



Activity report for 2008

Introduction

Welcome to the third activity report of Butterfly Conservation Europe, which covers the fourth year since the organisation was formed in late 2004. Following the highly successful Inaugural Meeting in October 2007, a total of 35 organisations from 32 countries have become Network Partners, creating a unique body of expertise to help stem and reverse the decline of butterflies and moths across Europe. Each of these partners have conducted major research and conservation projects during the year, most of which are outside the scope of this report. A full list of partners and links to their websites is given on the BC Europe website: website www.bc-europe.org

A key development during the year has been the publication of two projects aimed at identifying and predicting the impact of climate change on butterflies. The Climatic Risk Atlas of European butterflies is the first comprehensive attempt to quantify the impact of climate change on butterflies, while the Climate Change Indicator attempts to quantify what changes have already occurred in populations of butterflies. These studies show that climate change has already had a major impact on butterflies and is likely to have an even bigger impact in the future, even under the most optimistic climate change scenarios.

The results are extremely worrying and show that climate change could be disastrous for many European species. However, it is not too late to take action that would help. We need to expand our conservation effort and place far more emphasis on maintaining large, diverse populations on existing habitats while re-connecting habitats to allow species to move across the landscape. We need to work closely with farmers and planners to achieve this, together with well resourced and targeted agri-environment schemes and enlightened planning policies.

This is my last year as Chairman and I am pleased to be handing over this role to Dr Josef Settele, one of Europe's leading Lepidoptera researchers based at UFZ in Germany. I am sure you will join me in congratulating Josef on this appointment and wish him well in the role. I would like to thank everyone for their help and support in the early stages of the organisation. I will be remaining on the Board and look forward to working with you in the future.

Dr Martin Warren

Chairman, Butterfly Conservation Europe

Governance

BC Europe continues to be run by a small governing board comprising: Dr Martin Warren (Chairman), Dr Theo Verstrael (Secretary), Dr Dirk Maes (Treasurer), Dr Josef Settele, Martina Sasic, Dr Rudi Verovnik. The Board has appointed three advisers: Chris van Swaay (General adviser) Irma Wynhoff (General adviser) and Sue Collins (European Policy Adviser). The Board has met twice during the year and has corresponded regularly between meetings by email and telephone.

Second meeting of partners

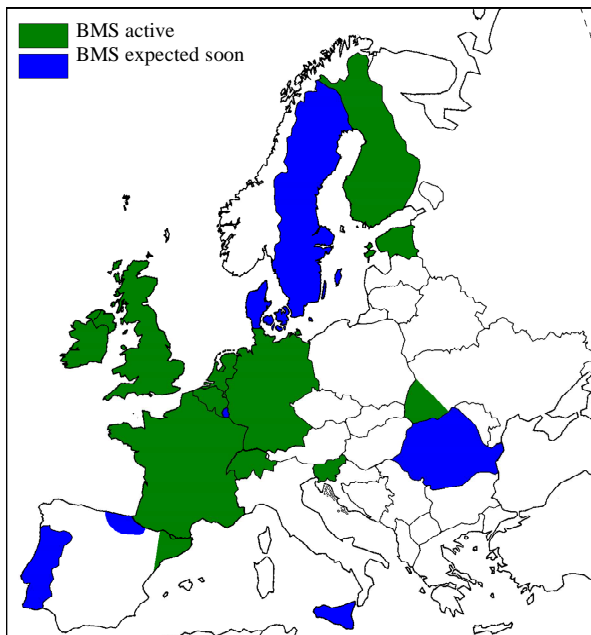
The second meeting of BC Europe partners has been arranged and will be held at Laufen in January 2009. The meeting will be split into two parts: the first dealing with the new draft Red List of European butterflies; the second dealing with BC Europe plans and activities. We are extremely grateful to IUCN for providing funds for part of the meeting and to ANL, the Bayerische Akademie für Naturschutz und Landschaftspflege, for hosting the meeting and providing funds to help cover the costs of delegates.

