

The Workshop Endemism : Introduction

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The present issue of the *Belgian Journal of Entomology* contains the proceedings of the workshop "Endemism", held in the Laboratoire Souterrain du CNRS in Moulis (France, Ariège) from 15 to 17 February 1999. Alain MANGIN, Director of the Laboratoire Souterrain, kindly accepted to host and to welcome the meeting. Special thanks are due to the staff of the laboratory, particularly to Line DELBREIL and Jacqueline RIVES, who took in charge material aspects of the workshop. The organization of this meeting would not have been possible without the financial and material support of several organisms and institutes: Conseil Général de l'Ariège, Université Paul Sabatier of Toulouse, Conseil Régional Midi-Pyrénées, Centre National de la Recherche Scientifique, and Mairie de Moulis (Ariège). Mario CATIZZONE and Martin SHARMAN of DGXII brought a decisive moral support to the holding of this workshop.

We hope that this meeting and its proceedings will contribute a significant milestone in our common effort for research into endemism and biodiversity conservation in Europe.

Readers may question why proceedings of a workshop covering such a taxonomic breadth are published in an entomological journal. Endemism and biodiversity questions have special importance for entomology, not least because insects represent by far the largest component of biodiversity and endemism on earth. Despite this, their contribution is often given little consideration in conservation policies. By opening its pages to these broader research topics, the new BJE recognises that insect taxonomy, basic to so many ecological and evolutionary investigations, will increasingly have to be applied in fields directly related to human welfare, and particularly to nature conservation. We appreciate the recognition of the importance of endemism research by the BJE in its support for this publication.

The rationale for studying endemism from a conservation perspective has been expressed clearly by BIBBY *et al.* (1992) : "There is now an urgent need to develop and refine patterns of endemism for other taxa (other than birds),

using more rigorous analytical techniques and more robust data-sets, to provide the world's conservation planners with a definitive list of areas of global significance for the conservation of biological biodiversity".

Endemics are narrowly distributed taxa, which tend to occur together in particular areas. These areas of endemism are often also hotspots of biodiversity, where endemic species supplement a core of more widespread species. Endemics themselves have a special biological value by virtue of their reduced distribution and frequently by their phylogenetic isolation. Therefore, areas of high endemism should be a high priority for biodiversity conservation. But so far, what has been achieved in translating scientific evidence into regional and European conservation policies is still so limited that new initiatives are urgently needed. With this goal in mind, in 1994 we launched the European project "High Endemism Areas, Endemic Biota and Conservation of Biodiversity in Western Europe" (DGXII), which pooled the energies of several European laboratories (France, Spain, Portugal, Belgium, Sweden). This programme aimed at developing a rigorous and more balanced approach to European biodiversity, re-evaluating the place of endemic biota and addressing both fundamental and regional issues relating to endemism.

As the closing meeting of this project, the "Endemism" workshop held in February 1999 was the occasion to present the results of our three and half years of work. This ranged from ecological effects of disturbance on endemics to problems of mapping endemism for conservation. A complete overview of the programme results is summarized briefly in the final report, which will be published separately. But the main objective of the "Endemism" workshop was to explore new ways of investigating questions in the field of endemism studies, and to promote new collaborations, in order to foster the integration of endemism as an important criterion in the selection of biota and areas for conservation. Several biologists contributed original communications in this area. I shall review briefly the contributions published in these proceedings within the framework of current research on endemism and its relationship to biodiversity conservation.

Patterns of endemism and processes by which they originated are priorities for scientific investigation. At best, we know only very approximately where in Europe centres of endemism are located, and why they are where they are. Combining information from different living groups, it was possible to mitigate the huge sampling heterogeneity inherent in distribution data, to characterize hotspots more accurately and more rigorously, and to explore the degree of dependence of particular high endemism areas on the taxonomic groups used to define them (GAMA *et al.*; MARTIN *et al.*). We are still very far from a balanced overview of centres of endemism even within western Europe, but general patterns as well as main gaps in our knowledge are beginning to emerge from this comparative approach (DEHARVENG *et al.*; GARCIA-BARROS *et al.*; LOZANO *et al.*). They highlight current progress in defining criteria used in Europe for selecting areas for conservation (STOCH).

A variety of regional and local factors may have contributed to the present-day spatial configuration of areas of high endemism. First, the stock of species available in any area is inherited from past ecological and geological events: linking biogeography to evolutionary analysis remains an essential tool for understanding regional endemism, until now used too rarely in Europe (HUGOT & COSSON). Second, habitat availability has a strong effect on the number of regional endemics. For example, non-karst areas tend to be much poorer in endemics than karst areas, simply because both the subterranean fauna and the terrestrial molluscs are largely dependent on the limestone, and both are among the groups with the highest proportion of endemic taxa. Many ecosystems and habitats have been reduced dramatically or have disappeared completely under human pressure. The most recent example of large-scale disturbance is industrial reforestation, which continues to consume the last stand of old forests in the biologically richest areas in Europe (GURREA *et al.*, SOUSA *et al.*). Third, endemics interact with other species, so the relative abundance of the former may affect biodiversity of the later. This is particularly true for host-parasite systems, in which the abundance or the range of the host may be a good predictor of its richness in parasites (MORAND & GUÉGAN).

It is unquestionable that such fundamental work on endemism has to be developed as a priority. However, protecting endemic biodiversity cannot wait for high precision maps of areas of endemism, for detailed characterisation of the all of the endemic fauna and flora, or for sound explanations of endemism patterns. While expanding this information base, we have to start using available information and, by using quantitative tools which already exist, to optimize area selection for conservation according to a range of values and constraints (WILLIAMS *et al.*). On the other hand, gathering biological information may be time-consuming and costly, and available data may be not appropriate to the scale needed for natural area management (GARCIA-BARROS *et al.*). The predictive approach to estimate local or regional biodiversity from limited datasets (CHUST *et al.*; MORAND & GUÉGAN) will have probably to be used increasingly for the management of natural areas.

Even when we have the data and the tools to use them, the major problem is socio-cultural : endemism and endemic biota on their own have rarely been considered by planners as a prime issue in nature conservation (CONDÉ). The prevailing biological criteria for managers are related more to the body size or colour of a taxon than to its geographic, phyletic or genetic uniqueness, and this is true even among invertebrates (LHONORÉ & BRUSTEL). However, minds are changing. We are confident that the biological evidence for the importance of endemism will soon catch up with the growing public and scientific awareness of the need for biodiversity conservation. The immediate challenge is to bring together those who are committed to manage biodiversity, and those who study it. We hope that the "Endemism" workshop has achieved a useful step in this direction.

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Reference

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