Blue	May be extinct; <1% of range in Turkey.
Hypolimnas misippus	False Plain Tiger	<1% of range in Turkey.
Limenitis camilla	White Admiral	<1% of range in Turkey.
Apatura ilia	Lesser Purple Emperor	<1% of range in Turkey.
Araschnia levana	Map Butterfly	<1% of range in Turkey.
Nymphalis vaualbum	False Comma	Migrant.
Neptis rivularis	Hungarian Glider	<1% of range in Turkey.
Boloria eunomia	Bog Fritillary	<1% of range in Turkey.
Brenthis ino	Lesser Marbled Fritillary	<1% of range in Turkey.
Melitaea britomartis	Assmann's Fritillary	<1% of range in Turkey.
Melitaea caucasogenita	Transcaucasian Fritillary	<1% of range in Turkey.
Hamearis lucina	Duke of Burgundy Fritillary	<1% of range in Turkey.
Aphantopus hyperantus	Ringlet	<1% of range in Turkey.
Hipparchia pisidice	Sinai Grayling	May be extinct; <1% of range in Turkey.
Lasiommata menava	Sooty Argus	<1% of range in Turkey.
Pyrgus carthami	Safflower Skipper	<1% of range in Turkey.
Carterocephalus palaemon	Chequered Skipper	<1% of range in Turkey.
Heteropterus morpheus	Large Chequered Skipper	<1% of range in Turkey.

NE (Not Evaluated) Species

Table 9. The species that were Not Evaluated (NE)

Scientific name	English	Justification
Pieris napi	Green-veined White	No confirmed records.
Melitaea turkmanica	Turkmen Fritillary	No confirmed records.

Karaçetin, E. and Welch, H.J. (2011). Red Book of Butterflies in Turkey. Ankara, Turkey: Doğa Koruma Merkezi. Available from: [www.dkm.org.tr]

Revised Checklist of Butterflies in Turkey

This list presents the revised list of butterflies occurring in Turkey, at species level, agreed during the taxonomy revision process described earlier in this document. A detailed annotated checklist is in preparation which will present the reasons for all the changes made during the review. It will be available to download from www.dkm.org.tr.

- To ensure consistency with widely used texts, English names are from Baytaş (2007) and Turkish names from Baytaş (2008).
- For species with no Turkish names in Baytaş (2008), those presented in Koçak and Kemal (2009b) are used.
- Under **End.** are Endemics **(E)** = taxa restricted to Turkey; and Near Endemics **(NrE)** = taxa with more than 60% of their global range in Turkey.
- Species marked with an * are those whose taxonomic status is known to be uncertain and whose status on the list is therefore likely to change.
- Species marked with ** are those for which there are no confirmed records in Turkey and which should therefore be removed from the list.

Table 10. Revised checklist

Code	Scientific name and species authority	End.	Red List Status	English name	Turkish name
000010	*Zerynthia caucasica* (Lederer, 1864)		VU	Caucasian Festoon	Kafkas Fisto Kelebeği
000020	*Zerynthia cerisy* (Godart, 1824)		LC	Eastern Festoon	Oriyental Orman Fisto Kelebeği
000030	*Zerynthia deyrollei* (Oberthür, 1869)		LC	Eastern Steppe Festoon	Oriyental Step Fisto Kelebeği
000040	*Zerynthia polyxena* ([Dennis & Schiffermüller], 1775)		LC	Southern Festoon	Güneyli Fisto Kelebeği
000050	*Archon apollinaris* (Staudinger, [1892])		LC	Little False Apollo	Küçük Yalancı Apollo
000060	*Archon apollinus* (Herbst, 1798)		LC	False Apollo	Yalancı Apollo
000070	*Parnassius mnemosyne* (Linnaeus, 1758)		LC	Clouded Apollo	Dumanlı Apollo
000080	*Parnassius nordmanni* [Ménetries], [1850]		LC	Caucasian Apollo	Kafkas Apollosu
000090	*Parnassius apollo* (Linnaeus, 1758)		LC	Apollo	Apollo
000100	*Iphiclides podalirius* (Linnaeus, 1758)		LC	Scarce Swallowtail	Erik Kırlangıçkuyruğu
000110	*Papilio alexanor* Esper, 1800		LC	Southern Swallowtail	Kaplan Kırlangıçkuyruk
000120	*Papilio machaon* Linnaeus, 1758		LC	Swallowtail	Kırlangıçkuyruk
000130	*Papilio demoleus* Linnaeus, 1758		NA	Lime Swallowtail	Nusaybin Güzeli
000140	*Anthocharis cardamines* (Linnaeus, 1758)		LC	Orange Tip	Turuncu Süslü Kelebek
000150	*Anthocharis damone* Boisduval, 1836		LC	Eastern Orange Tip	Turuncu Süslü Doğu Kelebeği
000160	*Anthocharis gruneri* Herrich-Schäffer, 1851		LC	Gruner's Orange Tip	Grüner'in Turuncu Süslü Kelebeği
000170	*Aporia crataegi* (Linnaeus, 1758)		LC	Black-veined White	Alıçkelebeği
000180	*Belenois aurota* (Fabricius, 1793)		NA	Pioneer	Beyazöncü
000190	*Catopsilia florella* (Fabricius, 1775)		NA	African Emigrant	Afrika Göçmeni
000200	*Colias crocea* (Fourcroy, 1785)		LC	Dark Clouded Yellow	Sarı Azamet
000210	*Colias thisoa* Ménetriés, 1832		DD	Menetries's Clouded Yellow	Turan Azameti
000220	*Colias aurorina* Herrich-Schäffer, 1850		LC	Anatolian Clouded Yellow	Anadolu Azameti
000230	*Colias caucasica* Staudinger, 1871		EN	Caucasian Clouded Yellow	Kafkasya Azameti
000240	*Colias chlorocoma* Christoph, 1888		DD	Christoph's Clouded Yellow	Azeri Azameti
000250	*Colias erate* (Esper, 1805)		NA	Eastern Pale Clouded Yellow	Doğulu Azamet
000260	*Colias hyale* (Linnaeus, 1758)		LC	Pale Clouded Yellow	Orman Azameti
000270	*Colias alfacariensis* Ribbe, 1905		LC	Southern Clouded Yellow	Türkistan Azameti
000280	*Colotis fausta* (Olivier, [1804])		NA	Large Salmon Arab	Mezopotamya Kolotisi
000290	*Euchloe penia* (Freyer, [1851])		LC	Eastern Greenish Black-tip	Doğu Elfinstonyası
000300	*Euchloe ausonia* (Hübner, 1804)		LC	Dappled White	Dağ Oyklösü
000310	*Euchloe belemia* (Esper, 1800)		NA	Green-striped White	Akdeniz Oyklösü
000320	*Gonepteryx cleopatra* (Linnaeus, 1767)		LC	Cleopatra	Kleopatra
000330	*Gonepteryx farinosa* (Zeller, 1847)		LC	Powdered Brimstone	Anadolu Orakkanadı
000340	*Gonepteryx rhamni* (Linnaeus, 1758)		LC	Brimstone	Orakkanat
000350	*Leptidea duponcheli* (Staudinger, 1871)		LC	Eastern Wood White	Doğulu Narin Orman Beyazı
000360	*Leptidea morsei* (Fenton, 1881)		DD	Fenton's Wood White	Fenton'un Narin Orman Beyazı
000370	*Leptidea sinapis* (Linnaeus, 1758)		LC	Wood White	Narin Orman Beyazı
000380	*Pieris bowdeni* Eitschberger, [1984]	(NrE)	DD	Bowden's White	Bowden'in Beyaz Meleği
000390	*Pieris bryoniae* (Hübner, 1805)		LC	Mountain Green-veined White	Dağ Beyaz Meleği
000400	*Pieris ergane* (Geyer, 1828)		LC	Mountain Small White	Dağ Küçük Beyaz Meleği
000410	*Pieris krueperi* Staudinger, 1860		LC	Kruper's Small White	Krüper'in Beyaz Meleği

