Fifth Meeting of Partners

Recording and monitoring butterflies across Europe

ANL conference centre, Laufen, Germany

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Partner summaries

(alphabetical order by country)

In association with

Protection of *Polyommatus myrrha cinyraea* in Armenia: a summary

Karen Aghababyan, Butterfly Conservation Armenia

Introduction

Polyommatus myrrha is distributed in the Anatolian province in Turkey and Zangezur Mountains of Transcaucasia. The last area, which includes two countries – Armenia and Nakhichevan, is inhabited by endemic subspecies *cinyraea* described by Nekrutenko & Effendi, 1979. The subspecies is known from just two populations in the world: one is located in Armenia and another in Nakhichevan. The species is found in rocky subalpine grasslands at 2200-2500 m a.s.l. The host plant of the species is very specific *Cicer* species, which grows only in specific screes on dry grassland slopes. *Polyommatus cinyraea* begins flight in mid-July and is on wing until early August, when males move down to the water, while females keep staying in vicinity of the host plant.

Population

The species was found in Armenia in 1997. The area was visited regularly, which allows understanding of distribution range of the species and its relative abundance, however the information is insufficient for the calculation of its population trend. The total distribution range of the current population of *Polyommatus cinyraea* is less than a hectare. The abundance of the species is relatively low and demonstrates a significant decline, especially in 2017. The small population of its host plant is also decreasing. It should be mentioned that the host plant appears to be very capricious, and prefers only screes made by fairly small stones; the number of such screes is very limited. Recently, another potential threat is appearing: the construction of Hydro Power Plant in the gorge has started but did not take this unique butterfly species into consideration.

Conservation

The species has not been evaluated for the IUCN Red List or the Red Book of Animals of Armenia. Also it is not listed in CITES, and in Bern Convention. The distribution range of the species is included in Zangezur Biosphere Complex, however the status of the land refers to a state sanctuary, which allows implementation of such projects as construction of HPP in the gorge. Important conservation steps are:

- Strengthening of the population of its host plant via artificial planting and creating more appropriate micro-habitats for the plant;
- Detailed study of distribution and abundance, and better understanding biological peculiarities of *Polyommatus cinyraea* ;
- evaluation of conservation status of the species and its subspecies for IUCN Red List;
- strengthening conservation status of the land and its protection regime;
- securing obligatory Environmental Impact Assessment of all the business and land use projects in the gorge; popularization of the area for butterfly-watching and creation of alternative income opportunities for local people.

Implemented conservation steps are:

- the gorge inhabited by *Polyommatus cinyraea* is recognized as Prime Butterfly Area Kajaran.
- the butterfly-watching trail Voghchi subalpine was designed.

Prime Butterfly Area Kajaran

The area is inhabited by 109 species, 48% of total number of species in Armenia. Two of the species included in IUCN Red List, 10 species are included in the European Red List, 6 species are included in National Red Data Book, as well as some regional endemics that require further assessment of their conservation status. Some species of national and international concern are: *Carcharodus orientalis, Parnassius apollo, Colias thisoa, Maculinea arion, Hyponephele lycaonoides, Pseudochazara beroe, Pseudochazara daghestana zangezura, and others.*

Activities for Butterflies in Austria - 2017

Manfred Pendl
OGEF, Austrian Society of Entomofaunistics

FFH Monitoring

Regarding for the preparation of the Austrian report in accordance with Article 17 of the Habitats Directive five species were focused in 2017. The following species were mapped, in order of the Environmental Agency Austria (UBA), representing the 9 states of Austria: *Coenonympha oedippus* (only two populations remained in Lower Austria and Vorarlberg); *Coenonympha hero* (only one population in Tirol); *Zerynthia polyxena* (in Lower Austria, Vienna, Burgenland, Styria); *Parnassius apollo* (only in the continental region) and *Eriogaster catax* (Vienna, Lower Austria, Burgenland). These and the already mapped species results will be used for the FFH report in 2019.

***E. catax* mapping *in* Vienna:** Range of distribution remained unchanged with respect to the last mapping. The variation in the number of caterpillar nests found may have been more due to extreme weather conditions in the spring of 2017.

New Butterfly Recording APP

The App with the title "Schmetterlinge Österreichs"(Butterflies of Austria) started in Mai 2016, with 140 species of butterflies for selection. At the end of the same year, 5,767 pictures were submitted, 82.5% butterflies, 18.5% moth. 108 species were recorded, with the most common being *Vanessa atalanta*, *Inachis io* and *Pieris rapae*.
By 30.11.2017, 31,974 entries were received via the app. In spring it was called for the count of male specimens of *Anthocharis cardamines,* where in two months 90 records contributed by 55 people/users. In addition, a garden butterfly count was performed in the time window (13.7-6.8), with 2,500 people/users reported 12,005 individuals and 112 species.
A number of publications have been carried out by the Foundation "Blühendes Österreich" and Global 2000 (NGO), which are behind this project, e.g. report on the causes and numbers of threatened Austrian butterflies; year-end reports on the inputs of butterfly sightings; etc.:

https://schmetterlingsapp.at/;
https://www.global2000.at/sites/global/files/Report_Ausgeflattert_2017.pdf;
https://www.global2000.at/sites/global/files/Schmetterlingsreport_0.PDF

ABOL – Austrian Barcode OF LIFE

In the group of butterflies, four new projects were launched in 2017, two in Vorarlberg, one in Lower Austria (NOENO-Noctuoidea of Lower Austria) and the DNA Barcoding of the "butterflies of Austria" (https://www.abol.ac. at/)

BINATS II

The project **BINATS** (**BI**odiversity-**NAT**ure-**S**afety) was assigned and financed by the Austrian Federal Ministries of Health and the Agriculture, Forestry, Environment and Water Management and was carried out between 2006 and 2009. The BINATS biodiversity network was developed as a tool for the detection and evaluation of potential unintended effects of genetically modified plants (GMPs) across the whole Austrian agricultural region. BINATS is the first national monitoring and evaluation network of the European Member States which is methodically focused on GMPs. It allows for estimating site-specific biodiversity related risks of GMP cropping even in advance of their release. Moreover, it provides a database that represents the fundamental prerequisite for detecting long-term effects of GMPs. Within BINATS, we searched for indicators that represent larger functional groups (e. g. primary producers, herbivores, pollinators) which are correlated to the diversity of as much un-surveyed taxonomic groups as possible and moreover respond sensitively and rapidly to changes in agrarian regions and which are particularly relevant to the GMP topic due to specific hypothesized risks. Based on a cost-benefit calculation four indicators

were finally chosen: habitat structures, vascular plants, butterflies and grasshoppers. After ten years, the biodiversity survey will be carried out again in 2017 (50 test areas in the maize cultivation areas) and 2018 (50 test areas in the rapeseed cultivation areas). In addition, wild bees are considered as another indicator in the new survey (BINATS II).

Further information in:
Pascher K., Moser D., Dullinger S., Sachslehner L., Gros P., Sauberer N., Traxler A. & Frank, T. (2010): Biodiversität in österreichischen Ackerbaugebieten im Hinblick auf die Freisetzung und den Anbau von gentechnisch veränderten Kulturpflanzen. Bundesministerium für Gesundheit, Sektion II.:
https://forschung.boku.ac.at/fis/suchen.projekt_uebersicht?sprache_in=de&menue_id_in=300&id_in=11362

New Publication regarding citizen science in Vienna is available:
The dissertation titled "Citizen Science on the Lepidoptera Fauna in Vienna" was designed to answer following questions: Are the citizens ready for butterfly monitoring?, what butterfly diversity can be expected in gardens?, and can gardens make a potential contribution to conservation issues?

Pendl M. (2017): Citizen Science anhand der Lepidoptera-Fauna in Wien. Erfassungsmethoden, Abundanzen und Monitoring von Tagfaltern in urbanen Lebensräumen und ihre Bedeutung für den Naturschutz. Diss. Universität für Bodenkultur.

Interreg Project Slovakia-Austria
In 2018 "Global 2000" an Austrian NGO, will start a project with partners from Slovakia and a number of strategic partners in both countries to maintain and protect butterflies in the corridor between Vienna and Bratislava. Many activities will carry out, e.g. creating stepping stones and nectar habitats, or nature trails.

Butterfly conservation activities in Flanders (northern Belgium)

Dirk Maes

Monitoring

Regular butterfly transects

Flanders started with butterfly monitoring as early as 1991, but only a couple of transects are still counted since then (± 10) and newly started transects are rather rare. Although few, the data are incorporated in the European Butterfly Monitoring Scheme data base (eBMS).

Species specific monitoring

For threatened or regionally important species, a species specific reduced monitoring scheme has been developed (Table 1). This implies that only three visits are paid to the known localities during the peak of the flight season. For some species, traditional butterfly transects are not feasible, because of their low abundance. Here, egg counts or timed site searches are used as an alternative.

Table 1 Species in Flanders for which a species specific monitoring scheme has been developed.

Species	N sites	Type	Method
Apatura iris	9	Completely	Site search
Cyaniris semiargus	1	Completely	Transects
Erynnis tages	4	Completely	Transects
Hesperia comma	11	Completely	Site search
Hipparchia semele	65	Random stratified sample	Transects
Lasiommata megera	55	Random stratified sample	Transects
Maculinea alcon	7	Completely	Egg counts
Melitaea cinxia	10	Completely	Transects
Pyrgus malvae	4	Completely	Transects
Pyronia tithonus	>500	Random stratified sample	Transects
Satyrium ilicis	13	Completely	Egg counts(difficult)

We are also sampling three localities in Belgium for the European genetic monitoring project on the Meadow Brown (*Maniola jurtina*) by Tom Olliver and Matthew Greenwell.

Research

The research on butterflies in Flanders focuses on the genetics of some rare species (*Maculinea alcon* - Vanden Broeck et al. 2017; *Plebejus argus* in 2018). The genetic research on *Maculinea alcon* will be continued in 2018 with museum specimens (from the Royal Belgian Institute of Natural Sciences in Brussels) to determine whether genetic diversity has declined compared to the period 1930-1960. We also addressed some more methodological issues about modelling future butterfly distributions under climate change (Titeux et al. 2017) and the use of citizen science data in trend analyses (Vantieghem et al. 2017). Finally, we have been doing some modelling in Belgium, the Netherlands and the UK to determine the most suitable source landscapes for the reintroduction of the Chequered Skipper in England (Maes et al. in prep).

References

Maes D., Ellis S., Bourn N.A.D., Cruickshanks K.L., van Swaay C.A.M., Goffart P., Cors R., Herremans M., Swinnen K.R.R., Wils C., Verhulst S., De Bruyn L. & Matthysen E. in prep. Species distribution modelling as a tool to locate possible source populations for the reintroduction of the the Chequered Skipper in England.

Titeux N., Maes D., Van Daele T., Onkelinx T., Heikkinen R.K., Romo H., García-Barros E., Munguira M.L., Thuiller W., van Swaay C.A.M., Schweiger O., Settele J., Brotons L. &

Luoto M. 2017. The need for large-scale distribution data to estimate regional changes in species richness under future climate change. Diversity and Distributions 23: 1393-1407. 10.1111/ddi.12634

Vanden Broeck A., Maes D., Kelager A., Wynhoff I., WallisDeVries M.F., Nash D.R., Oostermeijer J.G.B., Van Dyck H. & Mergeay J. 2017. Gene flow and effective population sizes of the butterfly *Maculinea alcon* in a highly fragmented, anthropogenic landscape. Biological Conservation 209: 89-97. 10.1016/j.biocon.2017.02.001

Vantieghem P., Maes D., Kaiser A. & Merckx T. 2017. Quality of citizen science data and its consequences for the conservation of skipper butterflies (Hesperiidae) in Flanders (northern Belgium). Journal of Insect Conservation 21: 451-463. 10.1007/s10841-016-9924-4

Butterfly monitoring and conservation activities in Wallonia (Southern Belgium)

Philippe Goffart, DEMNA, Gembloux, Belgium

Monitoring

Since 1990, we have an extensive program aimed at the monitoring of Red List species in the region. It is organised as a 6-year-cycle, synchronised with the N2000 reporting, in which the majority of the target species known populations are controlled during the species flight periods. There is also a basic monitoring scheme on agri-environmental measures taken in croplands and grasslands, with at least 40 sites, visited 4 times during each season.

The development of methods and tools for biological monitoring is one particular point included in the recent Belgian Integrate Life Project. The target species include a butterfly, the Violet Copper (*Lycaena helle*), for which Wallonia has a great responsibility, giving home to the probably largest populations in Western Europe.

During the 2016 and 2017 springs, we have tested a detectability protocol with 2 to 5 visits at a few dozen known sites in the Ardenne's massif. The results were used to design an ideal monitoring program. However, the very important field effort needed to enforce it prompted us to find another solution. We have studied ways to analyse the increasing amount of citizen opportunistic data with appropriate statistical methods. This gave already encouraging results and the chosen protocol will seek to complete these opportunistic data by targeted visits in under-sampled areas.

Conservation

A "Butterfly" Life+ project started in 2009 in five regions of southern Belgium and has been completed at the end of 2014. It was focussed on the restoration of metapopulations of the March Fritillary, *Euphydryas aurinia*, the Violet Copper, *Lycaena helle*, and the Large Copper, *L. dispar*. In total, more than 600 ha of open habitats were restored. Now, the « after-Life » work focuses on the management of these areas to enhance their suitability for the target butterflies, with some supplementary seed sowing, in addition to mowing and grazing.

References

- Fichefet, V., Barbier, Y., Baugnée, J.-Y., Dufrêne, M., Goffart, Ph., Maes, D. & Van Dyck, H., 2008. Papillons de jour de Wallonie (1985-2007). Publication du Groupe de Travail Lépidoptères *Lycaena* et du Département de l'étude du milieu naturel et agricole (SPW-DGARNE), série « Faune – Flore – Habitats », n°4, 320 pp.

- Goffart Ph., Cavelier E., Lighezzolo P., Rauw A. & Lafontaine D., 2014. Restoration and management of habitat networks for *Lycaena helle* in Belgium. *In* Habel J.Chr., Meyer M. & Schmitt T. (eds), Jewels In The Mist : A synopsis on the endangered Violet Copper butterfly *Lycaena helle,* Article XI, Pensoft Publishers, pp. 197-216. (ISBN 978-954-642-721-2)

- Le projet Life Papillons : reconstitution d'un réseau d'habitats de papillons menacés en Région wallonne (BE). Rapport final : bilan de 6 années en faveur de 3 espèces de papillons menacés. http://www.life-papillons.eu/

- Red list species monitoring and conservation : philippe.goffart@spw.wallonie.be https://www.researchgate.net/profile/Philippe_Goffart - http://biodiversite.wallonie.be/fr/papillons.html?IDC=797

- Agri-environmental measures butterfly monitoring : claude.dopagne@natagriwal.be - https://www.biogeonet.ulg.ac.be/

News on Butterfly Monitoring and Conservation in Bulgaria

Zdravko Kolev

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Bulgaria has a rich butterfly fauna, numbering ca. 217 species of which 47 are of conservation concern according to IUCN criteria and 16 are protected by national legislation. Institutionalized butterfly research is hamstrung by the severe underfinancing of the public sector, which is exacerbated by the lack of traditions in systematized research of butterfly ecology and population biology and the generally low popularity of butterflies among Bulgarians.

