SIXTH FRAMEWORK PROGRAMME

Projects

funded by BiodivERsA partners
2008 Call

European research in biodiversity

biodiversa

BiodiverSA Partners

Fondation française pour la Recherche sur la Biodiversité - FRB
Institut National de la recherche Agronomique - INRA
Fonds zur Förderung der wissenschaftlichen Forshung - FWF
BELSPO - Science Policy Belgium - PPS
Estonian Science Foundation - EstSF
Ministère de l'Ecologie, de l'Energie, du Développement Durable et la Mer - MEEDDM
Projektträger im Deutschen Zentrum für Luft- und Raumfahrt e.V - PT-DLR
Ministry of Environment and Water - MEW
Ministero della Istruzione, Università e Ricerca - MIUR
Netherlands Organisation for Scientific Research - NWO
The Research Council of Norway - RCN
European Science Foundation - ESF
Fundação para a Ciência e a Tecnologia - FCT
Ministerio de Ciencia e Innovación - MICINN
Swedish Research Council for Environment, Agricultural Science and Spatial Planning - FORMAS
Swedish Environmental Protection Agency - SEPA
Swedish Research Council - VR
The Department of the Environment, Food and Rural Affairs - DEFRA
Natural Environment Research Council - NERC
Agence Nationale de la Recherche - ANR

!

Cover photos:
Bees, Elizabeth Watson; Beech Forest, Georg Winkel; Scientists in field, Nancy Dise; Butterflies, Steffen Caspari

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Introduction - What is BiodivERsA?

> BiodivERsA partners work so that this call will not be a one shot operation. They aim at establishing a recurrent funding scheme for European research on biodiversity.

Beyond the joint-call and funding of the projects – that I hope you will enjoy discovering in the following pages – is a long road done by BiodivERsA partners. But what is this 'BiodivERsA'? Much more than just a mix of biodiversity and ERA (European Research Area)!

BiodivERsA is an ERA-Net (European Research Area Network) on research on biodiversity that I have had the pleasure to coordinate since Summer 2008, building upon 3 years of coordination by Jacques Weber. This 3-million-euro project is funded by the FP6 (6th Framework Programme), from May 2005 to April 2010. This project is a network of 19 partner funding agencies of 13 European countries. Its objectives are to promote the cooperation between funding agencies in the field of biodiversity research and to coordinate research programmes at strategic and management levels to eventually develop and implement joint-activities. Ultimately, BiodivERsA aims to build a sustained cooperation between funding agencies.

Behind the 2008 transnational call is a long process of learning from each other and of discussions and agreements, as cooperation among such a variety of institutional partners is not so easy. Indeed, each agency has its strategy and administrative rules to support research. Moreover, variety between agencies of a given country can be as challenging as between agencies of different countries! The first task has been to share information. One of the concrete supporting element in the information gathering was the building of a database of funding programmes and projects with a search and analysis tool for scientists and science managers, **http://www.biodiversity.be/biodiversa**

Then, best practice in commissioning and managing biodiversity research were assessed to be shared and to find approaches to overcome barriers to cooperation. These previous tasks have, in the end, made easier the identification of joint priorities. The scientific rationale of the joint-call was issued, aiming at balancing scientific excellence and policy relevance and addressing 3 topics: climate change and biodiversity dynamics, ecosystem functioning and ecosystem services. However, the rules and procedures to manage the joint-call and evaluate the proposals were still to be defined. But in the end, 15 out the 19 BiodivERsA partners went on board and committed themselves to an overall amount of 21.5 M€.

The 2008 call was launched on the 23rd of November 2007, and it was a great success! The strong responses from the scientific community (182 proposals) to the announcement of this opportunity, highlighted the huge scientific potential across Europe on the topic of biodiversity.

As you may have understood, the funding of the 12 projects presented below is the main output of this fruitful collaboration between the funding agencies of BiodivERsA. We are pleased to share these different topics with you and hope that you will find in these projects a future research collaboration, potential useful results for policy or conservation management, or simply a reason to cooperate with European partners!

Furthermore, the BiodivERsA partners work so that this call will not be a one shot operation. They aim at establishing a recurrent funding scheme for European research on biodiversity.

Xavier Le Roux
BiodivERsA coordinator

BiodivERsA pan-European Call 2008

14.2 M granted to 12 collaborative projects on biodiversity across 8 countries.

The Evaluation committee (RCN Research Council of Norway, Oslo, 22-23 September, 2008)

The BiodivERsA Pan-European call for international research projects on biodiversity: linking scientific advancement to policy and practice addressed the three following themes (across all ecosystems and organisms).

a) Global change and biodiversity dynamics
b) Ecosystem functioning
c) Ecosystem services

In the call, emphasis was laid on the link between scientific excellence and relevance to policy and practice. The proposals were accordingly evaluated against criteria on science, policy relevance and project management.

