Maculinea Newsletter Issue 2 - oktober 1997

Dear colleagues,

During this summer in almost all of Europe, the weather was quite bad during the flight period of the *Maculinea* species. Many of us were desperate, fearing that no butterflies would be on the wing at all this year. But finally, albeit with some delay, the fieldwork started. To start with, we would like to tell you more over the follow up of the workshop.

Current status of the proceedings of the International Maculinea workshop in Wageningen

The proceedings of the International Maculinea Workshop, which took place in November 1996 in Wageningen, are nearly finished. They will be published as a Special Issue of the "Journal of Insect Conservation" by Chapman and Hall in April 1998. Many participants of the workshop have written a contribution to the proceedings, and we would like to thank them all for their work. Since the proceedings are published in an official scientific journal, all manuscripts had to be refereed by an editorial board. This was organized by the editor of the journal, dr. Andrew Pullin. Some manuscripts have already been refereed and were sent back to the authors recently. As the majority of the manuscripts was of a high quality, we will have to cope with the fact that the Special Issue offers space for a limited number of contributions only. Because of this, it will not be possible to publish all of the submitted manuscripts together in a single issue. In cooperation with Andrew Pullin, a selection will be made which papers will be published in the Special Issue and which in a later issue of the Journal of Insect Conservation. This means that the authors who are correcting their manuscript right now or in the near future should again try to shorten their contributions as much as possible, so that more papers will find a place in the Special Issue.

Work at the Furzebrook/Paris group this season

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The Furzebrook/Paris group have had mixed success this summer. The detailed monitoring of theintroduction of Maculinea arion to former British sites was continued. South-west England suffered along period of heavy rainfall during the peak emergence time and it is feared that this might havecaused local extinction (or dangerously reduced populations) on half the sites. While this is unfortunatefrom the nature conservation perspective it will in the long-term provide invaluable data on the ability of small M. arion populations to withstand and recover from, extreme weather conditions.

Jeremy Thomas and Graham Elmes had a field trip to France and the Pyrenees where they met Michael Hochberg and Miguel Munguira respectively. New M. arion sites were located in the Dordogne region of France which will hopefully, be subjected to more intensive study by Michael Hochberg'sgroup, next year. The Panticosa region also suffered

from rainfall during the M.rebeli emergence period and we estimated that egg numbers were only about 30% of normal. However, the population there is so large and robust that we expect it to recover easily from such a depression in numbers.

Work at the UFZ group (Leipzig) this season

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Since 1989 the presence of Maculinea nausithous, M. teleius and Lycaena dispar has been monitored in the Palatine part of the Upper Rhine Valley (Rhineland-Palatinate/ Germany). Data are available for the years 1989, 1991, 1992, 1994, 1995 and 1997. Although the 1997 data have not yet been fully analysed I can give some preliminary results in terms of percentage of localities occupied by the species. These are summarized in table 1 (without the results on Lycaena dispar, which had a rather good second brood in the area this year and was found on many of the potential localities; percentage above the average of the last years). Detailed results of the research up to 1995 will be published in 1998 (Settele, in press).

Table 1: Percentage of 500m-grid-squares (1989-1995) or potential habitats (1997). The data on potential habitats are always rather similar to the grid-square-data; the latter however have not yet been analysed for 1997. Data of 1989-1995 taken from Settele (in press).

	1989	1991	1992	1994	1995	1997
M. nausithous	49	44	46	39	57	52
(total n of localities, rsp. grid-squares)	(201)	(84)	(68)	(49)	(88)	(95)
M. teleius	8	5	11	no data	9	6
(total n of localities, rsp. grid-squares)	(167)	(44)	(28)	(-)	(78)	(95)

Literature cited: Settele, J. (1998): Metapopulationsanalyse auf Rasterdatenbasis. Teubner Verlag, Leipzig & Stuttgart (in press; will most probably be published in January 1998).