My personal efforts have been directed at capacity building and eventually creating a nation-wide butterfly monitoring network. Although recording under Article 17 of Natura 2000 species is officially called "monitoring", but its frequency (once every six years) is inadequate and the results obtained in the first period (2007-2013) do not inspire confidence in the representativeness and effectiveness of the recording scheme. On the other hand, some of the most vulnerable and even endangered Bulgarian butterflies, e.g. the Dusky Large Blue (*Phengaris nausithous*), have been left out of the Natura 2000 network altogether, as a 2010 proposal for including its unique populations near Sofia in a dedicated Natura protected area has been ignored by the government.

In my talk I showcase three personal initiatives for butterfly capacity-building in Bulgaria:

1. The launching, in 2006, of the website www.butterfliesofbulgaria.com, which overcame the lack of an accessible, authoritative and up-to-date source on Bulgarian butterflies.
2. The launching, in recognition of the growing importance of social media for shaping up an active butterfly enthusiast community, of the Facebook group "Bulgarian butterflies and moths" (https://www.facebook.com/groups/122766351094491/?ref=group_header). The group currently has over 270 members, from complete amateurs to internationally recognized experts and professionals, and a growing active nucleus of young enthusiasts with rapidly improving butterfly identification skills.
3. The implementation, in 2014-2016, of the project "The Living Black Sea Gold" financed by EEA Grants Programme BG03 Biodiversity and ecosystem services, BG03.SGS: *Development of a nation-wide education and awareness campaign through volunteer action and supporting activities,* in partnership with Pomorie municipality. The goal was to test the feasibility of creating a self-sustaining system for engaging and training young volunteers through their schoolteachers and extracurricular activities. The main output was a bespoke *"Guide for monitoring biodiversity"* authored by me with standard monitoring guidelines. This is Bulgaria's first such guide, and it was reviewed and approved for use in schools by the Executive Agency for the Environment and the Ministry of Education.

I also mention two personal projects for clarifying the status of little-known butterfly species of conservation concern, such as:

1. The False Ringlet, *Coenonympha oedippus*, not recorded for over a century and considered extinct without a proper assessment.
2. The Bavius Blue, *Pseudophilotes bavius*, a new species for Bulgaria discovered after several years of dedicated search. The new population is ecologically remarkable, owing to the first recorded use of *Salvia pratensis* in the wild as well as the abnormally late flying period (mid-June till mid-July).

Butterflies of Croatia

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Recent activities of the Lepidoptera group working on the EU Natura 2000 Integration Project (NIP) were gathering new distribution data and setting up species monitoring on 124 sites across Croatia. The level of knowledge has raised considerably but we are still missing the information on the species trends as the project finished after two years. Nevertheless, future monitoring plans will help us to understand impacts of change; particularly how habitat loss and climate change is affecting our butterflies.

Different studies are going on to get additional data on several unstudied areas in Croatia and to fulfil the current database with new distribution records. Even the data collecting has been sporadic and uneven, with some areas receiving more attention than other does, the checklist of butterflies has been published and we managed to assess the species threat status and publish the Red Book of threatened butterflies. The results showed that about 25% of Croatia's butterfly fauna is of conservation concern. The main causes of declines thought to be changes in rural land use, especially agricultural intensification on some areas and land abandonment due to demographic changes and economic transition on other. In 2017, we held a monitoring training for the employees of the protected areas and carried on few monitoring projects for *Lycaena dispar* and *Phengaris* spp.

Also in 2017 we started a 5-year project of DNA barcoding of Croatian biodiversity (CroBarFauna) funded by the Croatian Science Foundation with primary goal of studying the amount and geographical distribution of the genetic diversity of selected animal groups including Lepidoptera by using DNA barcoding methodology, flagging species for further taxonomic, phylogenetic and phylogeographic studies.

Establishment of national database of genetic biodiversity will contribute to the global level and enriching international data basis (BOLD and GenBank) with DNA barcodes of not yet represented taxa and taxa from this underrepresented geographic region.

Cyprus Butterfly Study Group

Eddie John

The Cyprus Butterfly Recording Scheme continues to expand our knowledge of butterfly distribution throughout the entire island. Contributors to the scheme now number 238, a figure that includes records from published sources, from residents and from visitors to Cyprus. Distribution maps at 5 x 5km resolution will be published in the near future.

Publications
A peer-reviewed paper, with four contributing authors, describing the life-history and possible bivoltinism of the Cyprus endemic lycaenid, *Glaucopsyche paphos* (Paphos Blue) is timed for publication early in 2018. Please contact me for further information if required: eddiejohn100@mail.com

Updated information on all breeding butterflies of Cyprus was published in an extensive (117-page) chapter on Butterflies and Moths in a new 895-page book: 'An Introduction to the Wildlife of Cyprus' (David J Sparrow and Eddie John, Eds.), which includes work from 44 contributing authors. The butterfly section was written by Eddie John, with that on moths contributed by a Danish specialist, Bjarne Skule. For the moth section, it was not possible to do more than provide examples from various families, but an exception was made for the family Sphingidae (Hawkmoths), which, because they account for many enquiries to the study group, are fully illustrated in larval and adult form. Almost matching these in terms of enquiries are those concerning the processionary larvae of *Thaumetopoea wilkinsoni* (Pine Processionary Moth) and the large spring aggregations of *Ocnogyna clathrata cypriaca* that follow mass egg-laying by the wingless female of this species.

The following link provides additional information on this *non-profit-making* book:
http://www.cyprusbutterflies.co.uk/page7.html

Situation of butterflies and moths in the Czech Republic

Zdeněk Faltýnek Fric & Alois Pavlíčko

In total, 3,429 species of Lepidoptera, including 161 species of butterflies, were recorded from the landlocked country Czech Republic (=Czechia) (Laštůvka & Liška 2011). However, according the new Red Data book published by Hejda et al. (2017), 437 species of Lepidoptera (101 species of butterflies!) are listed in any of the Red List categories and 53 species (17 species of butterflies) in the country are extinct. Also 35 species of Lepidoptera are protected by law. The situation is in better investigated groups like butterflies or burnet moths more critical, more than half of the species are threatened. This suggests that the number of threatened species may be in the less popular groups highly underestimated.

The situation of Lepidoptera in the Czech Republic stands on three pillars: 1) academic research, 2) conservation by professional conservationists as well as larger NGO and 3) large army of amateurs, from insect collectors to nature photographs, supplying distribution records, biological observations and the current situation and experiences. None of the pillars can work without the other ones and therefore once per year, we organize “Lepidopterological colloquium”, i.e. meeting of Czech and Slovak butterfly and moth enthusiasts from all three pillars.

In cooperation of the three pillars, we run mapping of species´ distribution (1,314,227 records), monitoring of endangered species as well as monitoring of species inhabiting protected areas. Whereas conservation on national scale is organized by Nature Conservation Agency of the Czech Republic, a governmental body dependent on Ministry of Environment, the local activities like habitat management are run by local NGO. Currently it operates one national Action plan for *Euphydryas maturna*, and it monitors other Habitat Directive species. Regional action plan for *Pseudophilotes baton* is under preparation. The Agency also organizes monitoring of protected species and protected areas.

Whereas the situation of the Habitat Directive species generally did not change, several other species are in danger of extinction. Together with massive habitat management and genetic investigations of the population structure, we decided to run rescue breeding for several species likely going to extinct – *Chazara briseis*, *Hyponephele lycaon* and *Polyommatus dorylas*. We have found that the situation in *Ch. briseis* is very critical, a large proportion of eggs is not properly developed and a significant portion of eclosed adults is crippled. Austrian stock under the same environment does not show any of these problems.

We have found that the current population represents several haplotypes related, but not to be identical, to Austria and to the most distributed Euro-Asian haplotype. Contrary to the other areas, Czech population of *Ch. briseis* is infected by *Wolbachia*.

Report for Butterfly conservation meeting. Estonia.

Anu Tiitsaar and Toomas Tammaru, on behalf of numerous colleagues
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In Estonia, the **butterfly monitoring** project has been running since 2004 when we started with seven transects. The project is being continued as a part of Estonian national monitoring scheme, with the 14th season now completed. Currently we have 14 transects. For the sake of stability and data quality, we rely on professional hired assistance rather than volunteers. As the main result, we here report a stable overall abundance of butterflies in the country.

In 2018, an updated version of Estonian national **Red data book** will be produced. In this connection, we will explicitly assess the status of all Estonian Lepidoptera in accordance to IUCN guidelines. Previous estimation was done in 2008 (https://elurikkus.ut.ee/prmt.php?lang=eng).
In 2016-2017, we conducted a large-scale **butterfly distribution mapping** project, covering the whole country. Over 1200 sites throughout Estonia were visited three times during the season, all encountered butterfly individuals were registered. Besides producing detailed up to date distribution maps for all Estonian butterflies, an aim was to improve the knowledge about protected species and to provide input for the Red data book. The methodology was designed to provide data suitable for scientific analysis of the determinants of butterfly species richness, and habitat preferences of particular species. In particular, all study sites were preselected (using maps and orthophotos), visits were centrally coordinated, and in addition to recording butterflies, the observers estimated habitat parameters. The field work is now completed and preliminary results are available.

Our insect ecology group of the University of Tartu performs various studies related to **butterfly conservation,** see below for references**.** We study local aspects of the in species' ecology (host plant and habitat use) as well as analyse the persistence of butterfly populations in forest landscapes. In the latter context, we focus on the importance of forest clear-cuts as butterfly habitats. Papers are available from the authors upon request.

Recent publications

Lindman, L., Remm, J., Meister, H., Tammaru, T. 2017. Host plant and habitat preference of *Euphydryas maturna* (Lepidoptera: Nymphalidae, Melitaeinae): evidence from northern Europe. - **Ecological Entomology**, in press.

Lindman, L., Remm, J., Saksing, K., Sõber, V., Õunap, E., Tammaru, T. 2015. *Lycaena dispar* on its northern distribution limit: an expansive generalist. - **Insect Conservation & Diversity** 8: 3-16.

Meister, H., Lindman, L., Tammaru, T. 2015. Testing for local monophagy in the regionally oligophagous *Euphydryas aurinia* (Lepidoptera: Nymphalidae). - **Journal of Insect Conservation** 19: 691-702

Tiitsaar, A., Kaasik, A., Lindman, L., Stanevitš, T., Tammaru, T. 2016. Host associations of *Coenonympha hero* (Lepidoptera: Nymphalidae) in northern Europe: microhabitat rather than plant species. - **Journal of Insect Conservation** 20: 265-275

Vilbas, M., Esperk, T., Edovald, T., Kaasik, A., Teder, T. 2016. Oviposition site selection of the Alcon blue butterfly at the northern range margin. - **Journal of Insect Conservation** 20: 1059−1067.

Vilbas, M., Esperk, T., Teder, T. 2016. Host ant use of the Alcon blue butterfly at the northern range margin. - **Journal of Insect Conservation** 20: 879−886.

Vilbas, M., Teder, T.; Tiitsaar, A.; Kaasik, A., Esperk, T. 2015. Habitat use of the endangered parasitic butterfly *Phengaris arion* close to its northern distribution limit. - **Insect Conservation & Diversity** 8: 252−260.

Viljur, M.L. and Teder, T. Disperse or die: colonisation of transient open habitats in production forests is only weakly dispersal-limited in butterflies. Biological Conservation, acceptance pending minor revision.

Viljur, M.-L., Teder, T. 2016. Butterflies take advantage of contemporary forestry: clear-cuts as temporary grasslands. - **Forest Ecology and Management** 376: 118−125.

Results from country BMS: Finland

Mikko Kuussaari, Finnish Environment Institute (SYKE)

The Finnish butterfly monitoring scheme was started in 1999. The scheme is coordinated by Janne Heliölä and Mikko Kuussaari at the Finnish Environment Institute. I will present some summary statistics of the Finnish scheme and results on observed population trends for the first 18 years.

All the Finnish transects are located in agricultural landscapes, because originally the scheme was initiated to monitor Finnish farmland biodiversity. The transects are mostly counted by volunteer amateurs. Typically the length of our transects varies between 2 and 3 km. In recent years the average number of annual counts has varied between 10 and 12 counts per transect covering the total season of ca 16 weeks (May-August) reasonably well. Annually 48-60 transects have been counted, totaling 104 transects during 1999-2016. Forty-two transects have been counted for at least 10 years. In calculating population trends lacking data points are filled in using the TRIM program. Most transect subsections are located in linear habitats such as field margins, forest edges and verges of small roads. Less than 20% of transect subsections go through various kinds of grassland habitats.

So far our scheme has revealed records on ca 900 000 butterfly individuals belonging to 90 species. On average ca 30 species are observed annually within a typical transect. Population trends have been calculated for 45 butterfly species. Moreover, other day-active Macrolepidopterans are also counted on almost 50% of the Finnish transects. A total of 170 000 moth individuals of 325 species have been recorded in the transects during 1999-2016. However, only some 30-40 of these moth species are really common and abundant in the day-time. Population trends have been calculated for 27 moth species. In summary, the Finnish BMS has a good coverage of common butterfly species occurring in field margins, semi-natural grasslands and forest edges, but rare and threatened species only occasionally occur on our transects. A real shortcoming is that the bog specialists and arctic butterfly species are not covered by the Finnish scheme.

Results of the Finnish scheme are reported annually as a press release for media in early August. A written annual report is published in the Finnish Lepidopterological journal Baptria typically in the following spring before the next butterfly season (also available in our web pages: http://www.ymparisto.fi/paivaperhosseuranta). Generally the results of the Finnish scheme have not yet been published as scientific papers with the exception of a few papers based on combining results from several European BMS. Our annual reporting of population trends is based on TRIM. In the calculations only 7 counts are currently taken into account from each monitored transect. During 1999-2016 there has been a slightly decreasing trend in general butterfly abundance (Fig. 1). More species have shown a decreasing (19 species) than an increasing (9 species) trend.

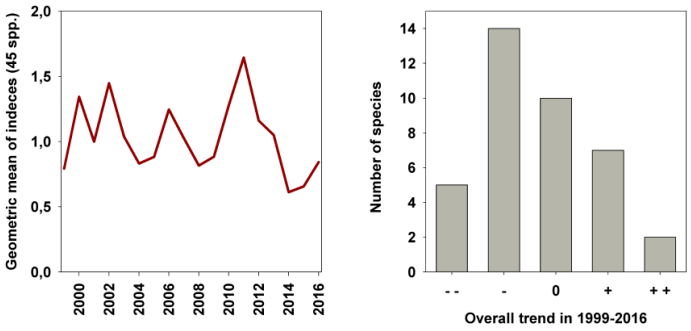

Fig. 1. General trend of butterfly abundance in Finland based on a combined index of 45 species (left) and numbers of species in different trend classes based on TRIM calculated trends (right; excluding 7 species with unclear trend).