Code	Scientific name	Species authority	End.	Red List Status	English name	Turkish name
000420	*Pieris mannii*	(Mayer, 1851)		LC	Southern Small White	Mann'ın Beyaz Meleği
000430	****Pieris napi***	(Linnaeus, 1758)		NE	Green-veined White	Yalancı Beyaz Melek
000440	*Pieris pseudorapae*	Verity, 1908		LC	–	Yalancı Beyaz Melek
000450	*Pieris persis*	Verity, 1922		DD	–	İran Beyaz Meleği
000460	*Pieris rapae*	(Linnaeus, 1758)		LC	Small White	Küçük Beyaz Melek
000470	*Pieris brassicae*	(Linnaeus, 1758)		LC	Large White	Büyük Beyaz Melek
000480	*Pontia callidice*	(Hübner, 1800)		LC	Peak White	Dorukların Benekli Meleği
000490	*Pontia chloridice*	(Hübner, 1813)		LC	Small Bath White	Küçük Benekli Melek
000500	*Pontia daplidice*	(Linnaeus, 1758)		LC	Bath White	Benekli Melek
000510	*Pontia edusa*	(Fabricius, 1777)		LC	New Bath White	Yeni Benekli Melek
000520	*Zegris eupheme*	(Esper, 1804)		NT	Sooty Orange Tip	Zegris
000530	*Favonius quercus*	(Linnaeus, 1758)		LC	Purple Hairstreak	Mor Meşe Kelebeği
000540	*Thecla betulae*	(Linnaeus, 1758)		DD	Brown Hairstreak	Huş Kelebeği
000550	*Callophrys rubi*	(Linnaeus, 1758)		LC	Green Hairstreak	Zümrüt
000560	*Callophrys herculeana*	Pfeiffer, 1927 stat. nov.		DD	–	–
000570	*Callophrys danchenkoi*	Zdhanko, 1998		DD	–	–
000580	*Callophrys paulae*	Pfeiffer, 1932		LC	Pfeiffer's Green Hairstreak	Anadolu Zümrütü
000590	*Callophrys mystaphia*	Miller, 1913	(NrE)	EN	Miller's Green Hairstreak	Minik Zümrüt
000600	*Satyrium abdominalis*	(Gerhard, [1850])		LC	Gerhard's Black Hairstreak	Sevbeni
000610	*Satyrium acaciae*	(Fabricius, 1787)		LC	Sloe Hairstreak	Minik Sevbeni
000620	*Satyrium myrtale*	Klug, 1834		LC	Rebel's Hairstreak	Mavi Sevbeni
000630	*Satyrium ilicis*	(Esper, 1779)		LC	Ilex Hairstreak	Büyük Sevbeni
000640	*Satyrium marcidum*	(Riley, 1921)		DD	Riley's Hairstreak	İranlı Sevbeni
000650	*Satyrium spini*	([Dennis & Schiffermüller], 1775)		LC	Blue-spot Hairstreak	Güzel Sevbeni
000660	*Satyrium w-album*	(Knoch, 1782)		LC	White-letter Hairstreak	Karaağaç Sevbeni
000670	*Satyrium hyrcanicum*	(Riley, 1939)		EN	Hyrcanian Black Hairstreak	Büyük Benekli Sevbeni
000680	*Satyrium ledereri*	(Boisduval, 1848)		LC	Orange-banded Hairstreak	Küçük Benekli Sevbeni
000690	*Satyrium zabni*	Oorschot & Brink, 1991		LC	–	Mavi Benekli Sevbeni
000700	*Apharitis acamas*	(Klug, 1834)		LC	Lebanese Silver-Line	Şeytancık
000710	*Apharitis cilissa*	Lederer, 1861		EN	Levantine Silver-Line	Akdeniz Şeytancığı
000720	*Apharitis maxima*	Staundinger, 1901		LC	Large Silver-Line	Büyük Şeytancık
000730	*Tomares nesimachus*	(Oberthür, 1893)		LC	Levantine Vernal Copper	Akdeniz Gelinciği
000740	*Tomares nogelii*	(Herrich-Schäffer, 1851)		LC	Anatolian Vernal Copper	Anadolu Gelinciği
000750	*Tomares callimachus*	(Eversmann, 1848)		DD	Caucasian Vernal Copper	Kafkasya Gelinciği
000760	*Tomares romanovi*	(Christoph, 1882)		LC	Romanoff's Vernal Copper	Romanov Gelinciği
000770	*Tomares desinens*	Nekrutenko & Effendi, 1980		DD	–	Azeri Gelincik
000780	*Lycaena alciphron*	(Rottemburg, 1775)		LC	Purple-shot Copper	Büyük Mor Bakır Kelebeği
000790	*Lycaena tityrus*	(Poda, 1761)		LC	Sooty Copper	İsli Bakır Kelebeği
000800	*Lycaena virgaureae*	(Linnaeus, 1758)		LC	Scarce Copper	Orman Bakır Kelebeği
000810	*Lycaena candens*	(Herrich-Schäffer, 1844)		LC	Balkan Copper	Ateş Rengi Kelebek
000820	*Lycaena ottomana*	(Lefèbvre, 1830)		VU	Ottoman's Copper	Osmanlı Ateşi
000830	*Lycaena phlaeas*	(Linnaeus, 1761)		LC	Small Copper	Benekli Bakır Kelebeği
000840	*Lycaena euphratica*	Eckweiler, 1989	(NrE)	DD	Anatolian Turan Copper	Fırat Bakırı
000850	*Lycaena phoenicurus*	(Lederer, 1870)		NA	Caucasian Turan Copper	İran Bakırı
000860	*Lycaena dispar*	(Haworth, 1802)		NT	Large Copper	Büyük Bakır
000870	*Lycaena asabinus*	(Herrich-Schäffer, [1851])		LC	Anatolian Fiery Copper	Anadolu Ateş Kelebeği
000880	*Lycaena ochimus*	(Herrich-Schäffer, [1851])		LC	Turkish Fiery Copper	Alevli Ateş Kelebeği
000890	*Lycaena lampon*	(Lederer, 1870)		DD	Persian Fiery Copper	İran Ateşi
000900	*Lycaena thersamon*	(Esper, 1784)		LC	Lesser Fiery Copper	Küçük Ateş Kelebeği
000910	*Lycaena thetis*	Klug, 1834		LC	Fiery Copper	Dağ Ateşi

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000920	*Lampides boeticus* (Linnaeus, 1767)		LC	Long-tailed Blue	Lampides
000930	*Leptotes pirithous* (Linnaeus, 1767)		LC	Lang's Short-tailed Blue	Mavi Zebra
000940	*Tarucus balkanicus* (Freyer, [1844])		LC	Little Tiger Blue	Balkan Kaplanı
000950	*Zizeeria karsandra* (Moore, 1865)		LC	Indian Grass Blue	Karsandra
000960	*Cupido alcetas* (Hoffmannsegg, 1804)		LC	Provençal Short-tailed Blue	Fransız Everesi
000970	*Cupido argiades* (Pallas, 1771)		LC	Short-tailed Blue	Everes
000980	*Cupido decoloratus* (Staudinger, 1886)		DD	Eastern Short-tailed Blue	Balkan Everesi
000990	*Cupido minimus* (Fuessly, 1775)		LC	Little Blue	Minik Kupid
001000	*Cupido osiris* (Meigen, 1829)		LC	Osiris Blue	Mavi Osiris
001010	*Cupido staudingeri* (Christoph, 1873)		DD	–	Staudinger'in Minikmavisi
001020	*Celastrina argiolus* (Linnaeus, 1758)		LC	Holly Blue	Kutsal Mavi
001030	*Glaucopsyche astraea* (Freyer, [1851])	(E)	LC	Anatolian Green-underside Blue	Anadolu Karagözlü Mavisi
001040	*Glaucopsyche alexis* (Poda, 1761)		LC	Green-underside Blue	Karagözlü Mavi Kelebek
001050	*Iolana iolas* (Ochsenheimer, 1816)		LC	Iolas Blue	Dev Mavi Kelebek
001060	*Phengaris arion* (Linnaeus, 1758)		LC	Large Blue	Büyük Korubeni
001070	*Phengaris nausithous* (Bergsträsser, 1779)		EN	Dusky Large Blue	Esmer Korubeni
001080	*Phengaris alcon* ([Dennis & Schiffermüller], 1775)		LC	Alcon Blue	Küçük Korubeni
001090	*Pseudophilotes vicrama* (Moore, 1865)		LC	Lesser Chequered Blue	Himalaya Mavi Kelebeği
001100	*Pseudophilotes bavius* (Eversmann, 1832)		LC	Bavius Blue	Bavius
001110	*Scolitantides orion* (Pallas, 1771)		NT	Chequered Blue	Karamavi
001120	*Turanana cytis* (Christoph, 1877)		LC	Persian Odd-spot Blue	İranlı Turan Mavisi
001130	*Turanana endymion* (Freyer, [1850])		LC	Odd-spot Blue	Anadolu Turan Mavisi
001140	*Turanana taygetica* (Rebel, 1902)		LC	–	Yunan Turan Mavisi
001150	*Chilades trochylus* (Freyer, 1845)		LC	Jewel Blue	Mücevher Kelebeği
001160	*Chilades galba* (Lederer, 1855)		NA	Small Desert Blue	Akdeniz Mücevher Kelebeği
001170	*Plebejus eurypilus* (Freyer, 1851)		LC	Eastern Brown Argus	Doğulu Esmergöz
001180	*Plebejus argyrognomon* (Bergsträsser, 1779)		LC	Reverdin's Blue	Avrupalı Esmergöz
001190	*Plebejus christophi* (Staudinger, 1874)		NA	Christoph's Blue	Christoph'un Esmergözü
001200	*Plebejus idas* (Linnaeus, 1761)		LC	Idas Blue	Esmergöz
001210	*Plebejus sephirus* (Frivaldzky, 1835)		LC	–	Balkan Esmergözü
001220	*Plebejus argus* (Linnaeus, 1758)		LC	Silver-studded Blue	Gümüş Lekeli Esmergöz
001230	*Plebejus dardanus* (Freyer, 1844)		LC	Gavarnie Blue	Pirene Çokgözlüsü
001240	*Plebejus loewii* (Zeller, 1847)		LC	Loew's Blue	Çokgözlü Gümüşmavi
001250	*Plebejus alcedo* (Christoph, 1877)		LC	Alcedo Blue	Acem Çokgözlüsü
001260	*Plebejus morgianus* (Kirby, 1871)		LC	Persian Blue	İran Çokgözlüsü
001270	*Plebejus rosei* (Eckweiler, 1989)	(NrE)	CR	Rose's Blue	Rose'nin Çokgözlüsü
001280	*Aricia eumedon* (Esper, 1780)		LC	Geranium Argus	Geranyum Çokgözlüsü
001290	*Aricia hyacinthus* (Herrich-Schäffer, [1847])	(E)	NT	Anatolian False Argus	Anadolu Çokgözlüsü
001300	*Aricia isauricus* (Staudinger, 1871)	(NrE)	LC	Isaurian False Argus	Çokgözlü Toros Mavisi
001310	*Aricia teberdina* (Sheljuzhko, 1934)		EN	Georgian False Argus, Caucasian Silvery Argus	Teberda Çokgözlüsü
001320	**Aricia torulensis* Hesselbarth & Siepe, 1993	(E)	EN	Turkish False Argus	Torul Çokgözlüsü
001330	*Aricia anteros* (Freyer, 1838)		LC	Blue Argus	Çokgözlü Balkan Mavisi
001340	*Aricia crassipunctus* (Christoph, 1893)		LC	–	Çokgözlü Anadolu Mavisi
001350	*Aricia bassoni* Larsen, 1974		DD	Steely Argus	Çokgözlü Lübnan Mavisi
001360	*Aricia agestis* ([Dennis & Schiffermüller], 1775)		LC	Brown Argus	Çokgözlü Esmer
001370	*Aricia artaxerxes* (Fabricius, 1793)		LC	Mountain Argus	Çokgözlü Orman Esmeri
001380	*Cyaniris semiargus* (Rottemburg, 1775)		LC	Eastern Mazarine Blue	Çokgözlü Güzel Mavi
001390	*Polyommatus bellargus* (Rottemburg, 1775)		LC	Adonis Blue	Çokgözlü Gökmavisi
001400	*Polyommatus coridon* (Poda, 1761)		NA	Chalk-hill Blue	Çilli Çokgözlü
001410	*Polyommatus corydonius* (Herrich-Schäffer, [1852])		LC	False Chalk-hill Blue	Çokgözlü Yalancı Çilli