Projects

Numerous projects have been started under the BC Europe umbrella or involve the organisation in an advisory capacity:

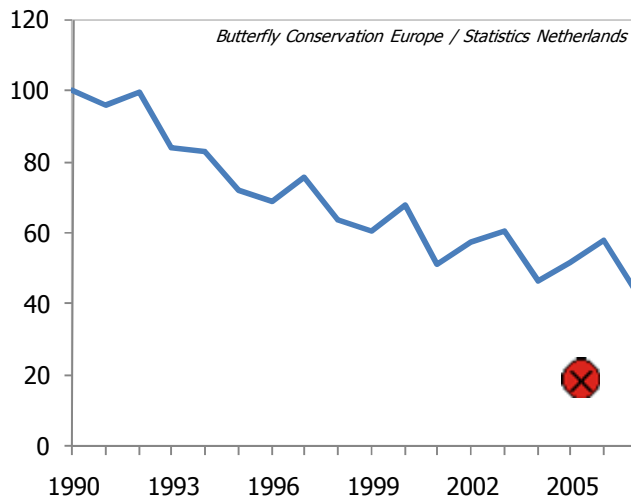
Update of the European Grassland Butterfly Indicator

Chris van Swaay has continued to represent BC Europe on the Streamlining European Biodiversity Indicators (SEBI 2010) group run by the EU Topic Centre on Nature Conservation. The aim is to develop a suite of indicators that will assess progress towards the EU target of halting biodiversity loss by 2010. During 2006, we successfully developed a provisional index of trends in grassland species, drawing data from 2000 sites in 11 national monitoring schemes, all using the standardised transect monitoring protocols (European Environment Agency, 2007; Swaay, 2007). The schemes involve over 2000 volunteers who walk the equivalent of the circumference of the earth each year recording butterflies! This is equivalent to around €3 million of volunteer effort (based on €90/day volunteer rate).



Butterfly Monitoring Schemes (BMS) in Europe

The results were updated in 2008 and show that populations of the 17 characteristic grassland species have continued to decline. Overall they have been reduced in numbers by 60 % in 17 years (see Figure below).



The European Grassland Butterfly Indicator shows a strong decline: since 1990 numbers have dropped by almost 60%, outweighing the small annual variations, mainly caused by weather effects. The traffic light is red, indicating a deteriorating situation (from van Swaay & Van Strien, 2008).

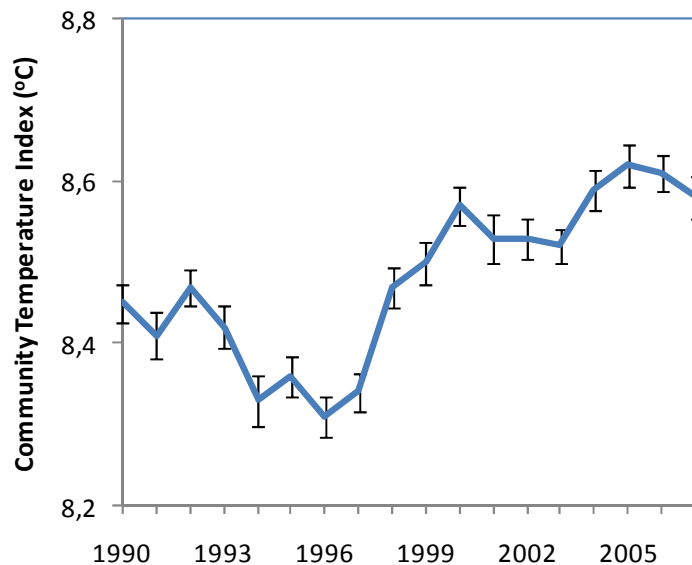
Developing a European Butterfly Climate Change Indicator.

Through our Partners at Dutch Butterfly Conservation, we produced a report investigating the possibility of building a European Butterfly Climate Change Indicator. We tested four different methods using long running data from Finland, United Kingdom, Netherlands and Catalunya (Spain). Two of the methods proved inconclusive because of methodological problems and time lags between cause and effect. However, one method showed clear and dramatic results. It uses the annual change of the Community Temperature Index (CTI), calculated following the method of Devictor *et al.* (2008).

The results show a clear upward trend over the 18 years from 1990 to 2007, with an annual change in the CTI of 0.0138 °C (0.0142 °C if weighted by area of the countries). As a comparison: in the Netherlands the temperature has risen with 0,0389 °C per year from 1970-2007. This is two to three times as fast as the butterfly community could move north.

Devictor *et al.*, 2008 reported a shift of the CTI of French birds of 91 ± 11 km from 1988-2006, corresponding to 86 km over seventeen years. Using the same method for butterflies the shift corresponds to 206 ± 148 km in the United Kingdom and 125 ± 62 km in the Netherlands in the seventeen years between 1990 and 2007. Thus butterflies seem to be responding even faster than birds, probably due to their endothermic nature which bounds them more to temperature regimes than exothermic birds.

The annual change of CTI is a good candidate to build a European Butterfly Climate Change Indicator, using data from all European Butterfly Monitoring Schemes. The report provides only a first test of the indicator and many unanswered questions remain. However we believe the results demonstrate the great potential for a butterfly indicator of climate change for Europe.