What's new in France?

Benoît Fontaine, Muséum national d'Histoire naturelle (Paris)

There are four nationwide Butterfly Monitoring Schemes in France, under the umbrella of Vigie-Nature, the French program of long-term biodiversity monitoring schemes. Each of these butterfly schemes is targeted towards a specific range of observers:

- The **STERF** is the counterpart to most BMS schemes all over Europe, based on repeated sampling of the same areas, with Pollard walks. Monthly visits between May and August are recommended, ie four per year. Since the beginning in 2005, 95 observers covering more than 2500 transects have provided data at least once. In 2016, national trends were produced using the BCE procedure for 111 species.

- The **Opération Papillons** (formerly known as Observatoire des Papillons des Jardins, equivalent to a Garden Butterfly Scheme) is a scheme open to the general public. It is based on a simple protocol, with no constraint on repetition, and a closed list of 28 species and species groups (eg large whites, small blues) observed in gardens. More than 12,000 gardens have provided data for this scheme since 2006.

- Two other protocols, targeting park and green spaces managers (**PROPAGE**) or farmers (**OAB**) are based on Pollard walks along fixed transects, three times a year, with a restricted list of ca. 30 species. Together, they represent ca. 2600 sites which provided data at least once since 2009.

Other major national works in progress regarding butterfly knowledge and conservation are:

- **National atlas of butterflies and burnet moths**, under the umbrella of the Inventaire National du Patrimoine Naturel. Several regional atlases have already been published, the project of national atlas aims at gathering these published data, plus other scattered data, in a publicly accessible web platform (inpn.mnhn.fr – contact: pdupont@mnhn.fr);

- **National Action Plan for butterfly**: under the supervision of OPIE, this action plan aims at setting up a list of priority taxa, according to regulation, endemism and level of threat (38 species were selected), defining a detailed set of possible actions and suggesting a realistic plan to achieve these actions;

- **Regional Red Lists**: several regional red lists have already been published in France, and will be followed by a national Red List.

A special emphasis was made on the interest of schemes open to the general public, such as Opération Papillons, which allow the gathering of huge amounts of data. These may be used to answer specific research questions, and have proved very powerful to assess the impact of environmental changes and management practices on butterfly communities. For instance, cross-scale interactions of landscape and gardening practices on butterflies, as well as the impact of pesticide use on butterflies in private garden were the subject of published studies. Other topics are currently investigated, based on Operation Papillons data, such as analysis of diversity-stability relationship in natural communities, or impact of participation in monitoring schemes on environmental awareness. Last but not least, a new field of research, based on Vigie-Nature monitoring schemes, deals with social sciences and aims at investigating motivations of volunteers, the results of which may be very helpful to design schemes which better fit with volunteer wills.

All the information regarding French nationwide butterfly monitoring schemes can be found on Vigie-Nature website: vigienature.mnhn.fr. Specific sites are: sterf.mnhn.fr, obj.mnhn.fr, propage.mnhn.fr, oab.mnhn.fr

Published studies based on the Opération Papillons data include:

Fontaine, B., Bergerot, B., Le Viol, I. and Julliard, R. 2016. Impact of urbanization and gardening practices on common butterfly communities in France. *Ecology and Evolution*, 00: 1–7. doi: 10.1002/ece3.2526

Olivier, T., Schmucki, R., Fontaine, B., Villemey, A., Archaux, F. 2015. Butterfly assemblages in residential gardens are driven by species' habitat preference and mobility. *Landscape Ecology* 31(4): 865-876. DOI: 10.1007/s10980-015-0299-9.

Muratet A., Fontaine B. 2015. Contrasting impacts of pesticides on butterflies and bumblebees in private gardens in France. *Biological Conservation*, 182: 148-154.

Bergerot B., Fontaine B., Julliard R. & Baguette M., 2010. Landscape variables impact the structure and composition of butterfly assemblages along an urbanization gradient. *Landscape Ecology*, 26: 83-94.

Bergerot, B., Fontaine, B., Renard, M., Cadi, A. & Julliard, R. 2010. Preferences for exotic flowers do not promote urban life in butterflies. *Landscape and Urban Planning,* 96(2): 98-107.

Activities of the Helmholtz Centre for Environmental Research (UFZ; http://www.ufz.de/) and the German Society for Lepidoptera Conservation (GfS; www.ufz.de/european-butterflies/)

Martin Wiemers

The **German Butterfly Monitoring** scheme (TMD; http://tagfalter-monitoring.de/) is now in its 13th year and going well. After an initial strong increase, the number of transects has been relatively stable with just a slight increase during the past 10 years. Key figures from the report for 2016 (Kühn et al. 2017) are: 460 transects were attended by 338 volunteers who counted on average 17 times per year, and walked a total of 3135 km. On these walks, 215,696 butterfly individuals were recorded which belonged to 110 butterfly species, i.e. 75% of Germany's resident butterfly species outside the Alps. Since 2014, the annual reports are published in Oedippus which is now an open access journal published by Pensoft (see https://ebooks.pensoft.net/series.php?ser=1095).
We are also trying to help other countries (e.g. in Romania, Austria and Portugal) to implement butterfly monitoring and have launched a Facebook site on **butterfly monitoring in Europe** (https://www.facebook.com/ButterflyMonitoringEurope/) to exchange information among the European schemes. However, this site needs more activity from our European partners to stay alive.

Our annual **workshop on the population biology of butterflies and burnet moths** enjoys increasing popularity, with a record number of 159 registered participants at the last workshop in Leipzig in February 2017. Many presentations are available for download on the society's website. As a new initiative to gather and disseminate knowledge on how to help conserve **butterflies in gardens**, a new website was launched: https://www.faltergarten.de/.

A current major book project which is now in its final phase after many years of preparations is the first **Distribution Atlas of Butterflies in Germany** (http://www.ufz.de/tagfalter-atlas/). The project is a collaborative effort together with major regional lepidopterological or entomological societies in the different German states and involves about 50 authors. Publication is planned for late 2018 or early 2019. The data and IT developments will also feed into our European **LepiDiv** project (http://www.ufz.de/lepidiv/), which was launched in 2015. The current website version presents distribution maps of the Butterflies in Europe and Asian Turkey in static form (jpeg format) as well as in a Web-GIS version.

Within our collaborative project **sECURE** which is funded by iDiv (https://www.idiv.de/?id=430) and in which many BCE partners are involved, we are currently analyzing the influence of global change on community traits in European butterflies, and our BiodivERsA-funded project **STACCATO** (http://www.staccato-project.net/) includes butterflies as a model group to analyze and evaluate Ecosystem Services in agriculturally dominated landscapes within Europe.

Kühn E, Musche M, Harpke A, Wiemers M, Feldmann R & Settele J (2017). Tagfalter-Monitoring Deutschland: Jahresauswertung 2016. – Oedippus 34: *in press*.

Research for development of management tools for the annex II & IV butterfly species of the habitats directive False Ringlet (*Coenonympha oedippus*) in Bavaria

Markus BRÄU, Robert VÖLKL und Christian STETTMER

In Germany, the False Ringlet (*Coenonympha oedippus*), which is one of the most endangered butterfly species in Europe, survived just at one single site in Bavaria. Since its rediscovery in 1996, the population was annually monitored by transect counts. Since its rediscovery in 1996, several measures have been taken to restore and enlarge the habitats in order to stabilize this population, which initially was very small and vulnerable. While enlargement to the original still open habitat patches with Molinetum-vegetation by removal of scrub resulted in some increase of the population, restoration of wet meadows in close vicinity by annual mowing for soil impoverishment did not lead to the desired spread of the inhabited area.

As a consequence, the Bavarian Academy for Nature Conservation and Landscape Management (ANL) initiated a research project to clarify the species requirements. Several measures aiming to increase habitat and population size did not succeed. Especially oviposition preferences and microhabitats of the premature stages were largely unknown at that time. Observations focusing on oviposition, search for caterpillars and ex situ breeding revealed, that a vegetation structure rich in gaps but with a pronounced litter layer is essential for larval survival. In contrast, regular mowing at any time of the year creates a uniform vegetation structure, which is unfavourable for *C. oedippus*. Even mowing in autumn may produce direct losses, because the larvae stay active until October/November. Moreover, the availability of wintergreen host-plants in close vicinity to the larvae is vital for their survival in spring. For the Bavarian population *Carex panicea* plays a key role as food supply, when the young caterpillars emerge from hibernation long before the growth of the other main host-plant, Purple Moorgras (*Molinia coerula/arundinacea*).

Based on these findings, measures to support the population could be adjusted. Restored meadows with plenty of the local host-plant *Carex panicea* were partially left uncut for accumulation of a litter layer and development of structural heterogeneity. On parcels with high densities of reed, high cutting during flight period of *C. oedippus* showed success, reducing reed and creating new habitats for reproduction. As a project success the size of the existing population could be increased.

High numbers of individuals (mostly pupae) could be produced by ex situ breeding and were successfully used for the re-establishment of a self-supporting new population at a site, where *C. oedippus* was extinct a long time ago.

BRÄU, M., DOLEK, M. & C. STETTMER (2010): Habitat requirements, larval development and food preferences of the German population of the False Ringlet *Coenonympha oedippus* (Fabricius, 1787) (Lepidoptera: Nymphalidae) – Research on the ecological needs to develop management tools.– Oedippus 26.– 41-51.

ČELIK,T., BRÄU, M., BONELLI, S., CERRATO, C., VREŠ, B, BALLETTO, E., STETTMER, C. & M. M. DOLEK (2015) : Winter-green host-plants, litter quantity and vegetation structure are key determinants of habitat quality for *Coenonympha oedippus* in Europe.– J. Insect Conserv. 19: 359-375

BRÄU, M., VÖLKL, R. & C. STETTMER (2016): Entwicklung von Managementstrategien für die FFH-Tagfalterart Moor-Wiesenvögelchen (*Coenonympha oedippus*) in Bayern –
Teil I: Forschungsresultate zur Ökologie der Art.– ANLiegen Natur 38(1), 2016: 59–66
Teil II: Stützungsmaßnahmen und Wiederansiedelung.– ANLiegen Natur, in prep.

Butterfly monitoring in Greece

Olga Tzortzakaki

Butterfly monitoring in Greece aimed to report on the conservation status of the species of Community Interest for the reporting period 2007-2012, as required by the Article 17 of the Habitats Directive. The project was funded by the Ministry of Environment and was the first aiming to collect field data for ten butterfly species included in Annexes II and IV of the Habitats Directive (total budget approx. 100,000 € including five Odonata and one moth species).

Fieldwork was conducted by ten experts during the period 2014-2015 in 67 Natura 2000 sites (Sites of Community Interest), excluding sites within the boundaries of National Parks. Additional sampling was performed outside Natura 2000 network (22% of the sampling sites). Butterfly surveys included 491 500-m line transects (384 in SCI, 107 outside Natura 2000 network) and 29 surveys in random sites. Each site was visited only once due to time and budget limitations. During fieldwork, environmental data such as habitat characteristics, vegetation cover and availability of plant resources were also recorded. Threats and pressures for the species of Community Interest were assessed as well.

In total, 330 individuals of 6 species of the Habitats Directive were recorded in 19% of the sampling sites, indicating a high percentage of pseudo-absences. Nevertheless, the conservation status of the species was evaluated for the first time, as it was previously reported to be “unknown” (period 2001-2006), taking also into account the opinion of the experts. Conservation status was assessed to be “favourable” for four species (*Papilio alexanor, Parnassius mnemosyne, Pseudophilotes bavius, Zerynthia polyxena*), “inadequate” for five species (*Apatura metis, Euphydryas aurinia, Maculinea arion, Parnassius apollo, Polyommatus eroides*) and “bad” for one species (*Lycaena dispar*). In addition, Standard Data Forms of 52 SCI were updated. Furthermore, the research group provided a detailed description of the strengths and weaknesses of this monitoring project to the Ministry of Environment and proposed the establishment of a monitoring scheme in compliance with the European Butterfly Monitoring Scheme (eBMS).

Setting up a Butterfly Monitoring Scheme in Hungary using transect counts

András Szabadfalvi
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Background: The destruction of environment in the former Eastern Bloc countries has been accelerating. It has been noticed by many but there have hardly been any long-term datasets available to prove and visualize this for everyone. Another problem is the underfinanced official Biodiversity Monitoring Protocol, often using outdated and ineffective methods (e.g. triple catch), which are in effect not more than presence-absence tests. Butterflies, being sensitive indicators and attractive to the general public, seemed to be a good instrument to answer this need for monitoring environmental trends.

Tests: During 2014 and 2015 we studied the European transect schemes and gained hands-on experience by running 6 transects throughout the country. Based on the test year, some minor practical modifications (e.g. no counts during extreme heat) were made to the survey protocol, in full compliance with the EBMS standards.

Vision: We envisioned a butterfly monitoring scheme based on 2 foundations: #1 Volunteers (as many as possible), doing their transects in the vicinity of their home with expert help if necessary in identification etc; #2 National Parks, each running (at least) 1 transect in a site of particular interest/high environmental value (e.g. Maculinea sites).

Start: In 2016 the Scheme became part of the Hungarian Lepidopterists' Society, setting off with 13 weekly transects, of which 10 (6 commissioned by NP's and 4 volunteer) made it to the end of September. The online database and data submission forms were created using purely open source tools (ODK Aggregate and Enketo web forms).

Current status: In 2017 the number of weekly transects rose to 20, of which 19 (9 commissioned by NP's and 10 volunteer) made it to the end of the season. Apart from the weekly general transects, we also run targeted transects on Maculinea sites, complemented by CMR projects. On 9 transects we have been counting day flying moths too.

Problems, lessons learned: Mixed transect counts of butterflies and day flying moths pose too much burden to the recorders and are often impossible. Data reliability and confusion species (aggregates, catching every nth specimen etc.). The power of transects is in the numbers, we have to grow. For this we have to mobilize more volunteers, which is hard in this part of Europe. The transect network does not represent all of our main habitat types yet. Some types are over-represented, others are not yet covered. Citizen science is looked down upon by many professionals and officials in Hungary. A decision has been made to move the transect database but the migration process has proven to be slower than expected. We need correct statistical analyses for the usability of biweekly transects (as part of a mixed weekly-biweekly scheme) so that to involve more people and especially the NP's.