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001420	*Polyommatus dezinus*	(de Freina & Witt, 1983)	(E)	DD	Hakkari Chalk-hill Blue	Çokgözlü Hakkari Çillisi
001430	*Polyommatus ossmar*	(Gerhard, [1851])	(E)	LC	Anatolian Chalk-hill Blue	Çokgözlü Anadolu Çillisi
001440	*Polyommatus syriacus*	(Tutt, 1914)		LC	Lebanese Adonis Blue	Çokgözlü Levantin Mavisi
001450	*Polyommatus buzulmavi*	Carbonell, [1992]	(E)	DD	Ice Blue	Çokgözlü Buzulmavi
001460	*Polyommatus daphnis*	([Dennis & Schiffermüller], 1775)		LC	Meleager's Blue	Çokgözlü Dafnis
001470	*Polyommatus coelestinus*	(Eversmann, 1843)		LC	Pontic Blue	Çokgözlü Rus Mavisi
001480	*Polyommatus diana*	(Miller, 1913)	(NrE)	EN	Diana Blue	Çokgözlü Diana
001490	*Polyommatus fatima*	(Eckweiler & Schurian, 1980)	(NrE)	LC	Fatima's Blue	Çokgözlü Fatma
001500	*Polyommatus amandus*	(Schneider, 1792)		LC	Amanda's Blue	Çokgözlü Amanda
001510	*Polyommatus dorylas*	([Dennis & Schiffermüller], 1775)		LC	Turquoise Blue	Çokgözlü Turkuvaz Mavisi
001520	*Polyommatus escheri*	(Hübner, 1823)		NA	Escher's Blue	Çokgözlü Eşer Mavisi
001530	*Polyommatus cornelia*	(Freyer, [1850])	(E)	LC	Small Anatolian Blue	Çokgözlü Küçük Turan Mavisi
001540	*Polyommatus aedon*	(Christoph, 1877)		LC	–	Çokgözlü Edon Mavisi
001550	*Polyommatus myrrha*	(Herrich-Schäffer, [1851])	(NrE)	LC	–	Çokgözlü Büyük Turan Mavisi
001560	*Polyommatus thersites*	(Cantener, 1835)		LC	Chapman's Blue	Çokgözlü Menekşe Mavisi
001570	*Polyommatus bollandi*	Dumont, 1998	(E)	CR	Bolland's Blue	Çokgözlü Hatay Mavisi
001580	*Polyommatus ciloicus*	de Freina & Witt, 1983	(NrE)	VU	Cilo Blue	Çokgözlü Cilo Mavisi
001590	*Polyommatus eros*	(Ochsenheimer, 1808)		LC	Forster's Eros Blue	Çokgözlü Elburs Eros Mavisi
001600	*Polyommatus icarus*	(Rottemburg, 1775)		LC	Common Blue	Çokgözlü Mavi
001610	*Polyommatus actis*	(Herrich-Schäffer, [1851])	(E)	DD	Actis Blue	Lacivert Anadolu Çokgözlüsü
001620	**Polyommatus artvinensis*	(Carbonell, 1997)	(E)	VU	Artvin Blue	Artvin Çokgözlüsü
001630	**Polyommatus cilicius*	(Carbonell, 1998)	(E)	DD	Cilician Blue	Gülek Cökgözlüsü
001640	**Polyommatus firdussii*	(Forster, 1956)		DD	Firdussi's Blue	Firdevski'nin Çokgözlüsü
001660	**Polyommatus haigi*	(Dantchenko & Lukhtanov, 2002)	(E)	DD	–	–
001670	*Polyommatus sertavulensis*	(Koçak, 1979)	(E)	DD	Kocak's Blue	Sertavul Çokgözlüsü
001680	**Polyommatus sigberti*	Olivier, van der Poorten, Puplesiene & de Prins, 2000	(E)	DD	Sigbert's Blue	Sigbert'in Çokgözlüsü
001690	*Polyommatus admetus*	(Esper, 1783)		LC	Anomalous Blue	Anormal Çokgözlü
001700	*Polyommatus alcestis*	(Zerny, 1932)		LC	Lebanese Anomalous Blue	Çokgözlü Lübnan Esmeri
001705	**Polyommatus karacetinae*	Lukhtanov & Dantchenko, 2002		DD	Evrim's Blue	–
001710	*Polyommatus dantchenkoi*	(Lukhtanov, Wiemers & Meusemann, 2003)	(E)	DD	–	–
001715	**Polyommatus aroaniensis*	(Brown, 1976)		DD	Grecian Anomalous Blue	Yunan Anormal Çokgözlüsü
001720	**Polyommatus bilgini*	(Dantchenko & Lukhtanov, 2002)	(E)	DD	–	–
001730	*Polyommatus demavendi*	Pfeiffer, 1938		LC	Persian Anomalous Blue	Çokgözlü Demavend Esmeri
001740	**Polyommatus eriwanensis*	(Forster, 1960)		DD	Forster's Anomalous Blue	Foster'in Anormal Çokgözlüsü
001750	**Polyommatus interjectus*	de Lesse, 1960	(E)	DD	–	–
001760	*Polyommatus ripartii*	(Freyer, 1830)		LC	Ripart's Anomalous Blue	Ripart'in Anormal Çokgözlüsü
001770	*Polyommatus antidolus*	(Rebel, 1901)	(E)	DD	Anatolian Furry Blue	Çokgözlü Anadolu Tüylüsü
001780	*Polyommatus kurdistanicus*	(Forster, 1961)	(E)	DD	Forster's Anomalous Furry Blue	Çokgözlü Van Esmeri
001790	*Polyommatus menalcas*	(Freyer, [1837])	(E)	LC	Turkish Furry Blue	Çokgözlü Anadolu Beyazı
001800	*Polyommatus mithridates*	(Staudinger, 1878)	(E)	DD	Mithridates	Çokgözlü Amasya Esmeri
001810	*Polyommatus dama*	(Staudinger, 1892)	(E)	EN	Mesopotamian Blue	Mezopotamya Çokgözlüsü
001820	*Polyommatus hopfferi*	(Herrich-Schäffer, [1851])	(E)	LC	Hoppfer's Blue	Hopfer'in Çokgözlüsü
001830	*Polyommatus lycius*	(Carbonell, 1996)	(E)	VU	Lycian Blue	Carbonell Mavisi
001840	*Polyommatus poseidon*	(Herrich-Schäffer, [1851])	(E)	LC	Poseidon Blue	Çokgözlü Poseydon
001850	*Polyommatus theresiae*	Schurian, van Oorschot & van den Brink, 1992	(E)	EN	Theresia's Blue	Çokgözlü Teresya
001860	*Polyommatus wagneri*	(Forster, 1956)	(E)	DD	Wagner's Blue	Wagner'in Çokgözlüsü
001870	*Polyommatus baytopi*	(de Lesse, 1959)	(NrE)	LC	Baytop's Blue	Baytop'un Çokgözlüsü
001880	*Polyommatus iphigenia*	(Herrich-Schäffer, 1847)		LC	Iphigenia Blue	Çokgözlü İfigenya