Temporal trend of the CTI (\pm standard error) in Europe (represented by Catalunya, Netherlands, United Kingdom and Finland), weighted by area of the country (from Van Swaay *et al.*, 2008)

Climatic Risk Atlas of European Butterflies

Climate change will have a major impact on European butterflies and many species have already expanded their ranges northwards in recent decades. However, climate change poses a risk to many species which may be unable to spread due to natural habitat limitations (e.g. montane species) or habitat fragmentation. The Atlas is the first attempt at a comprehensive analysis of how the climate space of butterflies (i.e. the suitable climatic niche occupied by each species) might shift under three scenarios of climate change.

The Atlas has been produced by researchers at Helmholtz Centre for Environmental Research (UFZ) in Germany under the EU ALARM project with input from BC Europe representatives (Settele *et al.*, 2008). The climate models were based on the comprehensive distribution maps produced by the Mapping European Butterflies project run by Dr Otakar Kudrna (Kudrna, 2002).

The Atlas shows that climate change will bring a new and severe threat to Europe's butterflies. It states that some climate change is inevitable and that even under the most conservative estimates this will force many butterflies to shift their distributions radically or face extinction. As butterflies are already facing huge losses following decades of habitat loss and changing management, the new risk of climate change is extremely serious. The fragmentation of habitat, combined with the low mobility of many species, means that species will struggle to track the available climate space as it shifts northwards with climate change.

Under the worst case scenario the average European temperature is predicted to increase by 2.4 °C by 2080 and 74% of the 294 species modelled in the analysis would lose more than 50% of their current climatic niche (the climate space that they currently live in). Even under the best case scenario the temperature would increase by 4.1 °C and 15% would lose 50% of their current range by 2080 (Settele *et al.*, 2008).

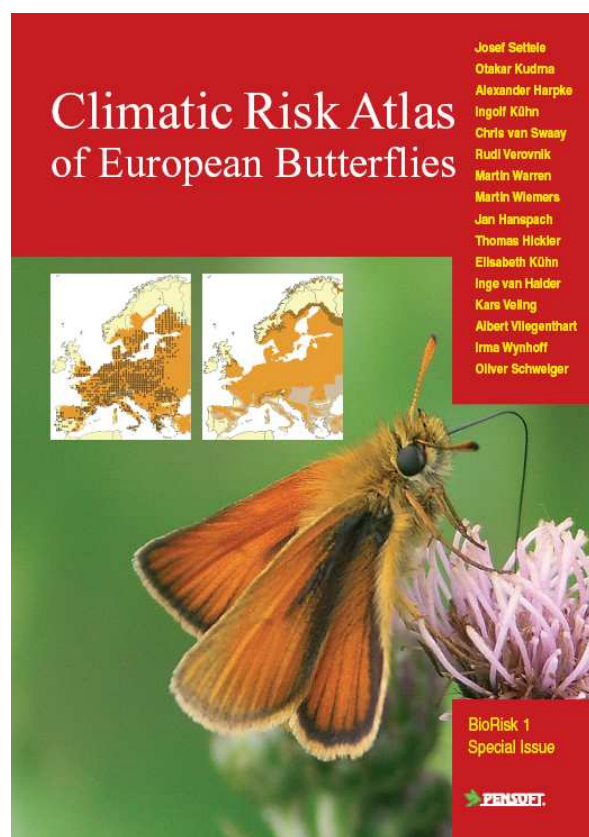
A special briefing on the Atlas findings was held with EU officials and policy makers on 27th November 2008. This was followed by a European-wide Press Release issued in December.

Dr Josef Settele, the chief author, said “The atlas shows for the first time how the majority of European butterflies might respond to climate change. It indicates that most species will have to shift their distribution radically to keep pace with the climate space that they are adapted to live in. We believe that the results are especially relevant because the way butterflies change indicates the possible response of many other insects, which collectively comprise over two-thirds of all species.”

Dr Ladislav Miko, Director of Nature Conservation at the EU Environment Directorate in Brussels, said “We strongly welcome this important study which helps us understand how species might respond to climate change. The evidence points to a radical change in species’ distribution, which we must plan for within future European policies. The results also show the enormous scientific value of records from thousands of volunteers across Europe.”