Report of activities and plans of the Hungarian Lepidopterological Society (Szalkay József Magyar Lepkészeti Egyesület)

Ádám Kőrösi

Our Society was established in 2004 with the aim to support and foster the research and conservation of Lepidoptera (both diurnal and nocturnal species) and their habitats in Hungary. In the last three years (since 2014), we contributed to the publication of several books on Lepidoptera research and participated in many surveys on Natura 2000 species and sites.

Our Society is often involved in research programs launched by national parks and other conservational bodies. In 2015, we initiated and co-organized a national meeting for lepidopterists. This is a three days long meeting that is held every year in a different national park and open for everyone who is interested in Lepidoptera. The number of participants was between 40-60 in each of the last three years, the program usually consists of talks, round-table discussions, field excursions (day and night) and social events. We made very good relationships with the national parks and other institutes during the organization of the meeting which became a very popular and well-liked event for lepidopterists. Most importantly, a volunteer-based butterfly monitoring scheme (using Pollard-walk transects, according to BC Europe recommendations) was started in 2016 under the umbrella of our Society. The chief coordinator of the system is András Szabadfalvi, he will give a talk about the current status and future prospects in the BCE meeting in Laufen.

Despite our progress and success there is still much room to develop and improve. Our membership is still very small and we have only a few active members. Moreover, in the last few years we could hardly reach the wider public and we are not visible enough even for Hungarian Lepidopterists. There are several promising initiatives and activities by Hungarian Lepidopterists and our main aim is to better coordinate these activities and involve as many more people (both beginners and professionals) as possible. The butterfly monitoring scheme has a high priority, we would like to involve more volunteers by promoting the programme, providing the newcomers with identification guides and field equipment, organizing camps and courses, and supporting András Szabadfalvi in the coordination.

Progress in Butterfly Recording and Monitoring in Ireland

Tomás Murray, National Biodiversity Data Centre

Until relatively recently, Ireland lacked the evidence base to begin developing landscape-scale conservation and management for butterflies. Consequently, over the past 10 years the National Biodiversity Data Centre has prioritised support for the growth in butterfly recording and systematic monitoring. In the past, these enterprises were largely driven by individuals, field clubs and societies (ca. 50-100 individuals) leading to the production of a provisional atlas of butterflies in Ireland in (1970-1982), and with increasingly co-ordinated and intense recording being undertaken for two atlases led by Butterfly Conservation UK in 1995-1999 and 2000-2004. Based on these data and on data collected by the Data Centre from 2007-2009, my predecessor Eugenie Regan and colleagues developed and published an IUCN Regional Red List of Irish Butterflies in 2010. Of the 30 resident and 3 regular migrant species assessed: one is regionally extinct, six were assessed as threatened and five as near threatened. Since this assessment, three species have transitioned from migrant to resident status with the Irish fauna now comprising 32 resident and 3 regular migrant species.
https://www.npws.ie/publications/red-lists

With regards systematic butterfly recording, the UK Butterfly Monitoring Scheme methodology was adopted and the Irish Butterfly Monitoring Scheme established by the Data Centre in 2007 with its first field season in 2008. At its height in 2012 there were 139 transects across the Republic of Ireland and numbers have now stabilised to 120-130 transects per year being walked by an excellent and dedicated group of over 120 volunteers. In 2014, in collaboration with Butterfly Conservation UK, a unified all-island analysis of trends across species was undertaken and in 2015 a power analysis employed to identify the number of species where declines of 30% or greater could be detected over a 10 year period. Currently, this is true for 16 species and an increase of 110 transect needed to increase this number to 21. Since 2015, funding has been sought to resource the expansion of the monitoring scheme but to date we have yet to be successful. This year marked the 10th field season of systematic butterfly monitoring in Ireland, therefore the analysis of population trends, multi-species trend assessment and power analyses will be submitted for peer-reviewed publication in 2018 and used to raise the profile of the monitoring scheme nationally, and support funding applications.
http://www.biodiversityireland.ie/record-biodiversity/surveys/butterfly-monitoring-scheme/

In parallel to the Irish Butterfly Monitoring Scheme, a species-specific monitoring scheme has been developed for *Euphydras aurinia* in collaboration with the Northern Ireland Environment Agency and Butterfly Conservation UK. Given its Annex II status under the EU Habitats Directive additional funding was provided by our governmental nature conservancy agency, the National Parks and Wildlife Service, in 2014 to trial and deliver and national monitoring scheme. The scheme is based on standardised larval web counts in combination with a rapid habitat assessment across a stratified random sample of sites. This will be used to estimate population change, support reporting obligations under the Habitats Directive, as well as identify optimal management practices for this species in Ireland. Starting with 32 sites in 2015 there are now 49 sites, 35 in the Republic of Ireland and 14 in Northern Ireland.
http://www.biodiversityireland.ie/record-biodiversity/surveys/butterfly-monitoring-scheme/get-involved/ssms/mfritms/

In preparation for next iteration of the IUCN Regional Red List in 2022, the Butterfly Atlas 2021 project was launched this year in collaboration with Butterfly Conservation Ireland and Butterfly Conservation UK. Running from 2017-2021, the project aims to draw together all butterfly recording initiatives and organisations across the island of Ireland to produce accurate contemporary species distributions and develop a dossier of 'butterfly sites and landscapes'. The Red List will facilitate the prioritisation of resources for butterfly conservation and the dossier of sites and landscapes will directly inform the development of landscape-scale butterfly conservation

and management. The atlas methodology combines 'casual' butterfly recording in combination with quantitative walks conducted five-times per year across a 'checkerboard' of 10 km^2 across the island to evenly spread quantitative effort. The response by butterfly recorders to the atlas in this first year has been very positive, with to date 641 people submitting 11,300 records this year, compared to 407 submitting 5,257 records in 2016. The uptake on the number of quantitative atlas walks was not as successful, but engagement will be specifically targeted on these areas in future years. A meeting of a Butterfly Atlas 2021 Steering Committee was held in February to agree the terms of reference of the committee, its membership and the methodological design of the fieldwork. A 2nd meeting was held in December, a data management and validation process agreed, with the production of a draft all-island and draft regional fieldwork plans for 2018 to be produced prior to beginning of our recording season next April.
http://www.biodiversityireland.ie/butterfly-atlas-2021/

Finally, in terms of linkages to policy, the multispecies butterfly index is now a National Biodiversity Indicator (http://indicators.biodiversityireland.ie/index.php?qt=si&id=26) used to inform progress on our National Biodiversity Action Plan 2017-2021 (https://www.npws.ie/legislation/national-biodiversity-plan). In addition, under action 2.1.5 of this Plan, the Data Centre has been tasked to identify and map Key Biodiversity Areas (KBAs) by 2021. Although their identification will be underpinned by analyses across multiple taxa, including Lepidoptera, KBAs may be an additional mechanism in parallel to the dossier of 'butterfly sites and landscapes', to focus resources on the protection and restoration of our most vulnerable areas that support rare butterfly populations.

Zoological Laboratory, Italy

Simona Bonelli, Francesca Barbero, Luca P. Casacci, Raluca Voda, Michele Zaccagno, Arianna Zampollo, Cristiana Cerrato & Emilio Balletto
University of Turin Department of Life Sciences and Systems Biology

Italian biodiversity is among the richest in Europe. In particular, the Italian butterfly fauna includes almost 300 native species, and the Euro-Mediterranean area is second in species richness only to Turkey. In the last 3 years we have been working to create the first Italian Red List for butterflies. Assessments of extinction risks were based on the IUCN Red List Categories and Criteria following their most updated guidelines and were discussed during workshops involving experts from different Italian regions. All native Italian butterflies were included in the evaluation.

Of 289 butterfly species assessed, one has become Regionally Extinct recently. Threatened species are 18 in total, corresponding to 6.3% of the species assessed. The majority of Italian butterfly populations are stable. The north-west hosts the 78% of 289 Italian butterflies (451 EU species), of which 13 listed in HD (17 in Italy, 60% of EU protected species).

We are now working in a national panel in the project “Interpretation of Favourable Conservation Status (FCS) and the evaluation of quantitative approaches to define appropriate Favourable Reference Values (FRVs)” and we work on butterflies in Piedmont, as a pilot Region. Specific objectives include:

1) Develop a proper methodology to calculate FRVs for butterfly species listed in the HD annexes

2) Provide an optimization of monitoring schemes for Piedmont butterflies, simultaneously collecting and simulating data functional to the definition of FRVs.

We are working on different conservation aspect of different HD species such as *Euphydryas maturna*. According to recent data we are assessing the taxonomic *status* of the Italian population of this species.

We are also developing a national Butterfly Monitoring Scheme in the framework of a co-operation with the Italian Federation of Parks and Nature Reserve of Rome.

Lithuania report, 2017

Giedrius ŠVITRA, Dalius DAPKUS

We do not have active BMS in Lithuania for now. We tried to sustain several BM transects during the period of 2009-2012, few other transects were conducted in different periods of time independently by individual researchers. Monitoring of peat bog butterflies was performed during 1999-2006 by Dalius Dapkus, and with some gaps it is still carried out in one/two bogs, mainly during the main flight of tyrphobiontic and tyrphophilous species in May and June (data is not published yet).

But finally BM stopped, why:

- only **few people are qualified enough** to conduct the BM transect;
- **it takes time and costs** to go to the place of the transect, as we have selected transects in different interesting places not necessarily very close to the observers living place;
- **it bounds**, as we have to repeat transect walking at least once each 10 days interval and when weather allows that;
- **it is boring**, as we have to walk the exact transect and look +/- 5 meters to both sides while usually all „nice and rare“ butterflies are flying 10 meters aside... It is much more interesting to go/drive to different places and find new places were one or another species live;
- **the enthusiasm** of recorders **has been decreasing** each year, as there are 3 reasons above and lack of understanding that results can be obtained only in a long-term period and in a larger scale of monitoring;
- **an administrator/curator is necessary** to find potential transect workers, to explain the goal of BM, to persuade/repersuade them to start walking the transect, to train them (if necessary), to help in establishing transects, permanent consulting, collecting data from each observer, compiling the annual report – and it takes lots of time and patience;
- **lack of motivation...** why should I go with this torture...

What can be done to reestablish BM in Lithuania:

- it is necessary **to find a key for long-lasting motivation** of administrator/curator and transect-walkers (some kind of funding?);
- to **promote the idea of BM** to the potential enthusiastic transect-walkers and **motivate** them;
- to prepare and print handy **appliance for identifying butterflies** in the field;
- to organize **training courses** for those who are not qualified;
- to **make people feel** that their work is valuable and appreciated – but how?
- it would be perfect if BM was a **part of state monitoring of biodiversity programme** (but there are some possible „bugs“ – we have bad practice of the state organized monitoring of ES Habitat Directive species in Natura‘2000 sites with unreliable results). External help may be necessary;

Meanwhile:

- we – Lithuanian lepidopterists – do what we like most of all – we go to different places and **make inventories** of butterfly/moth/dragonfly species living there;
- we **enter** all the **records to the database** „LepiBASE Lithuania“;
- we **publish** most interesting **findings** in the edition of Lithuanian Entomological Society „New and Rare for Lithuania Insect Species“ („Bulletin of the Lithuanian Entomological Society“ – new title from the year 2017);
- we have entered the majority of our **data** on the protected insect species **to the National Protected Species Information System** (SRIS) up to the year 2016 (f.e. as a result at least one peat bog was saved from destruction as we found *Oeneis jutta* living there);
- we are invited to **make inventories of protected species in national, regional parks, strict nature reserves, nature reserves** (they must know what they are protecting) and present

suggestions to responsible authorities on how **to maintain the habitats** for those protected species;

- we participate in the preparation of the **new Red Data Book of Lithuania** according to IUCN criteria – more detailed results will be available next year. However, it is not possible to apply adequate IUCN criteria without knowing trends, without long-term monitoring.

Alas, **we do not have BMS in Lithuania.**

Anyway - earlier meetings in Laufen encouraged joint research of some butterfly species between Lithuanian and Poland colleagues. Hope it will continue and enlarge ☺

Butterfly related activities in Luxembourg

Lisette Cantú Salazar (1), Michelle Clemens (2), Alain Dohet (1), Alain Frantz (3), Marcel Hellers, Lionel L'Hoste (1), Xavier Mestdagh (1), Georges Moes (2) & Simone Schneider (4).

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Monitoring

Following the initiative of the Government of Luxembourg (through the Ministère du Développement durable et des Infrastructures), the Luxembourg Institute of Science and Technology (LIST) launched a comprehensive national biodiversity monitoring programme in 2010. This programme includes transect-based butterfly monitoring, comprising about 37 sites selected based on a randomly stratified sampling method (since 2010), and about 53 sites targeting natural protected areas (since 2016). Most of the sites are surveyed by professional observers financed by national biomonitoring budget and LIFE Nature projects (LIFE Eislek and LIFE Orchis), but several sites are also surveyed by volunteers.

Since 2017, Luxembourg is using the new encoding system found on www.butterfly-monitoring.net, and count data are centralised in the international eBMS database. A second type of monitoring aims to update the distribution knowledge of butterflies throughout the country, with a special focus on the four species of European interest occurring in Luxembourg: *Lycaena helle, Lycaena dispar, Phengaris arion and Euphydryas aurinia* (LIST, natur&ëmwelt, SIAS, SICONA, Natural park Mëllerdall).

An ongoing project is the updating of the national distribution atlas and the national Red List (based on IUCN rules) of butterflies. Here, different types of maps are produced: (1) 5-km maps showing the general distribution and trends between atlas periods, (2) 1-km maps illustrating more precisely the connections between known sites and trends between atlas periods, (3) 1-km maps showing the currently known and potential distribution (based on species distribution models). Both types of 1-km maps integrate survey effort estimates in order to ensure comparability between atlas periods, and identify under-prospected areas. Luxembourg contributes to the BGEMS project by the collection *Maniola jurtina* individuals on one transect.

Because of concerns regarding the detectability of forest butterflies, we performed trials to automate their observation using a camera trap and promising results were obtained, as the number of detected species increased. The monitoring of butterflies in some local, municipal nature conservation areas in the southwest and west of Luxembourg has been established during the last few years. Management plans will be elaborated for these sites over the next years.

Awareness programmes (including the SNL in addition to authors) are targeting citizens through species identification workshops, group facilitation (e.g. discussion group) and international workshops. Moths are unfortunately not covered by the national monitoring; only a few volunteers actively participate in their sampling (e.g., Marcel Hellers).

Nature conservation

Butterflies are included in several nature conservation projects. LIFE Eislek directly targeted *Lycaena helle* and aimed to restore its habitat in the north of the country. The LIFE Orchis project, whose it was to restore calcareous grasslands in the east of the country, used butterflies as an indicator to survey restoration impacts. Butterflies are also used as indicators in the management of natural areas in the southeast of the country, where the highest butterfly species richness is observed.

The restoration of heathland as well as species-rich lowland hay meadows by SICONA creates new habitats also for butterflies. The implementation of the national action plans and the national nature conservation plan especially for endangered species like the Large Copper, aims to map species distribution, special protection measures and monitoring of habitat after management.