Fifteen funding partners from twelve countries took part in the call.

· FWF, Austria · EstSF, Estonia · MEEDDM, France
· PT-DLR, Germany · MEW, Hungary · MIUR, Italy
· NWO, Netherlands · RCN, Norway · FCT, Portugal
· MICINN, Spain · FORMAS, Sweden · SEPA, Sweden
· DEFRA, UK · NERC, UK · ANR, France

The funding partners had agreed on a joint evaluation procedure that also allowed them to comply with national rules. A joint project-monitoring scheme has also been organized and any problems arising with the projects will be tackled by the call steering committee.

The two-stage evaluation process was completed within 6 months:
-In March, 2008, 182 outline applications were received.
-In April, 2008, the 24 international experts (see p.6) of the evaluation committee sifted the pre-proposals and
recommended 47 of them to be invited to submit full proposals.
-Full applications were received in June and sent for external peer review over the summer.
-In September, the evaluation committee evaluated and ranked the 47 proposals.
-In October, the steering committee recommended 9 proposals to be funded and an additional 3 were included in a complementary list, subject to the availability of sufficient funds in some countries.
-Negotiations between the concerned agencies were completed by the end of November and gave way to the process of formal approval by the funding partners.

Thanks to a significant effort by NERC (UK) to increase its budget and to the flexibility of MEEDDM (France) and BMBF (Germany), 12 projects were able to be funded.

The fact that three agencies did not spend any of their reserved budget indicates that no political criteria interfered with the funding decision, which strictly followed the ranking established by the evaluation committee. As a result, part of the total announced budget was not used.

Flora Pelegrin

BiodivERsA – the challenge and the result

A comment by Peter Bridgewater, Chair of BiodivERsA's Pan European Call Evaluation Committee

BiodivERsA, as one of a number of European Research Area schemes, drew together the strengths, in intellectual and financial terms of some European Research funding bodies at national level, as part of the EU's 6th framework programme designed to promote coordination of national research funding programmes.
And now the partner agencies are in the process of making the formal funding decisions and the successful projects will soon be underway. For those who made it; well done, a good achievement, and a strong challenge. Yet to get to these finally agreed and funded 12 projects was a long process – long to ensure proper consideration and fairness, and long to ensure only the very best projects were selected.

I had the pleasure of chairing the Evaluation Committee for BiodivERsA, which met firstly in Lisbon, at the invitation of the Portuguese FCT - Fundação para a Ciência e a Tecnologia at the end of March 2008. The Evaluation Committee at that time had the difficult job of sifting nearly 200 pre-proposals into a set that would be asked to submit a full proposal. About 2/3 of the Evaluation Committee were directly from the science community, about 1/3 from the science –policy interface – between us covering the range of disciplines covered by the pre-proposals. After intensive work prior to the meeting by the members of the Committee, it met in full session for three days, examining in teams, and then in full plenary, the pre-proposals. It was a difficult task because of the very high quality of most of the submissions. But in the end it was clear we had 47 which stood out from the rest, and those went to the full proposal stage.

In late September 2008 the Evaluation Committee met again, in Oslo, at the invitation of RCN (Research Council of Norway-Forskningsrådet). This time the Committee had lost one or two original members, but was strengthened by an equivalent number of new members to cover the full range of subject matter encompassed by the proposals. Meeting continuously in plenary on this occasion we completed very hard task of reducing the proposals to a ranked list, recognising in some cases it was very difficult to compare exactly two projects with different subject matter and different approaches. Yet, in the end, a ranked list was achieved, with remarkable unanimity among members of the Evaluation Committee. And, as you know, following that process, the Steering Committee then had the difficult task of fitting that list to the available funding sources.

But is it worth taking nearly 12 months for this exercise? is a question I hear forming in your brain, if not on your lips. Of course the question probably does not arise if you are one of the successful consortia! But the answer is an unreserved yes, because Biodiversity research in Europe, and certainly globally, does need a more integrated focus. The needs and demands of the Convention on Biological Diversity (CBD) on member states (and the EC itself) mean much better quality information is needed on the status and trends of biodiversity. And in going through this process I am sure a good section of the scientific community, as well as the science-policy community, and the funding agencies themselves, learnt a great deal about the ways to promote an integrated and policy-relevant approach from biodiversity science.