Butterfly Conservation Europe will use the findings of the Atlas to lobby for better policies to conserve butterflies and other wildlife. Strong policy recommendations were included in the book, including

- 1) The need to maintain large populations in diverse habitats that may allow species to adapt and disperse
- 2) Encourage mobility across the landscape by restoring habitats and creating links between habitats
- 3) Reduce emissions of greenhouse gases, because this will greatly reduce the risk
- 4) Allow maximum time for species adaptation
- 5) Conduct further research on climate change and its impacts on biodiversity



The Atlas is published a special issue of BioRisk, a new open-access journal of biodiversity and environmental sciences and an online version can be viewed at www.pensoft.net/biorisk. Copies are available at €59 softback and €89 hardback.

Prime Butterfly Areas of Serbia.



This project ran from 2006-8 and aims are to identify and describe the most important sites for butterflies (Prime Butterfly Areas) in Serbia and identify threats and conservation measures needed. The project is funded by the BBI- MATRA programme of the Dutch Ministry for the Environment and is run with HabiProt, a newly formed NGO whose remit is habitat protection and sustainable development. The main contact is Predrag Jaksic.

The project finished in December 2008 with the publication of the book on Prime Butterflies in Serbia. The launch of this book was accompanied by a communication campaign to bring the importance of butterflies and butterfly conservation to the managers and policy makers of Serbia.

Butterfly Conservation (UK) volunteers

The European Interest Group of Butterfly Conservation (UK) was established in 2006 to co-ordinate the activities of BC Members in Europe and support the work of BC Europe. During 2008, two highly successful study trips were run to Mount Chelmos in the Greek Peloponnese, and to the Aggtelek and Bukk National Parks in Hungary. Reports of the trips are given on: www.bc-eig.org.uk. Further trips are planned for 2009 and details can be obtained from Simon Spencer cerisyi@btinternet.com.

Bioscore

This project runs from 2006-9. Its aim is to develop a tool for monitoring progress in achieving the EU target to halt the loss of biodiversity by 2010 and for linking pressures from policy sectors to the (change in the) state of biodiversity as measured by the presence and abundance of individual species. The tool will be made freely accessible on the Internet. BC Europe is an associate partner in the project. The main contact is Dirk Maes dirk.maes@inbo.be. Website: www.ecnc.nl/StateOfEuropeanNatur/Bioscore

Alarm

This project runs from 2004-9. Its aims are to develop an integrated large-scale risk assessment for biodiversity as well as terrestrial and freshwater ecosystems as a part of environmental risk assessment, linking these with factors such as climate change and socio-economic risk indicators to derive outcome-oriented policy measures in the field of biodiversity preservation. BC Europe is an associate partner in the project and in charge of the butterfly elements of the projects Focal Site Network, where standard butterfly transects are conducted. The main BCE contact and overall project coordinator is Josef Settele Josef.Settele@ufz.de website: www.alarmproject.net/alarm

Policy work

BC Europe has continued to make substantial contributions to policy making within Europe thanks to the voluntary work of Sue Collins, European Policy Advisor: icoll49@aol.com. We have contributed knowledge and advice about butterflies and moths to inform policy development and implementation at EU level, both directly to EU officials and in collaboration with European Networks such as the European Habitats Forum (EHF).

We have continued to support the Countdown 2010 initiative to halt the loss of biodiversity by 2010 and worked with EHF to develop a long term vision for biodiversity to 2050. We led a workshop, with DG Environment and Planta Europa, at the Countdown 2010 Partners Assembly in Bonn to promote a positive vision for biodiversity beyond 2010 and develop

specific targets for recovery. Biodiversity conservation is a test of sustainable development and losses of biodiversity are an indicator of the wider stresses on the planet. We believe that healthy ecosystems underpin economic and social welfare and much more understanding and action is needed by governments and others to deliver these.

We continued to lobby DG Environment to ensure compliance with the Habitats Directive in Bulgaria. As a result the Bulgarian government revised their list of Natura 2000 sites, and included all but one of the sites identified by us as in need of protection in our Prime Butterfly Area report published in 2007. The challenge now is to secure implementation of the protective requirements of the Directive.

We are working with RSPB and Birdlife International to improve the protection and recovery of butterflies and moths as well as other elements of biodiversity through reform of the Common Agriculture Policy. Three priorities for reform are

- 1) To increase the funding, extent and effectiveness of agri-environment schemes.
- 2) To make use of CAP “envelope” monies to support farming systems which deliver benefits for biodiversity.
- 3) To re-direct Less Favoured Area support to High Nature Value (HNV) farming (e.g. extensive livestock systems which are important for biodiversity).