Data portals:
map.mnhn.lu; data.mnhn.lu; biomonitor.mnhn.lu

Publications
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Hellers, M., 2016. Die Kleinschmetterlinge Luxemburgs: die Familien Micropterigidae, Eriocraniidae, Opostegidae, Heliozelidae, Adelidae, Prodoxidae, Incurvariidae, Tischeriidae und Tineidae. https://www.snl.lu/publications/bulletin/SNL_2016_118_111_129.pdf

Hellers, M. & S. Christian, 2016. Eine neue invasive Art in Luxemburg: der Buchsbaumzünsler Cydalima perspectalis. https://www.snl.lu/publications/bulletin/SNL_2016_118_131_134.pdf

Proess, R., E. Rennwald & S. Schneider, 2016. Zur Verbreitung und Ökologie des Großen Feuerfalters (Lycaena dispar Haworth, 1803) im Südwesten und Westen Luxemburgs https://www.snl.lu/publications/bulletin/SNL_2016_118_089_110.pdf

Michelle, C. & M. Thiel, 2014. Verbreitung von Lycaena dispar (Haworth, 1802) im Osten Luxemburgs https://www.snl.lu/publications/bulletin/SNL_2014_115_231_239.pdf

Kayser Marie, 2014. How to manage habitats of the endangered lycaenid butterfly Lycaena helle (Denis & Schiffermüller, 1775) (Insecta, Lepidoptera). https://www.snl.lu/publications/bulletin/SNL_2014_115_241_249.pdf

Mestdagh, X., H. Baltus, J.-L. Renneson, M. Meyer, L. Hoffmann & N. Titeux, 2011. Espèces nouvelles et retrouvées chez les papillons de jour au Luxembourg https://www.snl.lu/publications/bulletin/SNL_2011_112_097_107.pdf

Thiel, G. & M. Meyer, 2007. Suivi des populations de Polyommatus coridon (Poda, 1761) sur trois pelouses sèches calcicoles au Luxembourg (Lepidoptera, Lycaenidae). https://www.snl.lu/publications/bulletin/SNL_2007_108_055_062.pdf

Cungs, J., 1998. Beitrag zur Faunistik und Ökologie der Glasflügler (Lepidoptera, Sesiidae) im südlichen Erzbecken Luxemburgs. https://www.snl.lu/publications/bulletin/SNL_1998_99_165_186.pdf

Nature conservation projects
http://www.life-orchis.eu/fr/
http://life-eislek.eu/fr/

Macedonian Entomological Society (ENTOMAK) 2014-2017
Activities and achievements

Nikola Micevski

PBA Stogovo (MKD - 13)

Due to lack of financial support in the last three years ENTOMAK activities were limited to one project only. In 2015 BCE supported ENTOMAK with a small grant for investigating the Scarce Fritillary (Euphydryas maturna) populations on Stogovo Mountain where the species was discovered by ENTOMAK members earlier. Beside the Scarce Fritillary, another three Prime Butterfly Species were discovered during the surveys. One part of the mountain has been designated as Prime Butterfly Area representing only 13th such site in Macedonia. Full report is available on BCE web site:

https://assets.vlinderstichting.nl/docs/dfd8456f-25a2-477a-931c-02fe4fb7f31d.pdf

Digitalization of PBA borders

While reviewing the delineated PBAs in Macedonia (BCE, 2003) many errors regarding target species, areas, toponyms etc. were noticed. This was expected since in that time (2003) no national experts were involved in the PBA preparation and also Google Earth was still not in use so the areas were not digitalized. All PBAs in Macedonia including most recent ones delineated in 2007 and 2015 were digitalized by ENTOMAK and Kmz files were sent to BCE.

Borders update of PBA Ograzden (MKD-04)

During 2016 ENTOMAK members were involved in a study for borders update of the PBA Ograzden in Eastern Macedonia. This was a comprehensive study (all seasons covered) resulting with discovery of 114 butterfly species, 7 new sites for the Large Blue and largest PBA in Eastern Macedonia. The PBA Ograzden designated in 2003 covered an area of 4,536 ha (980 ha [sic]) of which 1,500 ha were expected to be impacted by planned mining activities in the region. Fallowing IFC and EBRD standards a net gain has been accomplished with the expansion of the PBA area by almost 5 times (old PBA - 4,536 ha/new PBA - 22,620 ha), while excluding only 1,500 ha from the old PBA where the Large Blue is absent. With this exclusion was enabled a non-conflict operation of the Mining activities while in the same time the PBA was enriched with much more valuable areas where the Large Blue populations were discovered.

Problems

- Not enough support for nature protection in Macedonia, when available - EU funded projects are implemented in a very non-transparent way such as the latest project:
- Strengthening the capacities for implementation of Natura 2000 (1,400 000 e) Results ? = 0

Conservation Strategy

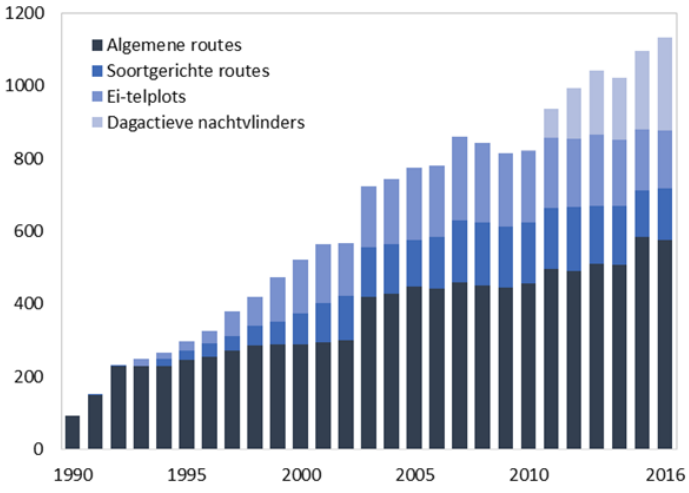
- Reassessment of all current PBAs in the country
- Search for financial support for full PBA study
- Initiative to include PBAs on the official guidelines of EBRD and IFC as is the case with Important Bird Areas and Important Plant Areas which can trigger critical habitat assessment.
- PBA sites to be automatically included in NATURA 2000 network as is the case with IBAs

Dutch Butterfly Conservation

Irma Wynhoff

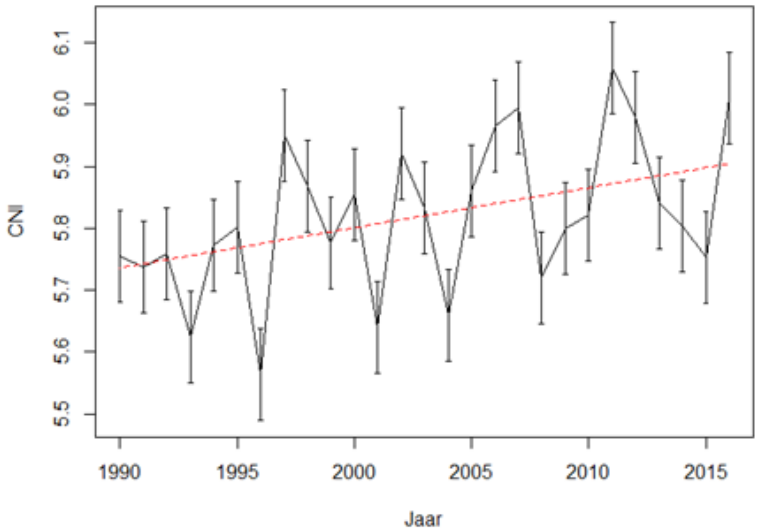
Dutch BC has around 30 people employed. We have 5400 members who receive our quarterly journal “Vlinders”, 11 000 followers on twitter, 25 000 on facebook and 1900 on instagram. Together with volunteers we collect data on the distribution of butterflies, moths and dragonflies. We take care of the quality control, and check all Dutch and many European observations. The last few years this generates around 400 000 butterfly records and 250 000 moth records per year. Such data is used for the calculation of distribution trends (by occupancy modelling), for research and conservation.

Butterfly monitoring is happening on more than 1000 sites, on 600 of them all species are counted each week, on other sites we only count one species or do egg counts.



We have started up a moth monitoring scheme. So far we have 47 plots. On such a plot a moth trap is run the whole night, and the next morning all moths are identified, counted and records are entered into the system. We hope that within a few years we will be able to calculate the first Dutch population trends for moths.

A lot of effort is put in conservation work and autecological research. We focus on the species with less than ten populations, and especially the Dutch Maculinea species get special attention. But also *Lasiommata megera*, which declined with more than 95% from a once common and widespread species, to a rare and local butterflies of the west of the country.



Together with WWF and Statistics Netherlands we developed indicators, e.g. biodiversity indicators as the Living Planet Index, and community indicators, as the CTI (temperature) and CNI (nitrogen). This one shows that butterfly communities more and more get dominated by high-nitrogen species.

In addition we spend much effort in getting societal support for nature conservation by free manuals for teachers and packages of eggs, caterpillars and pupae of the cabbage white for school classes, idylls (small parks with flowers for butterflies and bees), brochures, garden butterfly counts, moth trapping nights, etc.

Butterfly conservation in Norway - an update

Hallvard Elven, Norwegian Entomological Society

The talk gives a brief summary of butterfly conservation in Norway since the previous BCE meeting in Laufen in 2014.

Norway is perhaps one of the European countries with most intact nature, though "intact" in this case does not mean undisturbed. Most of the arable (and not-so-arable) land has traditionally been farmed, and the forests are to a large extent managed. Even the alpine zone is or has to a large extent been grazed. Today, Norway faces many of the same challenges with respect to butterfly preservation as other European countries, particularly those of intensification and abandonment in the agriculture. Flower rich meadows and pastures are becoming increasingly rare, and many flower-visiting insects are now suffering.

A further problem is that most of the species diversity in Norway is concentrated along the south-eastern coastline where the climate is particularly warm. This is also the most intensely populated part of Norway, and urbanization and development along the coast is posing a serious threat to very many species.

Today, two butterfly species can probably be considered extinct in Norway. The Reverdin's Blue (*Plebejus argyrognomon*) was last seen in 2013, despite thorough searches for it in also the years 2014–2016. Furthermore, the Niobe Fritillary (*Argynnis niobe*) has not been seen since 2004. This species was once widely distributed in southern Norway. Two other species are nearing the brink: the Glanville Fritillary (*Melitaea cinxia*), with one locality left, and the Chequered Blue (*Scolitantides orion*) with two localities left.

In 2009, Norway introduced "Biomangfoldloven" (the Biodiversity Law), a new law intended to provide better protection for the most threatened species. Species designated 'prioritized species' were in principle guaranteed protection against collection/hunting and all other forms of damage. Also their habitats were in principle automatically protected against damage. An action plan was to be made for each prioritized species, describing necessary measures for protecting it, and the authorities should provide the necessary funding for taking the measures. Unfortunately, the process of designating prioritized species came to a full stop because of conflicts of interest between farmers and management authorities over a prioritized species of bird. As of today, only one butterfly species has status as prioritized species: the Chequered Blue. Action plans have been prepared for a further four species: the Scarce Heath (*Coenonympha hero*), the Glanville Fritillary, the Reverdin's Blue, and the Niobe Fritillary. For two of these, however, it may already be too late.

On a positive note, a new National Strategy for protecting wild bees, Lepidoptera and other pollinators in Norway is in the making. The details are not known yet, but the presenter will be one of the experts to provide advice on pollinator-friendly management regimes and measures for the new strategy.

Butterflies and bumblebees as biodiversity indicators in Nature index for Norway

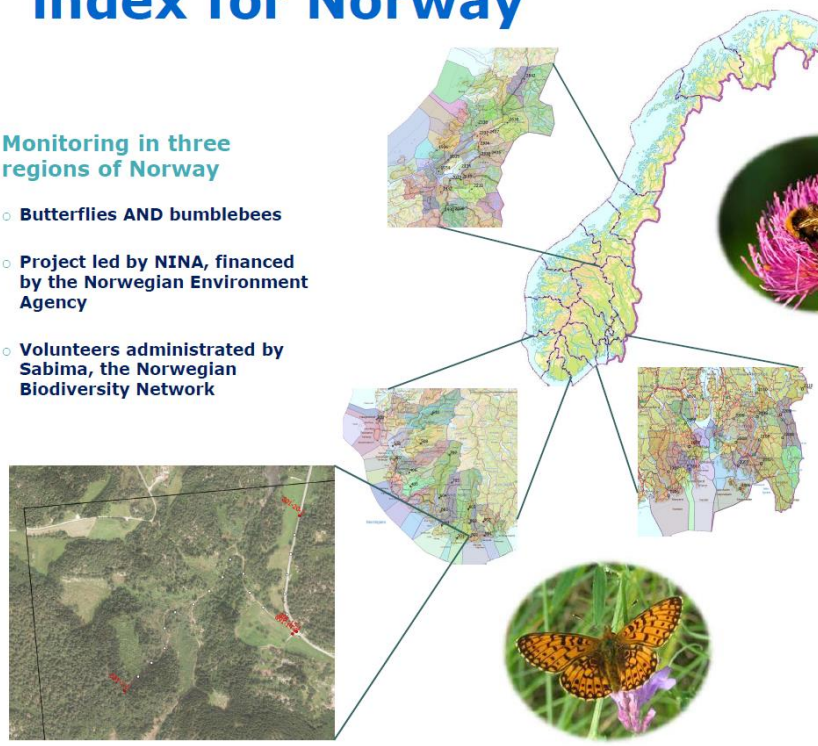
NINA
Norwegian Institute for Nature Research

NORWEGIAN ENVIRONMENT AGENCY

SABIMA

Monitoring in three regions of Norway

- Butterflies AND bumblebees
- Project led by NINA, financed by the Norwegian Environment Agency
- Volunteers administrated by Sabima, the Norwegian Biodiversity Network



Project design and field methodology

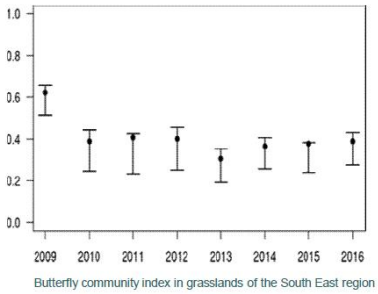
- Eighteen 1,5*1,5km squares in each region
- 1 km transects in each square, with a division of transects in open grassland and open woodland proportional to landscape composition
- Butterflies and bumblebees monitored three times per summer by using the "Pollard walk"-method

Indicator estimate calculation

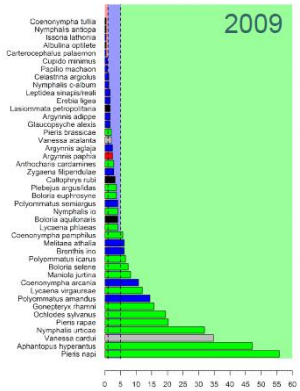
- The indicator estimates for butterflies and bumblebees are calculated as community indices
- Community indices (SI) are based on comparing the species composition that could potentially occur in an area and how commonly occurring each species is expected to be (RT), with recorded data from the inventories (ET)

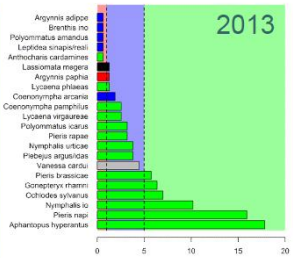
$$SI = \frac{RT - ET}{RT}$$

- Weights are used in the formulas for RT and ET, making a decrease in common species weigh more than a decrease in rare species



Butterfly community index in grasslands of the South East region





Butterfly species recorded in grasslands of the South East region in 2009 and 2013. Green, blue, red, gray and black columns: species expected to be common, somewhat common, rare, guest and not expected. Red, blue and green fields: transect occurrences where the species are considered rare, somewhat common, and common.