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001890	*Polyommatus iphicarmon* Eckweiler & Rose, 1993	(E)	VU	Iphicarmon Blue	Çokgözlü İfikarmon
001900	*Polyommatus tankeri* (de Lesse, 1960)	(E)	EN	Tanker's Blue	Tanker'in Çokgözlüsü
001910	*Polyommatus phyllis* (Christoph, 1877)		LC	Van Blue	Çokgözlü Van Mavisi
001920	*Polyommatus altivagans* (Forster, 1956)		DD	Alpine Blue	Lacivert Azeri Çokgözlüsü
001930	**Polyommatus anticarmon* (Koçak, 1983)	(E)	DD	Anticarmon Blue	Çokgözlü Antikarmon
001940	**Polyommatus aserbeidschanus* (Forster, 1956)		DD	Azerbaijan Blue	Azeri Çokgözlüsü
001950	*Polyommatus caeruleus* (Staudinger, 1871)		RE	Caeruleus Blue	Çokgözlü Hazer Mavisi
001960	*Polyommatus zapvadi* (Carbonell, 1993)		DD	–	Çokgözlü Elburz Mavisi
001970	*Polyommatus carmon* (Herrich-Schäffer, [1851])	(E)	LC	Gerhard's Blue	Gerhard'ın Çokgözlüsü
001980	*Polyommatus guezelmavi* Olivier, Puplesiene, van der Poorten, de Prins & Wiemers, 1999	(E)	NT	Beautiful Blue	Çokgözlü Güzelmavi
001990	*Polyommatus huberti* (Carbonell, 1993)		LC	Hubert's Blue	Hubert'in Çokgözlüsü
002000	*Polyommatus ninae* (Forster, 1956)	(NrE)	LC	Nina's Blue	Nina'nın Çokgözlüsü
002010	*Polyommatus pierceae* (Lukhtanov & Dantchenko, 2002)	(E)	DD	–	–
002020	*Polyommatus surakovi* Dantchenko & Lukhtanov, 1994		DD	Surakov's Blue	Çokgözlü Kunchuy
002030	*Polyommatus turcicus* (Koçak, 1977)	(NrE)	LC	Turkish Blue	Çokgözlü Türk Mavisi
002040	*Polyommatus cyaneus* (Staudinger, 1899)		LC	Cyaneus Blue	Çokgözlü Siyan Mavisi
002050	*Polyommatus merhaba* de Prins, van der Poorten, Borie, van Oorschot, Riemis & Coenen 1991	(E)	EN	Hi Blue	Merhaba Çokgözlü
002060	*Polyommatus damon* ([Dennis & Schiffermüller], 1775)		LC	Damon's Blue	Çokgözlü Damon
002070	**Polyommatus erzindjanensis* (Carbonell, 2002)	(E)	DD	–	Çokgözlü Erzincan Mavisi
002080	**Polyommatus schuriani* (Rose, 1978)	(E)	DD	–	Çokgözlü Kunchuy Mavisi
002090	*Polyommatus turcicolus* (Koçak, 1977)		DD	–	Çokgözlü Van Mavisi
002100	**Polyommatus damocles* (Herrich-Schäffer, [1844])		DD	–	Çokgözlü Damokles Mavisi
002110	**Polyommatus putnami* (Dantchenko &Lukhtanov, 2002)	(E)	DD	–	–
002120	*Libythea celtis* (Laicharting, 1782)		LC	Nettle-tree Butterfly	Çitlembik Kelebeği
002130	*Danaus chrysippus* (Linnaeus, 1758)		LC	Plain Tiger	Sultan
002140	*Hypolimnas misippus* (Linneaus, 1764)		NA	False Plain Tiger	Hipolimnas
002150	*Limenitis camilla* (Linnaeus, 1764)		NA	White Admiral	Hanımeli Kelebeği
002160	*Limenitis reducta* Staudinger, 1901		LC	Southern White Admiral	Akdeniz Hanımeli Kelebeği
002170	*Charaxes jasius* (Linnaeus, 1767)		LC	Two-tailed Pasha	Çift Kuyruklu Paşa
002180	*Apatura ilia* ([Dennis & Schiffermüller], 1775)		NA	Lesser Purple Emperor	Küçük Mor İmparator
002190	*Apatura metis* Freyer, 1829		LC	Balkan Emperor	Trakya İmparatoru
002200	*Euapatura mirza* Ebert, 1971		LC	Ebert's Mirza	Şehzade
002210	*Thaleropis ionia* (Eversmann, 1851)		LC	Ionian Emperor	Anadolu Şehzadesi
002220	*Araschnia levana* (Linnaeus, 1758)		NA	Map Butterfly	Isırgan Kelebeği
002230	*Nymphalis antiopa* (Linnaeus, 1758)		LC	Camberwell Beauty	Sarı Bantlı Kadife
002240	*Nymphalis polychloros* (Linnaeus, 1758)		LC	Large Tortoiseshell	Karaağaç Nimfalisi
002250	*Nymphalis vaualbum* ([Dennis & Schiffermüller], 1775)		NA	False Comma	Yalancı Virgül Kelebeği
002260	*Nymphalis xanthomelas* (Esper, [1781])		LC	Yellow-legged Tortoiseshell	Sarı Ayaklı Nimfalis
002270	*Aglais urticae* (Linnaeus, 1758)		LC	Small Tortoiseshell	Aglais
002280	*Aglais io* (Linnaeus, 1758)		LC	Peacock Butterfly	Tavuskelebeği
002290	*Vanessa atalanta* (Linnaeus, 1758)		LC	Red Admiral	Atalanta
002300	*Vanessa cardui* (Linnaeus, 1758)		LC	Painted Lady	Diken Kelebeği
002310	*Polygonia c-album* (Linnaeus, 1758)		LC	Comma Butterfly	Yırtık Pırtık
002320	*Polygonia egea* (Cramer, 1775)		LC	Southern Comma	Anadolu Yırtık Pırtığı
002330	*Neptis rivularis* (Scopoli, 1763)		NA	Hungarian Glider	Süzülen Karakız
002340	*Argynnis adippe* ([Dennis & Schiffermüller], 1775)		LC	High Brown Fritillary	Büyük İnci
002350	*Argynnis niobe* (Linnaeus, 1758)		LC	Niobe Fritillary	Niyobe
002360	*Argynnis pandora* ([Dennis & Schiffermüller], 1775)		LC	Cardinal	Bahadır
002370	*Argynnis aglaja* (Linnaeus, 1758)		LC	Dark Green Fritillary	Güzel İnci