Peter Bridgewater addressing the Lisbon Meeting
Photo: Flore Jeanmart/Flora Pelegrin

The final set of projects cover a range of topics, including climate change effects, economic and ecosystem service aspects of biodiversity, marine issues, and, importantly, the role of microbial and fungal diversity in ecosystem processes. All of the projects will help improve the science and evidence base for biodiversity challenges in the EU – including linking with the policy process.

And that brings me to the final comment – if we did it again what would the Evaluation Committee have wished for? And the answer is; better attention to answering the question on policy relevance of the project – either at pre-proposal or proposal stage. Far too many proposals simply said "this topic is policy relevant…" And?

BiodivERsA – Call evaluation committee

What the Evaluation Committee was looking for, and too rarely found, was a convincing statement of why the topic was policy relevant, in what ways the project could help policy and/or management develop, and how the wider community could be engaged if not in the project, certainly in applying the results. Something to remember for next time.

Finally I would like to congratulate the successful consortia, thank all members of the Evaluation Committee who gave freely of their time and expertise to help in this process, and to thank especially the secretariat from IFB (now FRB) and the support from various funding agency staff throughout this process. But – BiodivERsA should not be a once-off - if we are really to understand and manage biodiversity in this 21st century this needs to happen on a continuing basis!!

Peter Bridgewater
February, 2009

Scientific experts

Jacques BLONDEL, France

Jean BONCOEUR, France

Christian BROCHMANN, Norway

Jean-Pierre FERAL, France

Helena FREITAS, Portugal

Roy HAINES-YOUNG, UK

Rosemary S. HAILS, UK

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Mikko MÖNKKÖNEN, Estonia

Ivan NIJS, Belgium

Ian P.F. OWENS, UK

Tomaso PATARNELLO, Italy

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Peter BRIDGEWATER, UK

Aline CATTAN, France

Peter COSTIGAN, UK

Emilio FERNANDEZ, Spain

Emanuel GONCALVES, Portugal

Else Marie LOBERSLI, Norway

Mark MARISSINK, Sweden

Jieles VAN BAALEN, Netherlands

BiodivERsA pan-European Call Results

Despite the significant amount reserved for this call, the strong response of the scientific community resulted in a high selection rate: 7% of pre-proposals and 25% of full proposals. Partner agencies are working on ways to improve the success rate in the future by managing the scope of the calls and the balance of budgets between countries. However, this result also clearly highlights the need for sustained financial support to transnational research projects in the field of biodiversity.

An analysis of the call results profiling funding, participating teams, success rates and topics addressed is provided here after. The BiodivERsA partners have also published a report profiling the successes and shortcomings of the call procedure, which present some lessons learnt

The project leaders workshop was held in September 2009 (see page 27), gathering principal investigators, members of their consortia and BiodivERsA partners.

It is hoped that the projects funded by this joint research programme will provide an opportunity for science to address some pressing policy and management questions in an innovative way and to help plan policy responses to challenges in the relationship between biodiversity functions and human activities.

Analysis of the results of the 2008 BiodivERsA call:

profiling funding, participating teams, success rates and topics addressed

The 2008 BiodivERsA call met a huge success with the European scientific community, as 182 proposals were submitted, with 1246 participants! This wide participation shows that there was a real demand from the scientific community for funding opportunities on biodiversity at the European scale. But even if the 15 funding agencies participating in the call had reserved an overall budget of 21.5 M€, one of the largest budgets of the FP6 Environment ERA-Nets, only 12 of the top-ranked projects were eventually funded. Indeed, this wide-scope call aimed at supporting large and ambitious international projects, with significant funding (approximately 1 million €), and was thus highly competitive. Given the huge number of proposals, the success rate was ultimately low and some failed participants may have feel frustrated.

General figures for the call

The financial success rate of the call is 7.6%.
The average number of partners within a proposal is 7, including subcontractors and non-funded partners.
The average requested budget by project and by team is 1.3 M€ and 180 000 €, respectively.

Evaluation steps	No. of teams	No. of Proposals	Budget requested
Submitted proposals	1246	182	216 M€
Step 1 (eligible pre-proposals)	1158	167	204 M€
Step 2 (full-proposals)	347	47	63 M€
Funded	83	12	15.6 M€ (requested) 14.2 M€ (allocated)

Nationality of applicants

95% of applicants were from countries participating in the call. Research teams from other countries were also involved in some projects, mainly from Europe (Belgium, Poland, Greece, Bulgaria, Switzerland, Monaco, Serbia, Ukraine and Russia, etc.), but also from the USA, Australia, Asia (China, Laos & Thailand) and Africa (Morocco, Senegal & Kenya).