Data deliverance to the Nature Index for Norway

- The Nature Index gives an overview of the state of Norway's environment
- The Nature Index focuses on trends in major ecosystems, where butterflies and bumblebees are indicators in the ecosystems open lowland and forest
- In all, the Nature Index uses more than 300 indicators in nine major ecosystems

Sandra Åström (sandra.astrom@nina.no)

Norwegian Institute for Nature Research (NINA), P.O. box 5685 Torgarden, NO-7485 Trondheim, Norway.

The project:
https://www.nina.no/Våre-fagområder/Miljøovervåking/Humler-og-dagsommerfugler

The Nature Index:
www.naturindeks.no

Monitoring of butterfly species listed in Habitat Directive in Poland

Marcin Sielezniew
Laboratory of Insect Evolutionary Biology and Ecology, Institute of Biology, University of Białystok/Association for Butterfly Conservation (TOM)

Monitoring of butterflies listed in Habitats Directive in Poland is carried out by Institute of Nature Conservation PAS in Kraków at the request of the Chief Inspectorate of Environmental Protection as the part of the project: "Monitoring of species and natural habitats with a focus on Natura 2000 Special Areas of Conservation". Fourteen species listed in Annex II and/or IV of HD are monitored at the moment in Poland, i.e. *Parnassius mnemosyne, Colias myrmidone, Lycaena dispar, L. helle, Phengaris (=Maculinea) arion, P. teleius, P. nausithous, Polyommatus eros eroides, Euphydryas aurinia E. maturna, Lopinga achine, Erebia sudetica, Coenonympha oedippus, Coenonympha hero.* Two of them *(P. eros* and *E. sudetica)* were not recorded in recent years and are considered as extinct. The only species not included in the scheme is *Parnassius apollo* whose distribution range is very limited and existing populations are monitored independently within other activities.

For almost all species the main method of monitoring of abundance is conducting counts on fixed transects. Only in the case of *L. dispar,* which is a very widespread species and not related to a particular habitat type (what also makes delimitation of site borders difficult), quantitative data are not collected and only presence/absence of the butterfly (in any life stage) is recorded in 5x5km grid squares. For some species dependent on ephemeral habitats (e.g. forest clearings) it was found difficult to fix transect routes for long-term monitoring and a modified approach is considered e.g. timed count survey. Evaluated population parameters usually include: maximum number of individuals observed during counts, abundance index (sum of counts performed in 10-days periods covering the whole flight period) and isolation of monitored populations. Some habitat indices are also assessed, including site area, abundance of larval food plants (coverage ratio or density), coverage of common plants, trees/shrub cover. For some species specific characteristics are also considered, e.g. for *L. helle*: presence of shelters (hedgerows) which seem to be vital for local populations.

For most of the species monitoring was started in 2011 and is performed in 3-years intervals. The exceptions are *L. dispar* and *L. achine* for which 6-years intervals are planned. Detailed guidelines for monitoring of all species, including detailed information on species biology as well as conservation needs, are published and are available in the internet.

The monitoring network includes species coordinators as well as local experts performing the field work. At present, a total of 40 people are involved, including members of the Association for Butterfly Conservation. Local experts are paid about 250€ per site per year on average (transect counts) or 50€ (presence/absence data for *L. dispar).* A fee depends on a species (number of required visits) and a distance to a site (travel expenses are included). It could be also reduced when two and more sites are situated in the same area and can be visited during a single trip.

There are difficulties to find work-contractors to perform monitoring in some distant areas. Despite this coverage of distribution range is good for most of species. For *C. oedippus* all known sites (10) are already monitored. For other species there are plans to include some new localities (e.g. recently discovered ones) to get even better representation. The total number of monitored sites (excluding *L. dispar*) at the moment is about 200 and it is expected to be increased by about 10% in coming years. For *L. dispar* 188 squares were searched in 2013-14 and the optimum number is estimated at 224.

Some monitored populations are also subject to more detailed research including mark-release-recapture studies (e.g. some sites of *C. myrmidone, P. arion* and *C. hero*).

Biodiversity Stations Network in Portugal: contribution to butterfly monitoring

Patrícia Garcia-Pereira[1], Eva Monteiro[2] and Albano Soares[2]

[1] Centre for Ecology, Evolution and Envirnmental Changes
[2] Tagis – Butterfly Conservation Center
infotagis@gmail.com

We present the Biodiversity Stations (BioStations) project, which started to be implemented in Portuguese mainland in 2009, supported by EEA Grants. Since then, the network has been constantly growing, mainly financed locally by municipalities, achieving today a total of 43 sites distributed all over the country.

One BioStation is a natural walk signed by 9 information panels which shows to visitors conspicuous and common species recorded in the footpath, mainly plants and insects. These trails are short (maximum 3 km), with good accessibilities, preferably circular, and ideal for butterfly transects counts.

Our preliminary results about network's diversity count for 1955 species, of them more than 900 insects and about 30% of Portuguese flora diversity. Butterflies are very well represented, reaching 118 species and 3815 records. In some BioStations, it was possible to perform monthly butterfly counts, although only for one or two consecutive years. We have also been dedicated to performing guided visits and short courses about biodiversity to raise public awareness, showing BMS methodologies and species diversity, and appealing directly to visitor's contribution for butterfly monitoring. It has been a very difficult task due to the low level of scientific knowledge of Portuguese society and naturalist tradition. This also explains the few butterfly records in BioStations shared on www.biodiversity4all.org by Portuguese users.

Although the future of the project is still uncertain, always depending on suitable financing, next year we plan to publish a website dedicated to the project (www.ebio.pt), an e-book about the butterflies of the network and a Portuguese Butterfly pocked field guide. We think that the simplicity and new functionalities of the platform of the European Butterfly Monitoring Scheme will be a major contribution to increase butterfly monitoring in our country. We are committed to launch a promotion campaign designed to reach previously known concern individualities and particularly Nature Conservation and Forest Institute technicians and hopefully, with their help, be able to start a long term BMS Portugal program on 2018.

Madeira Butterfly Monitoring Scheme

Sérgio Teixeira

I started a monitoring scheme in 2012, which uses volunteer tourists that do leisure walks with Madeira Fauna & Flora. There is also a butterfly watching tour and counts. Some members of Butterfly Conservation (UK) that were on holiday on the Island joined in. This monitoring is still restricted to a couple of sites.

- Future objectives are to include schools, families and other tourism companies.
- Application to funds in 2018 to collect more data on threatened endemic species, lectures in schools and farmer associations.
- Start an annual report on butterfly monitoring in Madeira Islands, which will be sent to BCE yearly.
- Produce a leaflet to distribute to local inhabitants (funded by grants and Madeira Fauna & Flora)
- Contact groups in the Canary islands and Azores to work start a macaronesian conservation group, under BCE, acting as a macaronesia focal group of BCE. This is mainly due to the fact that our monitoring scheme has been included on the European Butterfly Indicator but none of the grassland species listed are native to these islands, hence it makes sense that a macaronesian butterfly indicator is created, especially considering the extinction threats on these populations.

NGO, Grassroots Alliance PERESVET, Bryansk, Russia
Igor Prokofev
E-mail: igor.prokofev@gmail.com

Grassroots Alliance PERESVET is an NGO which unites local people (school and university teachers, scientists, and students) to work together to find solutions to environmental problems in their communities, particularly protecting animals and their habitats.

The Bryansk Region of western Russia is an important area for biodiversity conservation in Europe, yet knowledge of the status and distribution of butterflies, especially rare species, in the region is poorly known. The main objects of our research are three butterfly species: Large blue *Phengaris arion*, Danube Clouded Yellow *Colias myrmidone*, and False Ringlet *Coenonympha oedippus*. These species are included in the regional Red List and the European Red List of Butterflies (category – endangered). Despite a dramatic decline, these species have been almost entirely overlooked by local nature conservationists. The speed of extinction of remaining populations is so fast that the responsible institutions failed to respond adequately to this trend.

The main goal of our work is to prevent the extinction of these three threatened butterfly species and promote monitoring and conservation activities and initiatives to conserve habitats of rare butterflies in the Bryansk region of Russia. A network of volunteers and citizen-scientists collected data on transects in the study region. As a result we recorded new localities of these rare butterflies in the region. Based on these data we identified Prime Butterfly Areas (PBA) of Bryansk and created maps using ArcGIS software. It helped to estimate the impact of agricultural intensification, abandonment of traditional practices, and isolation on rare butterflies and make recommendations to conserve the wider environment and whole landscapes within and surrounding Prime Butterfly Areas in order to sustain viable metapopulations. The study additionally resulted in recommendations for the future management of butterflies for local authorities and the development of conservation policy in regions and communities.

PERESVET is also involved in the Indicator Bats Program (iBats). iBats aims to develop national bat monitoring programs globally in order to generate long-term data on biodiversity indicator species to assess the impact of national development and global change. With the equipment and training provided by this project, PERESVET established the first large-scale monitoring programme for bats in Russia (iBatsRussia). We organize monitoring workshops and training events for citizen scientists.

Grassroots Alliance PERESVET supports the development of organic agriculture in Russia. The thematic complex of organic agriculture touches on all themes listed above, specifically biodiversity conservation. Organic agriculture also plays an important role in poverty reduction, food security and sustainable development. We organize workshops and training for farmers with small plots of land. Members of our organization conduct experiments and studies of different techniques of organic agriculture.

Grassroots Alliance PERESVET is open for cooperation with different organization in achievement of our main object - biodiversity conservation.

HabiProt and the Serbian butterfly scene 2014-2017

Milan Djuric, HabiProt

The above period was quite hectic, with lots of ups and downs. We've managed to put online Alciphron, our database on insects of Serbia where the majority data are those regarding butterflies. That increased number of those who are contributing regularly or ocasionally, and influx of data. Now we have 246.000+ data, and that gives fairly good idea of species distribution for better studied groups.
http://www.alciphron.habiprot.org.rs

We are more than happy to announce that in 2016 Serbia officially joined the Butterfly Monitoring Scheme. The project simply named "Butterfly monitoring in Serbia" was kindly financed by the Butterfly Conservation European Interests Group. The most important outcome of the project was web page monitoring.habiprot.org.rs and the software behind this page is used for collecting data from the transect walks. It allows registration of new users, very simple management of transect routes and input of new data from the transects. To help the newcomers, there is also a technical user manual and the translation of the BCE's official manual for butterfly monitoring in Serbian. The web page is available in both Serbian and English languages. After the first test year, several transects are designated in 2017 and visited by two persons. Although significant effort was made to include new people in the transect walks, we are still far from the point when we could be satisfied. All in all, the foundation is there (manuals and software) and we are ready to go for the next step - popularisation of the butterfly monitoring in Serbia.

Some more efforts should be mentioned, Facebook profile of HabiProt https://www.facebook.com/habiprot/ and shortly expected Android application to enable entering data into database directly from cell phones.

In 2016 we had a record number of 6 small projects, but the biggest problem remains that we still did not find a single source of regular financing. That has several serious implications, the most important one being our inability to keep for long those who would be able to successfully run the organisation.

Butterfly Monitoring Scheme in the East Slovakia

Serhiy Popov

Location of the transects is Ruske village, Snina district, Prešov region known from 1567, which disappeared in 1981 following the building of an artificial reservoir Starina. Map of the location is Google Maps with georeferences are GPS N49.106737° E022.341164°, a sample of species observation is *Erynnis tages* L. Details on the observations can be found here http://www.inaturalist.org/observations/4728549 and https://sites.google.com/site/bmseastslovakia/.

The monitoring method is by Pollard Walks. Five transects on one big 5 km circle on nature conservation territory of Narodny Park Poloniny was started. Each transect is 1 km long and divided by 20 sections, each of 50 meters. The main CORINE habitats are 1. Early-stage natural and semi-natural woodlands and regrowth, 2. Low and medium altitude hay meadows and Lowland and 3. collinar riverine [Salix] scrub.

Results of the monitoring year 2016
This was the starting year of the Butterfly Monitoring Scheme in the East Slovakia. Altogether 684 records were entered into a Dbase Microsoft FoxPro format database. 1860 adults of 36 butterfly species were counted. The most numerous species was *Maniola jurtina* (612 adults). Altogether 10 unique visits were done in May and July.

Results of the monitoring year 2017
Altogether 687 records were entered into the Dbase Microsoft FoxPro format database. 2190 adults of 36 butterfly species were counted. The most numerous species was again *Maniola jurtina* (795 adults). Altogether 20 unique visits were done in May and July.

Images of the presentation can be found here:
Page 1 –
http://i.piccy.info/i9/501a610f5b92d0d190b8d3c79746fd07/1512642191/174680/1203030/BMS_in_the_East_Slovakia_2017_page_1.jpg
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Page 4 –
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Society for the Conservation and Study of Lepidoptera in Slovenia

Barbara Zakšek
Društvo za proučevanje in ohranjanje metuljev Slovenije (DPOMS)
http://metulji.biologija.org/

Our society was founded in 1999. We have approximately 45 members from which around 20 are active. Our main objective is butterfly conservation in Slovenia and its promotion to broader public, popularization of butterflies and moths, coordination of butterfly studies in Slovenia and cooperation with government and non-government conservation organisations and entomological societies.

Our main projects are:

- Atlas of the butterfly distribution in Slovenia (published in 2012)
- transect monitoring of butterflies (from year 2007),
- monitoring of the isolated populations of *Plebejus optilete* (from year 2012),
- project for conservation of the last remaining habitats of the threatened *Polyommatus thersites* along Sava River in central Slovenia (https://sites.google.com/site/deteljinmodrin/) (from year 2013),
- collecting distribution data of *Parnassius apollo* with help of mountaineers,
- participation in setting up *common agricultural policy* in Slovenia friendly to butterflies,
- active contribution in NGO forum for sustainable development,
- publishing of a magazine in cooperation with other organizations (https://issuu.com/trdoziv) (from year 2012),
- participating in European Moth night project,
- recording of first and last sightings of butterfly species in a year (http://metulji.biologija.org/?q=sl/node/516) (from year 2014),
- promotion of butterfly and moth conservation through participation at youth camps, organization of field excursions, lectures and workshops...