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002380	*Argynnis paphia*	(Linnaeus, 1758)		LC	Silver-washed Fritillary	Cengaver
002390	*Boloria dia*	(Linnaeus, 1767)		LC	Violet Fritillary	Mor İnci
002400	*Boloria euphrosyne*	(Linnaeus, 1758)		LC	Pearl-bordered Fritillary	Beyaz İnci
002410	*Boloria caucasica*	(Lederer, 1852)	(NrE)	LC	Caucasian Fritillary	Kafkas Menekşe Kelebeği
002420	*Boloria graeca*	(Staudinger, 1870)		CR	Balkan Fritillary	Balkan Menekşe Kelebeği
002430	*Boloria eunomia*	(Esper, [1799])		NA	Bog Fritillary	Bataklık Noktalı Kelebeği
002440	*Brenthis daphne*	(Bergsträsser, 1780)		LC	Marbled Fritillary	Böğürtlen Brentisi
002450	*Brenthis hecate*	([Dennis & Schiffermüller], 1775)		LC	Twin-spot Fritillary	Çift Noktalı Brentis
002460	*Brenthis ino*	(Rottemburg, 1775)		NA	Lesser Marbled Fritillary	Küçük Brentis
002470	*Brenthis mofidii*	Wyatt, 1969		LC	Mofidi's Fritillary	İran Brentisi
002480	*Issoria lathonia*	(Linnaeus, 1758)		LC	Queen of Spain Fritillary	İspanyol Kraliçesi
002490	*Melitaea telona*	Fruhstorfer, 1908		LC	Algerian Fritillary	Cezayirli İparhan
002500	*Melitaea arduinna*	(Esper, 1783)		LC	Freyer's Fritillary	Turkistanlı İparhan
002510	*Melitaea cinxia*	(Linnaeus, 1758)		LC	Glanville Fritillary	İparhan
002520	*Melitaea collina*	(Lederer, 1917)		LC	Lederer's Fritillary	Hataylı İparhan
002530	*Melitaea diamina*	(Lang, 1789)		LC	False Heath Fritillary	Funda İparhanı
002540	*Melitaea didyma*	(Esper, 1778)		LC	Spotted Fritillary	Benekli İparhan
002550	*Melitaea trivia*	([Dennis & Schiffermüller], 1775)		LC	Lesser Spotted Fritillary	Güzel İparhan
002560	*Melitaea interrupta*	Kolenati, 1846		LC	Caucasian Spotted Fritillary	Kafkasyalı İparhan
002570	*Melitaea persea*	Kollar, 1849		LC	Persian Fritillary	İranlı İparhan
002580	*Melitaea phoebe*	([Dennis & Schiffermüller], 1775)		LC	Knapweed Fritillary	Benekli Büyük İparhan
002590	***Melitaea turkmanica*	Higgins, 1940		NE	Turkmen Fritillary	Türkmen Benekli Kelebeği
002600	*Melitaea athalia*	(Rottemburg, 1775)		LC	Heath Fritillary	Amannisa
002610	*Melitaea britomartis*	(Assmann, 1847)		NA	Assmann's Fritillary	Melike Amannisa
002620	*Melitaea aurelia*	Nickerl, 1850		NT	Nickerl's Fritillary	Güzel Amannisa
002630	*Melitaea caucasogenita*	Verity, 1930		NA	Transcaucasian Fritillary	Kafkasyalı Amannisa
002640	*Euphydryas aurinia*	(Rottemburg, 1775)		LC	Marsh Fritillary	Nazuğum
002650	*Euphydryas orientalis*	(Herrich-Schäffer, [1845])		EN	Steppe Fritillary	Güzel Nazuğum
002660	*Euphydryas iduna*	(Dalman, 1816)		DD	Lapland Fritillary	Kuzeyli Nazuğum
002670	*Hamearis lucina*	(Linnaeus, 1758)		NA	Duke of Burgundy Fritillary	İncili Kelebek
002680	*Aphantopus hyperantus*	(Linnaeus, 1758)		NA	Ringlet	Halkacık
002690	*Melanargia galathea*	(Linnaeus, 1758)		LC	Marbled White	Melike
002700	*Melanargia larissa*	(Geyer, 1828)		LC	Balkan Marbled White	Anadolu Melikesi
002710	*Melanargia russiae*	(Esper, 1783)		LC	Russian Marbled White	Rus Melikesi
002720	*Melanargia wiskotti*	Röber, 1896	(E)	VU	–	Wiskott'un Akdeniz Melikesi
002730	*Hipparchia fatua*	Freyer, 1844		LC	Freyer's Grayling	Anadolu Karameleği
002740	*Hipparchia parisatis*	([Denis & Schiffermüller], 1775)		LC	White-bordered Grayling	Beyaz Kenarlı Karamelek
002750	*Hipparchia statilinus*	(Hufnagel, 1766)		LC	Tree Grayling	Ağaç Karameleği
002760	*Hipparchia senthes*	(Bonelli, 1826)		LC	Southern Grayling	Güneyli Kurşuni Kelebek
002770	*Hipparchia mersina*	(Staudinger, 1871)	(NrE)	LC	Mersin Grayling	Mersin Kızılmeleği
002780	*Hipparchia pellucida*	(Stauder, 1924)		LC	Anatolian Grayling	Anadolu Kızılmeleği
002790	*Hipparchia volgensis*	(Mazochin-Porshnjakov, 1952)		LC	Volga Grayling	Rus Kızılmeleği
002800	*Hipparchia syriaca*	(Staudinger, 1871)		LC	Syrian Rock Grayling	Büyük Karamelek
002810	*Hipparchia pisidice*	Klug, 1832		NA	Sinai Grayling	Arabistan Karameleği
002820	*Erebia aethiops*	(Esper, 1777)		LC	Scotch Argus	İskoç Güzelesmeri
002830	*Erebia graucasica*	Jachontov, 1909	(NrE)	LC	Caucasian Ringlet	Kafkas Güzelesmeri
002840	*Erebia hewitsonii*	Lederer, 1864	(NrE)	LC	Hewitson's Ringlet	Laz Güzelesmeri
002850	*Erebia iranica*	Groum-Grshimailo, 1895		DD	Persian Ringlet	Acem Güzelesmeri
002860	*Erebia medusa*	([Dennis & Schiffermüller], 1775)		LC	Woodland Ringlet	Orman Güzelesmeri
002870	*Erebia melancholica*	Herrich-Schäffer, [1846]	(NrE)	NT	Alpine Ringlet	Mecnun Güzelesmer

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002880	*Erebia ottomana*	Herrich-Schäffer, 1847		NT	Ottoman Ringlet	Harem Güzelesmeri
002890	*Proterebia afer*	(Fabricius, 1787)		LC	Steppe Ringlet	Uygur Güzelesmeri
002900	*Arethusana arethusa*	([Dennis & Schiffermüller], 1775)		LC	False Grayling	Seyit
002910	*Brintesia circe*	(Fabricius, 1775)		LC	Great Banded Grayling	Kara Murat
002920	*Chazara persephone*	(Hübner, 1805)		LC	Great Steppe Grayling	Step Cadısı
002930	*Chazara bischoffi*	(Herrich-Schäffer, [1846])		LC	Orange Hermit	Kızıl Cadı
002940	*Chazara briseis*	(Linnaeus, 1764)		LC	The Hermit	Cadı
002950	*Chazara egina*	(Staudinger, 1892)	(E)	LC	Anatolian Hermit	Anadolu Cadısı
002960	*Minois dryas*	(Scopoli, 1763)		LC	Dryad	Kara Hayalet
002970	*Pseudochazara anthelea*	(Hübner, 1824)		LC	White-banded Tawny Rockbrown	Anadolu Yalancı Cadısı
002980	*Pseudochazara thelephassa*	(Geyer, 1827)		LC	Telephassa Grayling	Turan Yalancı Cadısı
002990	*Pseudochazara beroe*	(Herrich-Schäffer, [1844])		LC	Freyer's Tawny Rockbrown	Dağ Yalancı Cadısı
003000	*Pseudochazara geyeri*	(Herrich-Schäffer, 1846)		LC	Geyer's Tawny Rockbrown	Geyer'in Yalancı Cadısı
003010	*Pseudochazara lydia*	(Staudinger, 1878)	(E)	LC	Lydian Tawny Rockbrown	Lidya Yalancı Cadısı
003020	*Pseudochazara mamurra*	(Herrich-Schäffer, [1846])		LC	Anatolian Tawny Rockbrown	Osmanlı Yalancı Cadısı
003030	*Pseudochazara mniszechii*	(Herrich-Schäffer, 1851)		LC	Tawny Rockbrown	Step Yalancı Cadısı
003040	*Pseudochazara pelopea*	(Klug, 1832)		LC	Klug's Tawny Rockbrown	Levantin Yalancı Cadısı
003050	*Pseudochazara schakuhensis*	(Staudinger, 1881)		DD	Persian Tawny Rockbrown	İran Yalancı Cadısı
003060	*Pseudochazara guriensis*	(Staudinger, [1878])		DD	Georgian Tawny Rockbrown	Gürcistan Yalancı Cadısı
003070	*Satyrus amasinus*	Staudinger, 1861		LC	Amasian Satyr	Beyaz Damarlı Piri Reis
003080	*Satyrus iranicus*	Schwingenschuss, 1939		LC	–	İran Pirireisi
003090	*Satyrus favonius*	Staudinger, 1892		LC	Anatolian Satyr	Anadolu Piri Reisi
003100	*Satyrus ferula*	(Fabricius, 1793)		LC	Great Sooty Satyr	Haşmetli Piri Reis
003110	*Satyrus parthicus*	Lederer, 1869		NT	Caspian Satyr	Hazer Piri Reisi
003120	*Hyponephele kocaki*	Eckweiler, 1978	(NrE)	DD	Koçak's Steppe Brown	Koçak'ın Esmer Perisi
003130	*Hyponephele cadusia*	(Lederer, 1869)		LC	Iranian Steppe Brown	İran Esmer Perisi
003140	*Hyponephele urartua*	de Freina & Aussem, [1987]	(E)	VU	Urartuan Steppe Brown	Urartu Esmer Perisi
003150	*Hyponephele wagneri*	(Herrich-Schäffer, [1846])		LC	Wagner's Steppe Brown	Ağrı Esmer Perisi
003160	*Hyponephele naricoides*	Gross, 1977	(E)	LC	Staudinger's Steppe Brown	Çöl Esmer Perisi
003170	*Hyponephele lupina*	(Costa, [1836])		LC	Oriental Steppe Brown	Esmer Peri
003180	*Hyponephele lycaon*	(Kühn, 1774)		LC	Dusky Steppe Brown	Küçük Esmer Peri
003190	*Pyronia cecilia*	(Vallantin, 1894)		DD	Southern Gatekeeper	Sesilya
003200	*Maniola halicarnassus*	Thomson, 1990	(NrE)	EN	Halicarnas Brown; Thomson's Meadow Brown	Halikarnas Esmeri
003210	*Maniola jurtina*	(Linnaeus, 1758)		LC	Meadow Brown	Çayır Esmeri
003220	*Maniola megala*	(Oberthür, 1909)	(NrE)	LC	Larger Meadow Brown	Büyük Esmer
003230	*Maniola telmessia*	(Zeller, 1847)		LC	Eastern Meadow Brown	Doğu Çayır Esmeri
003240	*Pyronia tithonus*	(Linnaeus, 1767)		LC	Gatekeeper	Pironiya
003250	*Coenonympha arcania*	(Linnaeus, 1761)		LC	Pearly Heath	Funda Zıpzıp Perisi
003260	*Coenonympha glycerion*	(Borkhausen, 1788)		LC	Chestnut Heath	Orman Zıpzıp Perisi
003270	*Coenonympha leander*	(Esper, 1784)		LC	Russian Heath	Rus Zıpzıp Perisi
003280	*Coenonympha pamphilus*	(Linnaeus, 1758)		LC	Small Heath	Küçük Zıpzıp Perisi
003290	*Coenonympha saadi*	(Kollar, [1849])		LC	Saadi's Heath	İran Zıpzıp Perisi
003300	*Coenonympha symphyta*	Lederer, 1870	(NrE)	NT	Lederer's Heath	Kafkasya Zıpzıp Perisi
003310	*Coenonympha phryne*	(Pallas, 1771)		DD	Siberian Brown	Sibirya Perisi
003320	*Kirinia climene*	(Esper, 1783)		LC	Iranian Argus	Kaya Esmeri
003330	*Kirinia roxelana*	(Cramer, 1777)		LC	Lattice Brown	Ağaç Esmeri
003340	*Lasiommata maera*	(Linnaeus, 1758)		LC	Large Wall Brown	Esmer Boncuk
003350	*Lasiommata megera*	(Linnaeus, 1767)		LC	Wall Butterfly	Küçük Esmer Boncuk
003360	*Lasiommata menava*	Moore, 1865		NA	Sooty Argus	Türkistan Esmer Boncuğu