Another key area of work has been to promote the importance of butterflies as indicators. We are delighted that the Grassland Butterfly Indicator has been accepted as one of the indicators for the implementation of the EU Biodiversity Communication. The results of butterfly monitoring and the publication of the grassland indicator demonstrate the pressing need for better implementation of existing commitments to integrate environmental protection into agriculture policy as well as further agricultural reform. We strongly advocate better protection of permanent pasture (especially semi-natural grassland) through proper enforcement of cross compliance and Environmental Impact Regulations.

We have also emphasised the synergies between biodiversity protection and climate change adaptation strategy, particularly the need to increase the connection between habitats and create more extensive habitat mosaics which increase ecosystem resilience and the capacity of species to adapt in the face of climatic pressures. The publication of the recent Climatic Risk Atlas for Butterflies and Climate Change Indicator (see above) adds to the scientific evidence for strong climate change adaptation strategies and provides a focus for future work by BC Europe.

We welcomed the publication of the EU Communication on the Implementation of the EU Biodiversity Action Plan in December. This shows some progress but demonstrates that the target of halting biodiversity loss will not be achieved by 2010 and illustrates starkly the need for much more effective action both by EU Member States and at EU level in order to reach the target and start the much needed process of biodiversity recovery.

Sue Collins, European Policy Advisor, said “ Grassland butterflies continued to suffer serious declines across Europe. Grassland habitats are particularly threatened. She welcomed the Commission’s review and called on European Governments to do more to halt biodiversity declines. Farming practices need to change to give better protection to extensively managed semi-natural grasslands and to recreate mosaics of habitat across the landscape. More of the EU CAP funds need to be transferred into rewarding delivery of these public goods. This will become even more important as the potent threat of climate change intensifies.”

The EU Commission published their Review of the implementation at EU level and country by country of the EU Biodiversity Action Plan on 17 December. The Official Report with detailed country by country annexes is available at the following link:

http://ec.europa.eu/environment/nature/biodiversity/comm2006/bap_2008.htm

Funding

We still have limited funding to run the organisation and most costs have so far been borne by the Board member organisations. However, we urgently need to expand our activities and it is critical that we secure funds. Unfortunately, our application for core funding from the EU failed due to a technicality and we are considering applying for other EU funds in 2009. We are also exploring some other funding possibilities.

In addition to the funds raised for the Laufen meeting, we have successfully raised funds under the BBI-Matra programme of the Dutch Ministry for the Environment for major three year projects to identify the Prime Butterfly Areas in Turkey

References and selected publications by Butterfly Conservation Europe and its partners.

Devictor, V., Julliard, R., Couvet, D. & Jiguet, F. (2008). Birds are tracking climate warming, but not fast enough. *Proc. R. Soc. B*.

EEA (2008). *Impacts of Europe's changing climate — 2008 indicator-based assessment*. EEA Report No 4/2008, JRC Reference Report No JRC47756

Kudrna, O. (2002). *The Distribution Atlas of European Butterflies*. Apollo Books.

Schweiger, O., Settele, J., Kudrna, O., Klotz, S. and Kühn, I. (2008) Climate change can cause spatial mismatch of trophically interacting species. *Ecology* (in press).

Settele, J., Kudrna, O., Harpke, A., Kühn, I., Van Swaay, C.A.M., Verovnik, R., Warren, M.S., Wiemers, M., Hanspach, J., Hickler, T., Kühn, E., Van Halder, I., Veling, K., Vliegenthart, A., Wynhoff, I. & Schweiger, O. (2008) *Climatic Atlas of European Butterflies*. Pensoft, Sofia.

Van Strien, A.J., Pavert, R. van de, Moss, D., Yates, T.J., Swaay, C.A.M. van & Vos, P. (1997). The statistical power of two butterfly monitoring schemes to detect trends. *Journal of Applied Ecology* **34**, 817-828

Van Swaay, C.A.M. & Van Strien, A.J. (2008) *The European Butterfly Indicator for Grassland species 1990-2007*. Report VS2008.022, De Vlinderstichting, Wageningen

Van Swaay, C.A.M., Van Strien, A.J., Julliard, R., Schweiger, O., Brereton, T., Heliölä, J., Kuussaari, M., Roy, D.B., Stefanescu, C., Warren, M.S., & Settele, J. (2008) *Developing a methodology for a European Butterfly Climate Change Indicator*. Report VS2008.040, De Vlinderstichting, Wageningen.

Van Swaay, C.A.M., Nowicki, P., Settele, J. & Strien, A.J. van (2008). Butterfly monitoring in Europe: methods, applications and perspectives. *Biodiversity and Conservation* **17**, 3455–3469

www.bc-europe.org

Report compiled by
Dr Martin Warren
12 January 2008