During the first decade of our activities the main focus was on the preparation of the Atlas of the butterfly distribution in Slovenia. Surveys in more remote and understudied parts of the country were organised to get a better geographic coverage of the records. Special attention was given to rare and threatened species for which focused surveys in potentially suitable habitats were undertaken. In 2007 butterfly transect monitoring was established with 33 transects walked. In the past few years usually from 10 to 15 transects were active. Given the low number of transects walked there are no reliable trends available for most species, even for the common ones.

In recent years the focus of our society shifted towards popularization and active conservation with habitat management for the threatened Chapman's Blue (*Polyommatus thersites*) which survived on gravels along Sava River near the capital city of Ljubljana. Financial support for the projects was given by the Manucipality of Ljubljana.

Developing monitoring in Spain

Miguel L. Munguira
Biology Department, Universidad Autonoma de Madrid

In the year 2013, encouraged by BCE and the successful Catalan BMS, we decided to launch a program to coordinate the several local monitoring programs that were taking place in different parts of Spain. 2014 was the initial year for this project, in which we held the first brainstorming meeting and developed an application to host BMS data for Spain. The volunteers soon produced the first new transects that were added to the previous ones, resulting in 120 transects overall. During the year 2015 the Spanish National Park Service financed a project to extend butterfly monitoring to the eleven Peninsular and Balearic National Parks. This allowed BMS Spain to grow, cover the most representative habitats in our country, and plan 71 transects of which 56 were active a year later (2016).

While a third of BMS Spain transects are the result of citizen science volunteers, those in National Parks represent a 54% of the total, and are monitored with the collaboration of volunteers coordinated by park officials and/or professional environment agents working in the parks. The involvement of National Parks has given stability and has been crucial to the overall success of the project. Each park has its own strategy, but personnel from the parks are always involved and supervise the continuity of the monitoring program. Some parks allocate specific budgets to cover butterfly monitoring, while others cover the costs as part of the park's current activities in which wildlife monitoring is always mandatory.

The network offers a reasonable geographic coverage for a starting project, but improvement will indeed report better results. The number of recorded species was 158 in 2015 (70% of Iberian species) and 166 in 2016 (73%). The total of recorded butterflies increased from 31,000 in 2015 to 59,000 in 2016. The refinement of the computer application and the production of regular reports with analysis of data are important challenges for the near future. Financial support will also be needed to fulfill these goals.

ZERYNTHIA

2007-2017

Spain

ZERYNTHIA Association

- ZERYNTHIA was founded in 2006. It is the only national organization (NGO) which works for the Spanish butterflies and moths conservation.
- It takes its name from the *Zerynthia rumina* butterfly, a very representative butterfly of the Iberian fauna. It is very beautiful, almost endemic, and its colours are similar to those of the Spanish flag.
- Our association has three working lines:
  - Research
  - Divulgation
  - Conservation

10 years already!

DIVULGATION

- We use, as much as we can, **press, radio and publication of informative articles** to transmit our projects, or significant aspects of the butterflies and their conservation.
- Usually this divulgation work is related to present the **most representative or threatened butterflies in our country**. We have published news related to species as *Euchloe bazae, Lemonia philopalus, Lemonia dumi, Actias isabelae, Prosperpinus proserpina, and others.*

CURSES AND EXHIBITIONS

- ZERYNTHIA organizes numerous **courses** to introduce butterflies to the general population. In these activities people learn how to distinguish the most common species and field trips are made to observe both butterflies and moths.
- We also organize **exhibitions**, in which we try to raise awareness of the need to conserve butterflies.

INVOLVE PEOPLE

- People are very important in order to get interesting sightings about butterflies and moths.
- **Natusfera ("Spanish-iNaturalist")**, allows people to share any observation with precise coordinates and pictures directly from their phones.
- "Oasis for butterflies", allows schools, councils, enterprises and individuals to create small patches with foodplants and flowers to help butterflies.

Endangered species

- Our work is usually focused on the most endangered species.
- Studies, action plans and conservation (reserves).
- Legal protection:
  - regional government's list's of protected species
  - national list of protected species: *Euchloe bazae*.
- "Butterfly/Moth of the year"

PUBLICATIONS

- Several papers have been published in scientific journals, and some books with regional information about Spanish butterflies:
  - ✓ Comunitat Valenciana
  - ✓ La Rioja
  - ✓ Valle de Aranguren (Navarra)
  - ✓ Basque Country
  - ✓ Up-to-date checklist of common names for the 258 butterflies of the Iberian Peninsula, the Balearic Islands and the Canary Islands.
  - ✓ ...

SCIENTIFIC MEETINGS

- Our association has organized five editions of a national meeting for Spanish lepidopterologists so far.
- Also seminars to discuss strategies related to the conservation of Spanish butterflies and moths.

BUTTERFLY MONITORING

- ZERYNTHIA is coordinating 85 transects and arround 100 volunteers.
- The BMS program of the Basque Country started in 2008.
- This is a large project with data of 38 transects nowadays.
- Also Cantabria, Navarra, La Rioja and Tenerife.

BUTTERFLY MONITORING

- First long-term butterfly study in Macaronesia.
- Start: 2017
- Already with 20 working transects.




MOTHS MONITORING

- Starting project based on volunteers with a high level of interest.
- Much more difficult to find adecuate volunteers than with butterflies.
- Based mostly just in identification by pictures of alive specimens.

MICRO-RESERVES

- The first butterfly microreserve in Spain was created in 2009 in Huesca (Aragón, north of Spain) to protect a *Phengaris arion* population.
- Then others have been created for *Phengaris arion*, *Phengaris alcon*, *Phengaris nausithous*, *Actias isabelae*.
- Working now in some others. Soon one for *Parnassius apollo* will be created in a new previously unknown locality.





Habitat restoration

- Habitat restoration for the *Satyrium w-album* (White-letter Hairstreak), an endangered butterfly linked to elms.
- "Dutch elm disease" has destroyed 85% of the Iberian elms.
- The Spanish Government has just found 7 almost 100% resistant elms and has clonated them.
- We are planting hundreds of those elms in every known population of this butterfly.




10 years already!

Thank you!

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25 years of the Catalan BMS: results and lessons learnt

Constantí Stefanescu
Museu de Ciències Naturals de Granollers

With up to 200 butterfly species recorded, Catalonia, in NE Spain, is one of the hotspots for butterfly diversity in Europe. In 1994, butterfly populations were started to be monitored in this region with the standard methodology of the BMS. Nowadays, this network consists of over 150 recording sites, from the lowlands to the Pyrenees, with about 50 sites with temporal series extending for 15 or more years.

After 25 years, the Catalan BMS has assembled an important database on Mediterranean butterflies that is being used to assess how global change is affecting the butterfly fauna in south-western Europe. One of the most relevant and worrying results is the finding that about 70% of the butterfly species are undergoing serious declines. Several analyses point at two of the main drivers of global change, namely climate warming and land abandonment, as the most important causes for such trends. In particular, summer drought has been identified as a key climatic variable for explaining population collapses in some years.

Quite surprisingly, amongst the species experiencing the most important declines are several Mediterranean species with southern distributions, probably because their habitats are the most severely affected by summer droughts. Forest increase following land abandonment, especially in mountain areas, is also affecting many species. Given that the vast majority of Catalan butterflies are associated with open habitats (e.g. grasslands and pastures), this factor has also a general detrimental effect on butterfly communities.

Finally, as reported in central and northern Europe, habitat specialists are suffering the more serious declines, which means that a phenomenon of faunal homogenization also applies to this Mediterranean and exceptionally diverse butterfly fauna.

Although these are generally bad news for butterfly conservation, the Catalan BMS also provides important information on the ecological requirements of many species, which may be used to mitigate some of the reported negative trends.

Website and reports

http://www.catalanbms.org/

The Swedish Butterfly Monitoring Scheme

Lars Pettersson, Lund University

The Swedish Butterfly Monitoring Scheme, Svensk Dagfjärilsövervakning, is a national monitoring programme coordinated by Lund University for the Swedish Environmental Protection Agency. The scheme started in 2010 and has now been running eight seasons. It is volunteer-based and runs from April 1st to September 30th annually. Sites are visited 3-7 times per season and are surveyed using a standardized, common methodology. Two different recording methods are used: one is the point site counts which cover an area with a 25 m radius for 15 min per visit. The other method is fixed-route Pollard walk transects, typically 0.5-3 km in length.

The scheme currently involves about 300 volunteers, covers 435 sites annually and counts about 75000 butterflies of 90-95 species annually. The Swedish Butterfly monitoring Scheme also runs a targeted scheme covering Sweden's eleven butterfly species and one moth species that are listed in the EU Habitats Directive. The scheme is funded by the Swedish Environmental Protection Agency and is run in collaboration with County Administrative Boards. Currently, the scheme covers 360 sites in 17 Counties and in 2016 it counted 2887 adult butterflies and 5751 larval colonies of species belonging to the EU Habitats Directive. The targeted monitoring is carried out by professionals and semi-professionals.

The homepage of the Swedish Butterfly Monitoring Scheme can be found at http://dagfjarilar.lu.se/english and reports (with summaries in English) can be downloaded from http://dagfjarilar.lu.se/om-oss/arsrapporter and http://dagfjarilar.lu.se/om-oss/biogeografisk-uppfoljning

Reports from 2017:

- Pettersson, L. B. & Sjöström C. 2017. Nationwide monitoring of butterflies and moths of the EU Habitats Directive 2016. Department of Biology. Lund University, Sweden. 32 pp.
- Pettersson, L. B. & Sjöström C. 2017. Nationwide monitoring of butterflies of the EU habitats Directive 2015. Department of Biology. Lund University, Sweden. 22 pp.
- Pettersson, L. B., Ottvall, R. & Sjöström C. 2017. Nationwide monitoring of butterflies of the EU habitats Directive 2014. Department of Biology. Lund University, Sweden. 23pp.
- Pettersson, L. B., Mellbrand, K. & Sjöström, C. 2017. Swedish Butterfly Monitoring Scheme, annual report for 2015. Department of Biology, Lund University. 100 pp.

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Swiss Butterfly Conservation: a summary

Goran Dušej

Switzerland has been monitoring its biological diversity for quite a long time, mainly through the Swiss Biodiversity Monitoring BDM programme, ruled by the Federal Office for the Environment FOEN. Butterflies have involved in this programme since 2003 on 500 sampling sites. Corresponding documents can be found and downloaded on the official homepage of FOEN. The webpage can be consulted in different languages (DE, IT, FR, EN) however, most of the documents are published in German with some exceptions where the summary is translated into the above mentioned languages. Link: www.biodiversitätsmonitoring.ch

The team “Swiss Butterfly Conservation” has been working since 2000 on the elaboration of action plans for the most endangered and national important butterfly species. Until now action plans for 14 species have been finished. At the same time the implementation of promotion and conservation measures for some species has taken place. Most projects were realised in close cooperation with official nature conservation departments or major nature conservation organisations such as BirdLife or Pro Natura. Many of our recommendations have been implemented in the respective projects or have become part of directives concerning the maintenance of relevant protected areas. In many cases our recommendations broke new ground, so it was and still is interesting to observe if the measures show the supposed effects or not. In some cases it was possible to establish some basic monitoring for checking of success.

As examples, we present two interesting cases: the promotion of *Coenonympha tullia* and *Phengaris nausithous / teleius*. *C. tullia* is experiencing a dramatic decline not only in Switzerland but also in many other European countries. Especially in lower altitudes the species has practically disappeared. The last Swiss "lowland-population" lives in the marshes near the Lake Hallwil (Aargovia). Since 2008 the population has been monitored with yearly 3-4 visits during the flight period. The establishment of rotational fallows has stabilized the population, although some extreme events such as very dry-hot summers (e.g., 2003) or flooding over many days (e.g., 2005) have severely afflicted the species. The fact that the "right" maintenance of habitats can help the species to survive and even increase the population size has been demonstrated on some higher-altitude locations in the Canton of St. Gallen, where monitoring has taken place since 2008.

The second example concerns *P. nausithous* and *P. teleius* in the Jura Mountains (Aargovia). Following changes to the mowing dates of the twice mown meadows, the population of both species increased quite rapidly (2007-2013). Additionally, both species were able to spread into adjacent meadows that were managed according to the new directives and to establish stable (sub-) populations. However, *P. nausithous* spread out much more and was also able to increase its population density better than *P. teleius*, whose population density was apparently subject to bigger fluctuations.

"Swiss Butterfly Conservation" plans to publish selected documents and the results of the monitoring programmes on a homepage soon.

Summary of Lepidoptera activities in Turkey

Ozge Balkiz and Evrim Karacetin (DKM)

Since the last partners meeting, 3 major projects were carried out in Turkey on butterflies: one in Central Anatolia, one in the Mediterranean region and one in Kaz Mountains.

The first project “Sustainable Land Management and Climate-Friendly Agriculture Project: Biodiversity Inventories and Management Plan”, supported by GEF and is run by FAO SEC Office and the Ministry of Forestry and Water Affairs, is carried out in Konya Closed Basin in Central Anatolia. The project aims at (i) ensuring sustainable use of agricultural and forest lands and (ii) providing benefits for conservation of biodiversity (especially steppes) and combatting land degradation and climate change. Within the project DKM carried out biodiversity inventories for different species groups (plants, birds, butterflies, big mammals, small mammals, and herpetofauna) and will prepare a Biodiversity Management Plan. In this framework, detailed butterfly surveys were carried out in 3 pilot sites in Konya Closed Basin and species presence data were collected. One of the 3 pilot sites is a forest management unit, namely Ereğli Forest Management Unit and its management plan was renewed during the project. In this framework, the information collected on all species groups (including butterflies) was integrated into the Forest Management Plan of the site. For this, hotspots of steppic butterfly communities were identified and these sites were identified as sites where no afforestation practices would be carried out to change the habitat suitability for butterflies. Furthermore, conservation measures towards butterflies and their habitats will be identified in the project with experts and will be presented in the Biodiversity Management Plan.

The second project covering the Mediterranean Ecoregion is entitled “Developing an Integrated Approach for the Management of Mediterranean High Conservation Value Forests in Turkey”. The project is supported by GEF and is run by UNDP and General Directorate of Forestry and aims at promoting an integrated approach to the management of forests in Turkey, demonstrating multiple environmental benefits in high conservation value forests in the Mediterranean forest region. DKM, who is the project partner, is responsible of (i) integrating biodiversity into management plans of forests, (ii) preparing a landscape level planning using biodiversity and socio-economic data, (iii) developing ecotourism plans and (iv) carrying out value chain analysis on selected non-timber wood products for forest villages. In the project, DKM worked towards gathering presence data on forest related priority species from different taxa (including butterflies) in 5 pilot Forestry Enterprise Directorates. Species distribution models were prepared to identify priority areas for conservation and this information was integrated into forestry management plans. As a result, no forestry zones were identified and forestry practices towards conservation of butterflies and their habitats were identified (e.g. protection of maquis and bushes with food plants, protection of openings inside and near the forest).