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003370	*Lasiommata petropolitana* (Fabricius, 1787)		LC	Northern Wall Brown	Orman Esmer Boncuk
003380	*Pararge aegeria* (Linnaeus, 1758)		LC	Speckled Wood	Karanlık Orman Esmeri
003390	*Ypthima asterope* (Klug, 1832)		LC	African Ringlet	Karagöz
003400	*Carcharodus lavatherae* (Esper, 1783)		LC	Marbled Skipper	Mermer Zıpzıpı
003410	*Carcharodus stauderi* Reverdin, 1913		LC	Stauder's Skipper	Cezayir Zıpzıpı
003420	*Carcharodus flocciferus* (Zeller, 1847)		LC	Tufted Marbled Skipper	Tüylü Zıpzıp
003430	*Carcharodus orientalis* Reverdin, 1913		LC	Oriental Marbled Skipper	Oriyental Zıpzıp
003440	*Carcharodus alceae* (Esper, 1780)		LC	Mallow Skipper	Hatmi Zıpzıpı
003450	*Erynnis marloyi* (Boisduval, 1834)		LC	Inky Skipper	Kara Zıpzıp
003460	*Erynnis tages* (Linnaeus, 1758)		LC	Dingy Skipper	Paslı Zıpzıp
003470	*Muschampia plurimacula* (Christoph, 1893)		NT	Maculated Skipper	Benekli Zıpzıp
003480	*Muschampia poggei* (Lederer, 1858)		LC	Pogge's Skipper	Pogge'nin Zıpzıpı
003490	*Muschampia proto* (Ochsenheimer, 1808)		LC	Sage Skipper	Akdeniz Zıpzıpı
003500	*Muschampia proteides* (Wagner, 1929)		LC	Anatolian Skipper	Anadolu Zıpzıpı
003510	*Muschampia tessellum* (Hübner, [1803])		LC	Tessellated Skipper	Mozayik Zıpzıp
003520	*Pyrgus aladaghensis* de Prins & van der Poorten, 1995	(E)	DD	Aladag Skipper	Aladağ Zıpzıpı
003530	*Pyrgus alveus* (Hübner, 1803)		LC	Large Grizzled Skipper	Büyük Boz Zıpzıp
003540	*Pyrgus armoricanus* (Oberthür, 1910)		LC	Oberthur's Grizzled Skipper	İspanyol Zıpzıpı
003550	*Pyrgus bolkariensis* de Prins & van der Poorten, 1995	(E)	DD	Bolkar Skipper	Bolkar Zıpzıpı
003560	*Pyrgus carthami* (Hübner, 1813)		NA	Safflower Skipper	Nadir Zıpzıp
003570	*Pyrgus cinarae* (Rambur, 1839)		LC	Sandy Grizzled Skipper	Güzel Zıpzıp
003580	**Pyrgus cirsii* (Rambur, 1839)		DD	Cinquefoil Skipper	Beşparmakotu Zıpzıpı
003590	*Pyrgus jupei* (Alberti, 1967)		LC	Caucasian Skipper	Kafkasya Zıpzıpı
003600	*Pyrgus malvae* (Linnaeus, 1758)		LC	Grizzled Skipper	Ebegümeci Zıpzıpı
003610	*Pyrgus melotis* (Duponchel, [1834])		LC	Aegean Skipper	Ege Zıpzıpı
003620	*Pyrgus serratulae* (Rambur, 1839)		LC	Olive Skipper	Zeytuni Zıpzıp
003630	*Pyrgus sidae* (Esper, 1784)		LC	Yellow-banded Skipper	Sarıbantlı Zıpzıp
003640	*Spialia orbifer* (Hübner, 1823)		LC	Red Underwing Skipper	Kızıl Zıpzıp
003650	*Spialia osthelderi* (Pfeiffer, 1932)		EN	Osthelder's Skipper	Osthelder'in Zıpzıpı
003660	*Spialia phlomidis* (Herrich-Schäffer, 1845)		LC	Persian Skipper	Acem Zıpzıpı
003670	*Eogenes alcides* Herrich-Schäffer, [1852]		LC	Alcides Skipper	Alsides Zıpzıpı
003680	*Eogenes lesliei* Evans, 1926		DD	Pakistani Skipper	Pakistan Zıpzıpı
003690	*Gegenes nostrodamus* (Fabricius, 1793)		DD	Mediterranean Skipper	Nostrodamus
003700	*Gegenes pumilio* (Hoffmannsegg, 1804)		LC	Pygmy Skipper	Cüce Zıpzıp
003710	*Pelopidas thrax* (Hübner, 1821)		LC	Millet Skipper	Beyaz Çilli Kara Zıpzıp
003720	*Hesperia comma* (Linnaeus, 1758)		LC	Silver-spotted Skipper	Gümüş Benekli Zıpzıp
003730	*Ochlodes venatus* (Esper, 1777)		LC	Large Skipper	Orman Zıpzıpı
003740	*Thymelicus acteon* (Rottemburg, 1775)		LC	Lulworth Skipper	Sarı Lekeli Zıpzıp
003750	*Thymelicus hyrax* (Lederer, 1861)		LC	Levantine Skipper	Levantin Zıpzıpı
003760	*Thymelicus lineolus* (Ochsenheimer, 1808)		LC	Essex Skipper	Siyah Antenli Zıpzıp
003770	*Thymelicus novus* (Reverdin, 1916)		LC	New Skipper	Yeni Zıpzıp
003780	*Thymelicus sylvestris* (Poda, 1761)		LC	Small Skipper	Sarı Antenli Zıpzıp
003790	*Carterocephalus palaemon* (Pallas, 1771)		NA	Chequered Skipper	Sarı Benekli Zıpzıp
003800	*Heteropterus morpheus* (Pallas, 1771)		NA	Large Chequered Skipper	Beyaz Benekli Zıpzıp

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IUCN Guidelines: Categories and Criteria

For detailed information please refer to the Guidelines at IUCN's website:

- IUCN Red List Categories and Criteria Version 3.1 (2001): http://www.iucnredlist.org/documents/redlist_cats_crit_en.pdf
- Guidelines for Application of IUCN Red List Criteria at Regional Levels, Version 3.0: http://www.iucnredlist.org/documents/reg_guidelines_en.pdf

Glossary of IUCN terminology used in assessments

Population and Population Size (Criteria A, C and D): Population is here defined as the total number of individuals of the taxon. For functional reasons, primarily owing to differences between life forms, population size is measured as numbers of mature individuals only.

Subpopulations (Criteria B and C): Subpopulations are defined as geographically or otherwise distinct groups in the population between which there is little demographic or genetic exchange.