Start of a research program on M. alcon in Belgium

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This summer, we started a new study in different Belgian populations of M.alcon. Unfortunately there was no extra money available for our project, but we started anyway. M.alcon flew from half of July till half of August and data were collected on population density, residence time and mobility using a MRR-method), temporal and spatial egg-distribution and relationships with the ants. We will soon know which species of Myrmica is used as a host in at least some of the Belgian populations. The study was planned in three areas, but in one of the three access to the area was refused because the Belgian army exercised their war-games in this military area in that period. We will try to work out a new research

schedule for the next years and keep on trying to get funds. Involved researchers are: Dirk Maes (Institute of Nature Conservation), Luc De Bruyn (University of Antwerp), Hans Van Dyck (University of Antwerp) and Willem Talloen (Biology student, University of Leuven). The project will be carried out in close co-operation with our friends and colleagues from the Dutch Butterfly Conservation.

Present situation of the Kostrza populations in the Wisna valley near Krakow

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Last year in August a major part of the habitat of Maculinea teleius, nausithous and alcon near Kostrza got flooded due to heavy rainfall. Additionally, this year the weather in July was extremely bad. Probably as a consequence of these bad weather conditions, the populations of all three Maculinea species have dramatically declined in numbers. In July, only very few butterflies were seen. However, in August caterpillars on the flowerheads of Sanguisorba officinalis were found.

In case of M. alcon the situation is even worse because the number of its hostplant Gentiana pneumonanthe is continuously decreasing from year to year. Last year we could observe some eggs on a few gentians but this year no eggs were seen anymore. The gentian population is also affected by changes in land use. The farmers cut the area very irregularly or even stop the mowing regime. We hope that the populations are still strong enough to persist at the long term.

Maculinea work at Dutch Butterfly Conservation and Wageningen Agricultural University

As we did not get any funding for some additional work on the ecology of Maculinea alcon, we had to restrict our activities to M. nausithous and M. teleius. The flight period of the reintroduced populations started quite late, probably due to the bad weather in June and early July. While the population of M. teleius again increased, M. nausithous had a bad year, as there were only limited numbers of individuals. However, a new subpopulation was discovered at a distance of about 5 km from the reintroduction site. Unfortunately, one of the initially established subpopulations is at the same time decreasing because of overgrowing of the site with Rubus, and will probably become extinct next year.

Action Plan for the Conservation of Maculinea species in Europe

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The council of Europe has asked the butterfly specialists from the Universidad Autonoma de Madrid in Spain to produce an Action Plan for the European Maculinea butterflies (Council of Europe, project: Action plans for Maculinea species in Europe). The final report will have less than 36.000 words and will be written in English. In order to incorporate to the final output as much first hand information as possible, we have asked for help to one Maculinea expert from each country in which we know there is somebody involved with the topic Each partner was asked to produce a short text of 2-5 pages.

The text will have an introduction summarizing the most relevant aspects of the biology and ecology of the genus and its interest from the scientific and conservation points of view. The status for each species in Europe will

be proposed based on recent information on distribution and abundance from each country. The most important part of the work will deal with the endangering processes for each country and the actions that should be taken to preserve as many populations as possible. Our aim is not to give general ideas, but to be very specific which are the problems each population is facing and the possible solutions to conserve the species. The conclusion of the work will provide a list of priority actions that could include reintroductions in critical areas, the creation of nature reserves, recommendations for management needed, or any other possibilities. Action plans will be provided both in a species and country basis, and priorities for the whole of Europe will also be pointed out.

The work will be written during September and October and the final draft will be ready at the beginning of November, although the date of publication is not fixed. If you have any ideas or want to collaborate please contact Miguel L. Munguira (tel:+34.1.3978281, fax: +34.1.3978344 or e-mail). We are particularly interested in information from Eastern European Countries from which very little information is available apart from Poland, Hungary and Bulgaria, but any other support will be most welcome.

A Database with results of different kinds of management in Maculinea populations

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For the conservation of Maculinea species the management of their sotes is of major importance. Certainly, there is a lot of experience available. However, this is often difficult to get access of this information. Furthermore, the information may contradict or complemet each other. Two examples may illustrate this:

- The flight period of Maculinea teleius differs considerably within Bavaria. Many potentially suitable grassland sites are mown twice a year, but only where the flight period is late, the hostplants produce a suffiently high number of new flowerheads after the first cut on which the females can deposit their eggs. Populations with an early flight period are harmed by such an early cut, because no flowerheads are available when the butterflies are on the wing. Therefore, two cuts per year might be detrimental, depending on the region.

- In the Swabian Jura, grazing is suggested for M. rebeli sites while in the Franconian Jura the best populations are on more or less abandoned sites. On the larger grazed sites, no populations exist. Of course, abandonment is not a good grassland management technique on the long run. The question is how to manage/graze these sites to achieve good results for the long-term persistance of the M. rebeli populations.