Lastly, in the framework of this project, a regional assessment was carried out throughout the Mediterranean Ecoregion. In this respect, detailed literature data were collected on diverse species groups, including butterflies. Intensive field surveys were then carried out towards filling the gaps of information. As a result 38 days of field surveys were done on butterflies and species data were collected in 93 squares of 10x10 km. The presence data different species groups (butterflies, birds, large and small mammals, plants, freshwater fish, and herpetofauna) will be used together with socio-economic data (e.g. threats, conservation opportunities) to support the preparation of a landscape level planning tool for the region. All data gathered will be spatially mapped using GIS softwares and spatial models and optimization will be employed throughout the process. As a result of the project, priority sites of conservation concern will be identified, and a specific analysis towards forestry sector will be carried out to propose management practices towards Sustainable Forestry Management in the region. Both projects have the potential to serve as models towards integrating conservation and management prescriptions into planning decisions.

The third project carried out in Turkey on butterflies was led by Erciyes University in partnership with DKM, Buğday Ecolological Living Association and Kayseri and Çanakkale Directorates of Provincial Food Agriculture and Livestock. The global aim of this project was to provide suggestions towards decreasing the negative impacts of agriculture on biodiversity, thus developing a biodiversity-friendly agricultural vision. Study area was Kaz Dağları (Kaz Mountains) and the olive-groves in the region. We had carried out our sampling in three different types of agricultural systems: (i) conventional/high input olive-groves, (ii) organic olive groves, (iii) natural/semi-natural areas. In the framework of the project, a total of 18 sampling sites, 48 transects, 96 plant quadrats were identified through GIS systems and field work was carried out in these sites. We communicated and surveyed more than 70 farmers in the region. In each of these transects, parameters related to agricultural activities and biodiversity (birds, butterflies, spiders and plants) were recorded between 2015 and 2017. Using community analysis, organic and conventional olive groves were compared and the impact of different agricultural activities on biodiversity was assessed.

There exist no structural differences between organic and conventional agricultural systems. Yet 1) herbicide use, 2) ploughing intensity, and 3) fertilizer use were recorded as main differences between organic and conventional systems. The use of insecticides is not common in the region. The agricultural practices, which had the highest impact on biodiversity, resulted to be tillage and herbicide use. We recommend stopping the use of herbicides, and instead of ploughing, we recommend cutting the weeds twice every year (in spring and end of summer). Lastly, we recommend ploughing soil every 2-3 years and at most with a depth of 30% of soil to avoid deep ploughing. With this project for the first time, we were able to compare conventional and organic olive growing practices with biodiversity. In the long-term, there is a need to disseminate the outcomes of the project and start implementing them in the region.

Butterfly watchers are also active in Turkey. Websites formed by butterfly photographers like trakel.org, adamerkelebek.org are actively working on increasing the butterfly photography interest as well as collecting data on rare species encounters. *Pontia glauconome* was recorded by a local butterfly watcher for the first time in Turkey in Siirt in November 2017. An ecotourism project on butterflies of Saimbeyli (Adana, Turkey) was carried out and completed by butterfly watchers (http://www.ekosaimbeyli.com/default.aspx?Dil=2).

Progress in Butterfly Conservation (UK) **UK**

Martin Warren and Paul Kirkland

BC (UK) continues to grow and take on more Lepidoptera conservation and recording projects. It now has 33,000 members and a staff of over 80. In 2017, Julie Williams took over as Chief Executive and overseen by a Council (Board) of 15 people. Next year (2018) is our 50th anniversary year which will be celebrated by an International Symposium to be held at Southampton and the publication of the first ever Moth Atlas of Britain and Ireland.

Recording and monitoring remain major activities and we now have over 12 million records of butterflies and 25 million records of moths. BC runs three large schemes: Butterflies for the New Millennium and the National Moth Recording Scheme, and the UK Butterfly Monitoring Scheme, which is run with the Centre for Ecology and Hydrology (CEH). We collaborate with a wide range of Universities and researchers to analyse this data and publish scientific papers. We are also heavily involved with the development of the European BMS run by BC Europe and CEH.

Since 2010, we have run a highly successful Big Butterfly Count aimed at engaging the wider public. Over the last 8 years the Count has engaged over 200,000 people. After 6 years sponsorship from the supermarket Marks and Spencer, it is now sponsored by another supermarket Waitrose. In 2017, it had its best ever year in terms of participation, with over 62,000 counts submitted by over 60,000 people. However, the number of butterflies seen per 15 minute count was the lowest ever at 10.9 individuals. As well as engaging the public, the Count provides valuable scientific data even though it is based on a simple 15 minute count by inexperienced observers. Its scientific validity count was proved in a paper by Emily Dennis et al which showed that counts were highly correlated with results from the more systematic and validated UK BMS, when a weather correction was applied http://onlinelibrary.wiley.com/doi/10.1111/cobi.12956/full.

Practical conservation projects are focussed on over 70 Priority Landscape areas across the UK which support concentrations of threatened species. A large number of funded projects are now being implemented in these landscapes and several species are increasing after decades of decline. They include *Phengaris arion*, *Hamearis lucina* and *Euphydryas aurinia*. We have recently started several projects aimed at enhancing butterflies in urban areas and a major new collaborative project in England called Back from the Brink, funded by our national lottery http://butrfli.es/BFTBlaunch

Although there has been some good news from these highly targeted conservation projects, many common butterflies and moths continue to decline, indicating an ongoing biodiversity crisis in the UK. With Stirling University, we published a paper showing a close correlation between the increasing use of neonicotinoid pesticides and the decline of common butterflies http://butrfli.es/1R4lUgP . However, this was just a correlation and other factors may be involved so we are pressing for more research. We are delighted that our current UK Environment Minister has surprisingly gone against his predecessors and is supporting a wider EU ban on neonics!

We have followed up a lottery funded education project, Munching Caterpillars with several regional projects known as Munching Caterpillars Comes to Town. These are aimed at showing school children the amazing life cycles of butterflies and their connection with food-plants and habitats.

On the policy front, we are obviously very concerned over Brexit and what this will mean for wildlife legislation, much of which comes from the EU. The EU Withdrawal Bill is supposed to translate much EU law into UK statute, but will exclude many things such as the precautionary principle. We are also very concerned what happens to agri-environment payments to farmers after Brexit as these underpin most of our practical conservation projects. The UK Government has promised a new Environment Act but it remains to be seen whether this improves the current situation or dodges crucial issues. Full details of our work are in our latest annual review https://butterfly-conservation.org/files/charity-annual-accounts-for-the-year-ending-31-march-2017.pdf

Butterfly Conservation - European Butterflies Group

Martin Davies

The *European Interests Group* (EIG) was formed in 2006 as a branch of the UK-based organisation *Butterfly Conservation* (BC) to provide a focus for members of BC who have an interest in European butterflies. It renamed itself in November 2016 as "*Butterfly Conservation - European Butterflies Group*."

It exists to promote the enjoyment, study and conservation of butterflies, moths and their habitats in Europe and currently has over 450 members, who mostly live in the UK. The UK has 59 regular butterfly species (representing some 10% of the European butterfly fauna) and many of the members of the European Butterflies Group travel in Europe each year in search of other European butterflies. We offer our time, enthusiasm and experience as volunteers to help in various European butterfly projects, often in response to local requests. We sometimes help establish other projects in Europe, particularly working closely with Butterfly Conservation Europe. Such projects vary but are often focussed on key sites (such as National Parks) or on rare or local species. Sometimes we can also offer small-scale funding to support European butterfly initiatives.

A few examples of recent activities include: a survey of a very local population of *Euphydryas maturna* in Italy, *Pieris cheiranthi* in Tenerife, on-going support to colleagues in Orseg National Park in Hungary (£20,000 raised in 10 years); surveys and training 2017-18 in Tzoumerka, Chelmos and Pindus National Parks in Greece; 2 bursaries in 2017 for young lepidopterists to support projects in Greece (surveying habitat for *Turanana taygetica*) and Hungary (surveying *Phengaris* species using mark-recapture techniques); support for *Colias myrmidone* work in Romania and searches for this species in Bulgaria.

We communicate with our members by means of a biannual Newsletter (distributed electronically) and, through our website www.european-butterflies.org.uk, with a much wider community of people interested in butterflies. The website contains a wealth of information on butterflies in Europe, including Country Pages, listings of forthcoming Events, requests for help with projects, butterfly-watching holidays, and an extensive network of web-links to many other websites and organisations interested in European butterflies. To celebrate our 10th anniversary in 2017, we published a 50-page printed colour newsletter and this also included the newly updated checklist of European butterfly species.

Over recent years, member of the European Butterflies Group have participated in studies on the endemic species of the Sierra Nevada and surrounding areas in southern Spain, and on other local endemics (such as *Kretania hesperica*) in central Spain, on rare and local *Erebia* species in the Alps, and on *Agriades dardanus* in Bulgaria and *Turanana taygetica* in the Peloponnese in Greece. A survey of *Colias myrmidone* in Romania in 2015 provided vital data to enable the Romanian government authorities to designate three new SCIs for the species. In the coming year, we plan to continue our support (jointly with German colleagues) for work on *Colias myrmidone* in Romania and also in Belarus, on *Pieris cheiranthi* in Tenerife, *Euchloe bazae* in Spain and in encouraging on-going searches for *Pseudochazara orestes* in NE Greece.

UKRAINE

Butterfly recording in Ukraine: genus *Maculinea* species

Serhiy Popov

The butterfly monitoring pilot project in West Ukraine started in 1974. Since then, butterflies have been surveys have been done at 828 sites. Now, the high number of Pollard Walk transects (200) makes it possible to calculate regional and habitat-indices for many species (Popov, 1995, 1996, 2008). Special attention is paid to threatened species in Europe and butterfly indicators. The objective is to make two yearly recording visits for each Pollard Walk transect in May and July. This can be achieved by a 'Red list monitoring scheme', in which monitoring is restricted to the flight period of the species. Another objective is to investigate trends in butterfly diversity and numbers and to be able to relate these to environmental factors and possible conservation measures. Facilitation of regional and international cooperation on this issue is also one of the objectives.

All monitoring data on 150+ butterfly species from field work on transects into Dbase format MS FOXPRO contributed. The database for period since 1973 to 2016 has 199375 records which hase been done while 1931 unique visits.

Some results on Genus ***Maculinea*** van Ecke (1915)

Maculiea alcon
Number of the butterflies seen since year **2000** are **339**
The butterfly habitats **CORINE** -

- Abandoned pastures
- Central European hygrophile acidophilous oak forests
- Wet [*Spiraea salicifolia*]-[*Gentiana pneumonanthe*] heaths
- Montane eastern Carpathian bilberry-ling heaths
- Herbaceous clearings
- Medio-European rich-soil thickets
- Shady woodland edge fringes Bog cottonsedge-*sphagnum* lawns and green hummock bases

***Maculinea rebeli* (also *alcon* ssp. *rebeli* as well)**
Number of the butterflies seen since **2002** are **89**
The butterfly habitats **CORINE** –

- Early-stage natural and semi-natural [*Betula*] - [*Quercus*] light woodlands and regrowth
- Recently abandoned hay meadows
- Sub-Pannonic wooded steppe meadows

Maculiea arion
Number of the butterflies seen since **1975** are **946**
The butterfly habitats **CORINE**

- Blackthorn-bramble scrub
- Bramble thickets
- Carpathian tall herb communities
- Deciduous scrub woodland
- Dry grasslands
- Early-stage natural and semi-natural light woodlands and regrowth
- Flood swards and related communities
- Fruit and nut tree orchards
- Fruit orchards
- Herbaceous clearings
- Intensive vineyards
- Low and medium altitude hay meadows

- Mesophile fringes
- Mixed [*Quercus*] - [*Ulmus*] - [*Fraxinus*] light woodland of great rivers
- Mixed crops of market gardens and horticulture
- Montane eastern Carpathian bilberry-ling heaths
- Mountain hay meadows
- Permanent mesotrophic pastures and aftermath-grazed meadows
- Recently abandoned garden areas
- Recently abandoned hay meadows
- Regularly or recently cultivated agricultural, horticultural and domestic habitat
- Rich fens, including eutrophic tall-herb fens and calcareous flushes and soaks
- Sarmatic steppes
- Seasonally wet and wet grasslands
- Small-scale ornamental and domestic garden areas
- Sub-Pannonic wooded steppe meadows
- Temperate thickets and scrub
- Unbroken pastures
- Wet heaths
- Woodland fringes and clearings and tall forb stands

Maculiea teleius

Number of the butterflies seen since **1988** are **2919**

The butterfly habitats **CORINE** –

- Blackthorn-bramble scrub
- Central European hygrophile acidophilous light oak forests
- Central sub-Carpathian light oak-hornbeam forests
- Deciduous scrub woodland
- Disused road, rail and other constructed hard-surfaced areas
- Early-stage natural and semi-natural light woodlands and regrowth
- Flood swards
- Flood swards and related communities
- Herbaceous clearings
- Large-scale intensive unmixed crops (>25ha)
- Lines of trees, small anthropogenic woodlands, recently felled woodland, early-s
- Low and medium altitude hay meadows
- Lowland and collinar riverine [*Salix*] scrub
- Medio-European rich-soil thickets
- Moesio-Carpathian meadow-steppes
- Mountain hay meadows
- Regularly or recently cultivated agricultural, horticultural and domestic habitat
- Rich fens, including eutrophic tall-herb fens and calcareous flushes and soaks
- Road networks
- Seasonally wet and wet grasslands
- Sparsely wooded grasslands
- Tall-herb communities of humid meadows
- Wet [*Spiraea salicifolia*]-[*Gentiana pneumonanthe*] heaths
- Wet heaths
- [*Quercus*] swamp light woods

Maculiea nausithous

Number of the butterflies seen since **1988** are **718**

The butterfly habitats CORINE –Bog cottonsedge-sphagnum lawns and green hummock bases

- [*Sanguisorba officinalis*] flood swards
- Herbaceous clearings
- Lines of trees, small anthropogenic woodlands, recently felled woodland, early-s
- Low and medium altitude hay [*Sanguisorba officinalis*] meadows
- Moesio-Carpathian meadow-steppes
- Mountain hay [*Sanguisorba officinalis*] meadows

- Rich fens, including eutrophic tall-herb fens and calcareous flushes and soaks
- Species-rich lowland flood [*Sanguisorba officinalis*] meadows
- Tall-herb communities of humid [*Sanguisorba officinalis*] meadows

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