Mature individuals (Adults) (Criteria A, B, C and D): The number of mature individuals is the number of individuals known, estimated or inferred to be capable of reproduction.

Reduction (Criterion A): A reduction is a decline in the number of mature individuals of at least the amount (%) stated under the criterion over the time period (years) specified, although the decline need not be continuing.

Continuing decline (Criteria B and C): A continuing decline is a recent, current or projected future decline (which may be smooth, irregular or sporadic) which is liable to continue unless remedial measures are taken.

Extreme fluctuations (Criteria B and C): Extreme fluctuations can be said to occur in a number of taxa when population size or distribution area varies widely, rapidly and frequently, typically with a variation greater than one order of magnitude (i.e. a tenfold increase or decrease).

Severely fragmented (Criterion B): The phrase 'severely fragmented' refers to the situation in which increased extinction risk to the taxon results from the fact that most of its individuals are found in small and relatively isolated subpopulations (in certain circumstances this may be inferred from habitat information). These small subpopulations may go extinct, with a reduced probability of recolonization.

Extent of occurrence (EOO) (Criteria A and B): Extent of occurrence is defined as the area contained within the shortest continuous imaginary boundary which can be drawn to encompass all the known, inferred or projected sites of present occurrence of a taxon, excluding cases of vagrancy. In this study EOO was calculated using records since 1980. Unsuitable geographical features (e.g. sea) were excluded.

Area of occupancy (AOO) (Criteria A, B and D): Area of occupancy is defined as the area within its 'extent of occurrence' which is occupied by a taxon, excluding cases of vagrancy. The measure reflects the fact that a taxon will not usually occur throughout the area of its extent of occurrence, which may contain unsuitable or unoccupied habitats. AOO was calculated according to the number of 10x10 km UTM squares the species has been recorded from since 1980, using expert opinion to make a spatial adjustment for the estimated average occupancy of each square, down to a minimum of 4 km^2.

Location (Criteria B and D): The term 'location' defines a geographically or ecologically distinct area in which a single threatening event can rapidly affect all individuals of the taxon present. The size of the location depends on the area covered by the threatening event and may include part of one or many subpopulations. Where a taxon is affected by more than one threatening event, location should be defined by considering the most serious plausible threat.

IUCN Red List categories for regional assessments

Regionally Extinct (RE): Category for a taxon when there is no reasonable doubt that the last individual potentially capable of reproduction within the region has died or has disappeared from the wild in the region, or when, if it is a former visiting taxon, the last individual has died or disappeared in the wild from the region. The setting of any time limit for listing under RE is left to the discretion of the regional Red List authority, but should not normally pre-date 1500 AD.

Critically Endangered (CR): A taxon is Critically Endangered when

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the best available evidence indicates that it meets any of the criteria A to E for Critically Endangered, and it is therefore considered to be facing an extremely high risk of extinction in the wild.

Endangered (EN): A taxon is Endangered when the best available evidence indicates that it meets any of the criteria A to E for Endangered, and it is therefore considered to be facing a very high risk of extinction in the wild.

Vulnerable (VU): A taxon is Vulnerable when the best available evidence indicates that it meets any of the criteria A to E for Vulnerable, and it is therefore considered to be facing a high risk of extinction in the wild.

Near Threatened (NT): a taxon is Near Threatened when it has been evaluated against the criteria but does not qualify for Critically Endangered, Endangered or Vulnerable now, but is close to qualifying for or is likely to qualify for a threatened category in the near future.

Least Concern (LC): a taxon is Least Concern when it has been evaluated against the criteria and does not qualify for Critically Endangered, Endangered, Vulnerable or Near Threatened. Widespread and abundant taxa are included in this category.

Data Deficient (DD): a taxon is Data Deficient when there is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status. A taxon in this category may be well studied, and its biology well known, but appropriate data on abundance and/or distribution are lacking. Data Deficient is therefore not a category of threat. Listing of taxa in this category indicates that more information is required and acknowledges the possibility that future research will show that threatened classification is appropriate. It is important to make positive use of whatever data are available. In many cases great care should be exercised in choosing between DD and a threatened status. If the range of a taxon is suspected to be relatively circumscribed, and a considerable period of time has elapsed since the last record of the taxon, threatened status may well be justified.

Not Applicable (NA): this applies to a taxon deemed to be ineligible for assessment at a regional level. A taxon may be NA because it is not a wild population or not within its natural range in the region, or because it is a vagrant to the region. It may also be NA because it occurs at very low numbers in the region (i.e. when the regional Red List authority has decided to use a 'filter' to exclude taxa before the assessment procedure) or the taxon may be classified at a lower taxonomic level (e.g. below the level of species or subspecies) than considered eligible by the regional Red List authority. In contrast to other Red List categories, it is not mandatory to use NA for all taxa to which it applies; but it is recommended for taxa where its use is informative.

Not Evaluated (NE): a taxon is Not Evaluated when it has not yet been evaluated against the criteria.

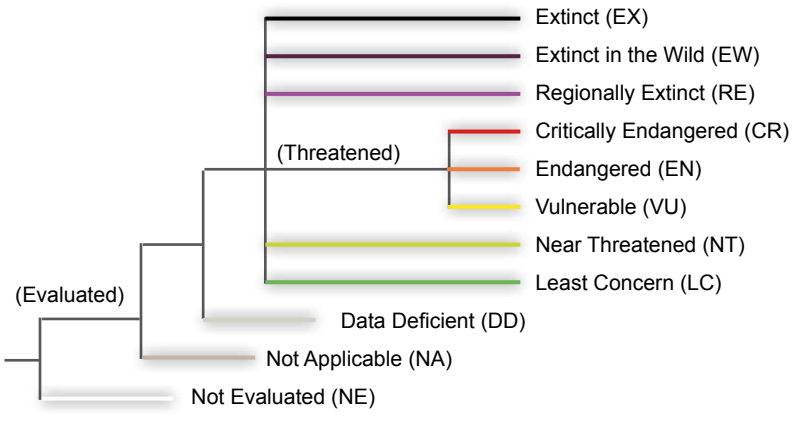

Figure 2. Structure of the categories at regional level

Summary of the five criteria (A-E) used to evaluate if a taxon belongs in a threatened category (Critically Endangered, Endangered or Vulnerable). The criteria that could not be used for evaluating Turkish butterflies are shown in brackets.

Use any of the criteria A-E	**Critically Endangered**	**Endangered**	**Vulnerable**
A. Population reduction	Declines measured over the longer of 10 years or 3 generations		
A1	> 90%	> 70%	> 50%
A2, A3 & A4	> 80%	> 50%	> 30%

A1. (NOT USED IN TURKISH RED LIST)
Population reduction observed, estimated, inferred, or suspected in the past where the causes of the reduction are clearly reversible AND understood AND ceased based on and specifying any of the following:

(a) direct observation
(b) an index of abundance appropriate to the taxon
(c) a decline in area of occupancy (AOO), extent of occurrence (EOO) and/or habitat quality
(d) actual or potential levels of exploitation
(e) effects of introduced taxa, hybridisation, pathogens, pollutants, competitors or parasites.

A2. (NOT USED IN TURKISH RED LIST)
Population reduction observed, estimated, inferred, or suspected in the past where the causes of reduction may not have ceased OR may not be understood OR may not be reversible, based on any of (a) to (e) under A1

A3. Population reduction projected or suspected to be met in the future (up to a maximum of 100 years) based on any of (b) to (e) under A1.

A4. (NOT USED IN TURKISH RED LIST)
An observed, estimated, inferred, projected or suspected population reduction (up to a maximum of 100 years) where the time period must include both the past and the future, and where the causes of reduction may not have ceased OR may not be understood OR may not be reversible, based on any of (a) to (e) under A1.

B.	**Geographic range in the form of either B1 (extent of occurrence) OR B2 (area of occupancy)**			
B1.	Either extent of occurrence	< 100 km^2	< 5,000 km^2	< 20,000 km^2
B2.	or area of occupancy	< 10 km^2	< 500 km^2	< 2,000 km^2
and 2 of the following 3:				
(a) severely fragmented or # locations		= 1	≤ 5	≤ 10

(b) continuing decline in (i) extent of occurrence (ii) area of occupancy, (iii) area, extent and/or quality of habitat, (iv) number of locations or subpopulations and (v) number of mature individuals.
(c) extreme fluctuations in any of (i) extent of occurrence, (ii) area of occupancy, (iii) number of locations or subpopulations and (iv) number of mature individuals.