In view of these problems, I suggest to collect information on failures and successes of managenemt of Maculinea sites in different regeions of Europe under different circumstances to gain better insight into the effects of the different management types on Maculinea populations.

Further ideas on a book/booklet on methods for Maculinea research

During the Workshop, the idea was launched to write a book(let) with standard techniques and methods for the study of Maculinea species. One important function of this book could be to stimulate people to start work on this fascinating butterfly genus and its host plants and ants. Another

advantage of such a book could be that people starting up work on this group are more likely to use identical techniques and methods, which makes comparisons with earlier work easier. The book would also serve to give an overview of the existing literature, putting a finger on the wound of poorly comparable research results due to different sampling techniques and interpretations of data.

At Dutch Butterfly Conservation, we have been brainstorming a little bit about the possible contents of such a book. This has resulted in the following list of chapters. Of course, this list is intended as a basis for discussion within the forum of Maculinea researchers that reads this newsletter. What we would like you to do is (1) to give comments on the list of subjects, make additions and suggest improvements, and (2) think about possible authors for each of the chapters or sections, preferably people specialised in each field of interest.

Methods and Techniques for the study of Maculinea species

1. Introduction

1.1 Why study Maculinea's ?
1.2 The Maculinea system: plants, ants, butterflies and parasites

2. Identification of the Species

2.1 Host plant species
2.2 Myrmica ant species
2.3 Maculinea butterflies, eggs and caterpillars
2.4 Maculinea parasites

3. Geographical Distribution of Maculinea species

3.1 Data from the field
3.2 Butterfly collection data

4. Methods to Study Individual Components of the Maculinea System

4.1 Host Plants
4.1.1 Describing individual plant architecture
4.1.2 Estimating host plant population size
4.1.3 Analysing population dynamics and monitoring
4.1.4 Host plant ecology

4.2 Host Ants
4.2.1 Locating nests and colonies
4.2.2 Assessing colony size
4.2.3 Monitoring (host) ant populations
4.2.4 Ecological description of nest sites
4.2.5 Rearing techniques for experimentation

4.3 Butterflies
4.3.1 Mark-recapture techniques
4.3.2 Estimating population size
4.3.3 Butterfly behavioural ecology
4.3.4 Monitoring populations
4.3.5 Metapopulation surveys

4.4 Parasites
4.4.1 Establishing the presence of parasites

4.4.2 Studying parasite behaviour
4.4.3 Parasite ecology

5. Interactions between the Components of the Maculinea System

5.1 Adoption of caterpillars by Myrmica ants
5.2 Ant-caterpillar interactions in the nest
5.3 Estimating hibernation success in the field
5.4 Ant-detection experiments
5.5 Impact of Maculinea on host plant populations
5.6 Impact of Maculinea on Myrmica populations
5.7 Impact of species-specific parasites on butterfly populations

6. Modelling the Interactions

6.1 Population models
6.2 Metapopulation models

7. Collection of Samples

7.1 Samples for genetical research
7.2 Photographic records

8. Genetical Studies of Maculinea Species

8.1 Taxonomical questions
8.2 Population genetical structure
8.3 Techniques to study genetic variation
8.3.1 Isozyme electrophoresis
8.3.2 DNA-analysis
8.3.3 Image analysis

9. Literature References

What do you think of these contents? We would appreciate very much if you have any suggestions concerning the book. Also tell us know, if you would like to volunteer as an author of a specific chapter (or a part of a chapter). Of course, you can also share authorship with one or more others. We would like to have your reaction before November, 1rst. Our plans are to have a good layout of the new book together with a list of authors by the end of the year. In the beginning of 1998 we will contact possible editors. With a little bit of luck, the texts can be written before the field season starts. By the end of the year, correcting and editing of the book should be finished, followed by publication in the beginning of 1999.

We prefer to receive your response by e-mail, if you have this available. However, fax, telephone or regular mail will also do. All our numbers and addresses are given in the colofon of this Newsletter.

Many thanks to everyone who contributed to this Maculinea Newsletter. We look forward to receiving many new contributions and reactions !

With many greetings, and good luck processing and publishing your research data!

Dutch Butterfly Conservation
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