C. Small population size and decline			
Number of mature individuals and either C1 or C2:	< 250	< 2,500	< 10,000
C1. An estimated continuing decline of at least up to a maximum of 100 years	25% in 3 years or 1 generation	20% in 5 years or 2 generations years	10% in 10 years or 3 generations
C2. A continuing decline and (a) and/or (b)			
(a i) # mature individuals in largest subpopulation	< 50	< 250	< 1,000
(a ii) or % mature individuals in one subpopulation	= 90-100%	95-100%	100%
(b) extreme fluctuations in the number of mature individuals			
D. Very small or restricted population			
Either (1) number of mature individuals	< 50	< 250	< 1,000
or (2) restricted area of occupancy	na	na	typically: AOO < 20km^2 or # locations ≤5
E. Quantitative Analysis (NOT USED IN TURKISH RED LIST)			
Indicating the probability of extinction in the wild to be at least	50% in 10 years or 3 generations (100 years max)	20% in 20 years or 5 generations (100 years max)	10% in 100 years

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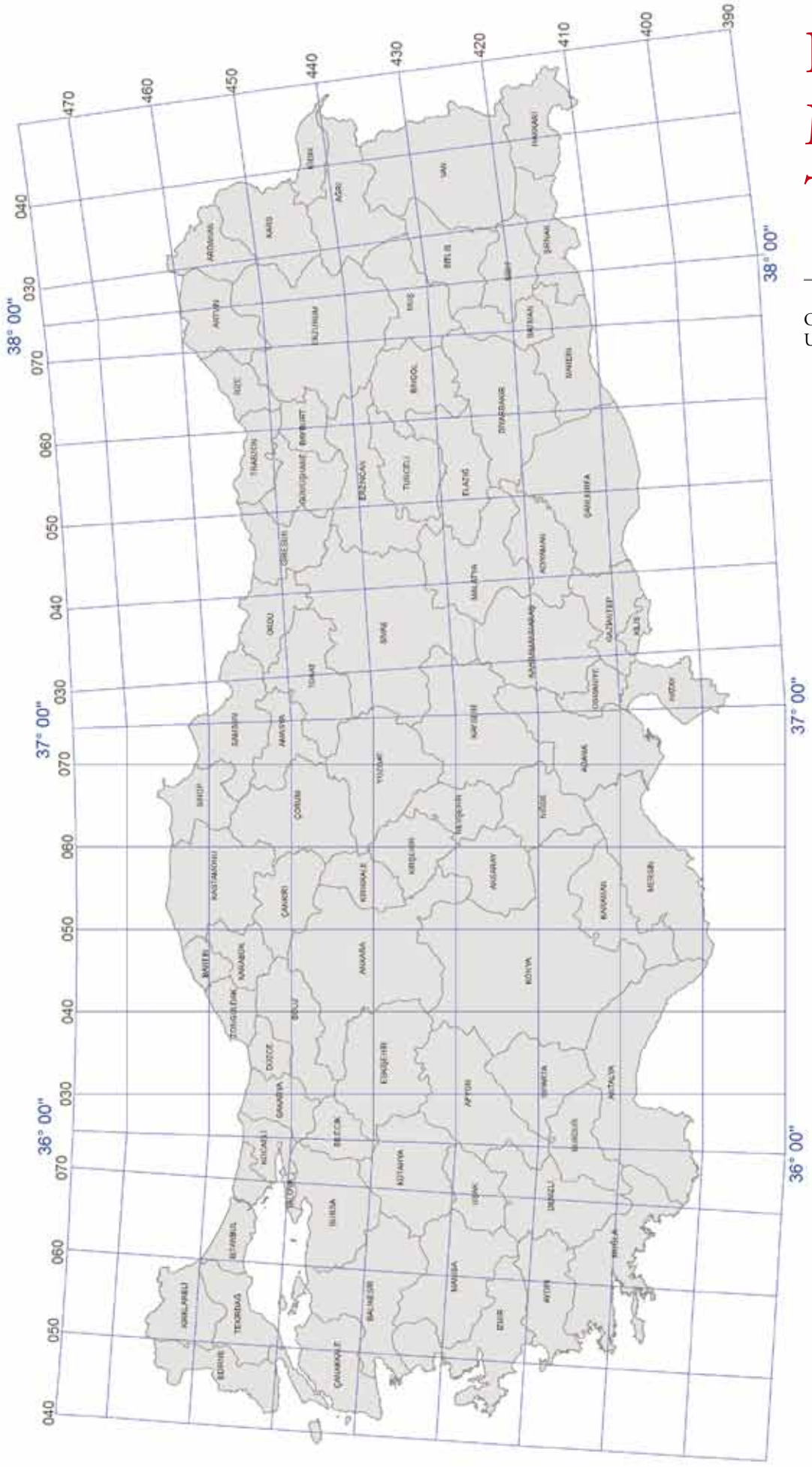
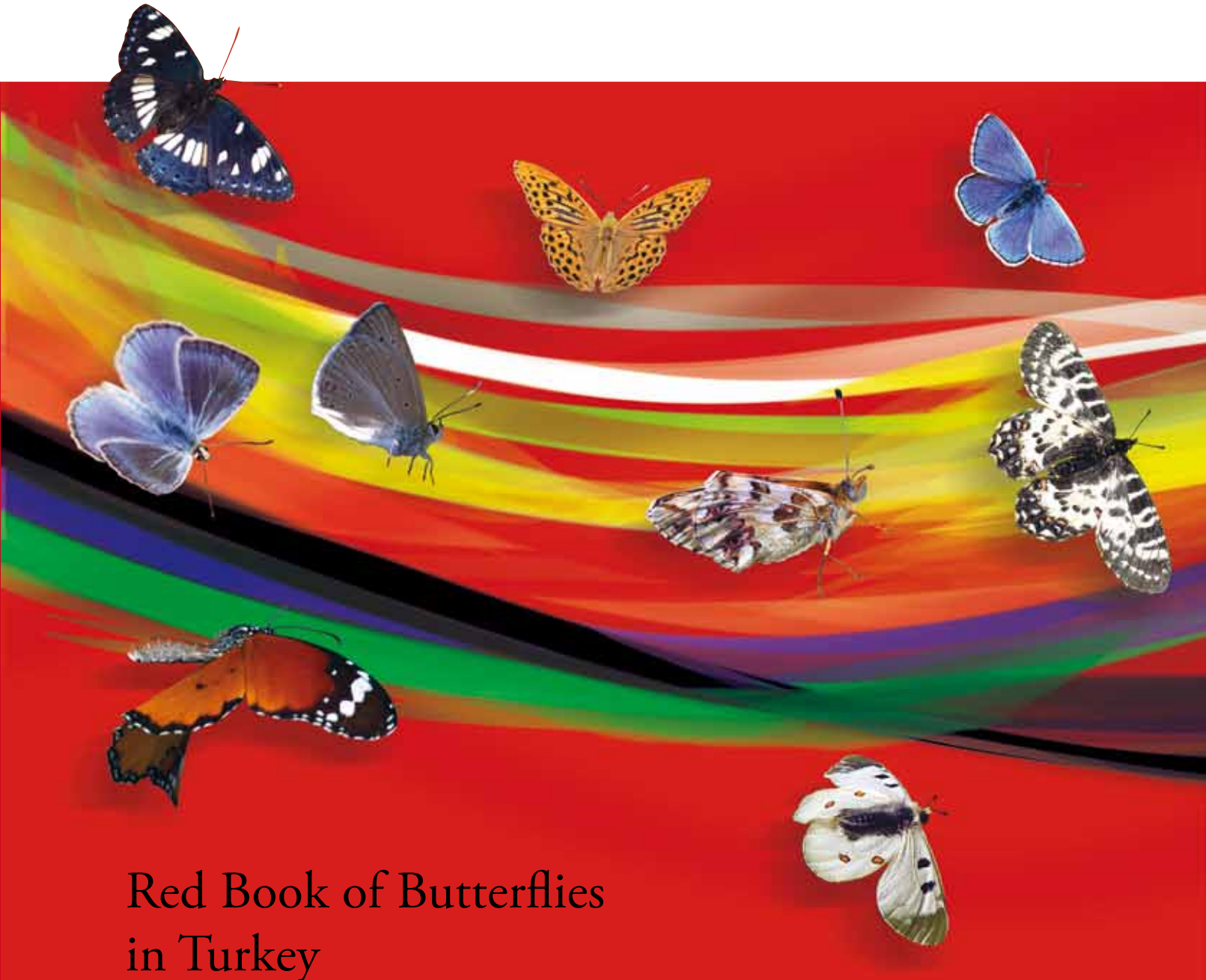
Province Map of Turkey



Overlaid with the UTM grid.



Red Book of Butterflies in Turkey

Evrim Karaçetin & Hilary J. Welch

In a country as important for butterflies as Turkey –with around 380 species, 45 of them endemic and another 21 very nearly so– conserving butterflies is evidently a priority. But, in a world of limited resources and a need to invest wisely to ensure the best conservation return, where should one start? This Red Book of Butterflies in Turkey, painstakingly researched and compiled with the active support of almost 40 national and international experts, scientists and butterfly watchers, identifies the priority species and presents profiles of 95 of Turkey's most threatened and little known butterflies. This important book is the first step towards effective butterfly conservation, and will inspire anyone with a serious interest in butterflies.

DOĞA KORUMA MERKEZİ
NATURE CONSERVATION CENTRE

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