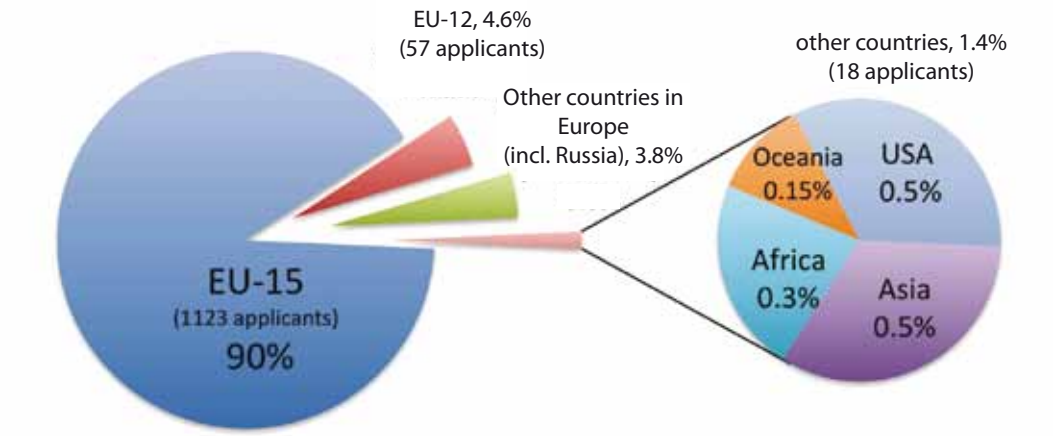


Fig. 1 : Geographical origin of participating teams in the BiodivERsA 2008 call
Partners of BiodivERsA are the majority of the EU-15 applicants, EU-12 applicants (Estonia and Hungary) and other countries applicants (Norway).

The reserved budgets of the BiodivERsA partners were quite in line with the needs of the scientific communities of the different partners countries, as the biggest funders are the countries whose communities have applied the most to the call. However, how the publication of the reserved budget by the different funding agencies can affect the participation of research teams must not be underestimated.

Reserved budget by country (21.8 M€)

Percentage of requested Budget (216 M€) in the submitted proposals (182) by country

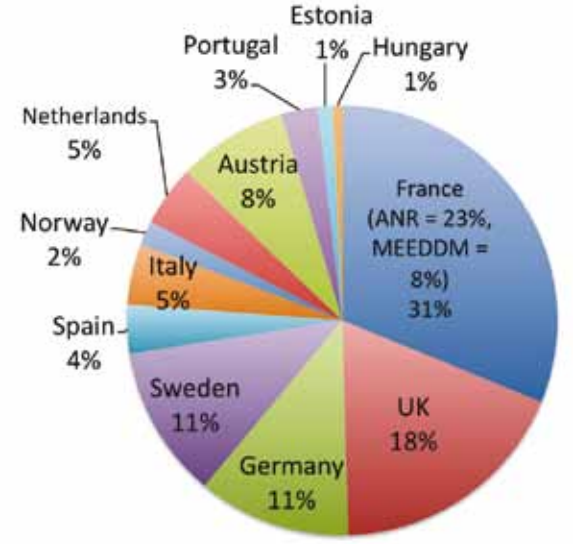


Fig. 2 : Comparison of the distribution of reserved budget and that of the budget requested by applicants among countries

The participation of Estonian, Hungarian, Norwegian or Portuguese teams is relatively low (less than 3% of the total requested budget for each of these countries). However, if the data above is normalised according to the estimated number of researchers in each country (assessing the number of researchers in the biodiversity field is currently not possible), a better evenness of the participation of the different countries is observed (Fig. 3).

Fig 3: Budget requested by applicants among countries, normalised according to the size of the national scientific community (budget by FTE unit) - source: Eurostat 2007

Successful participation

The scientific communities of the biggest funders of the call (France, UK and Germany) were the main participants and were also the main beneficiaries, with a good success rate. The Swedish, Spanish and Norwegian research teams were particularly successful, considering their participation in the submitted proposals.

In the end, three countries participating to the call had no research teams involved in the top-ranked proposals: Estonia, Hungary and Portugal. In the case of Portugal, insufficient mobilisation of the national top-level teams in the context of a very competitive call seems to be the main explanation. For other countries, figures computed with low proposal numbers should be interpreted with caution.

Fig 4: Distribution of budget awarded to the successful applicants, by country

* Note: Italy is not shown, as difficulties in the decision-making process at the MIUR resulted in the successful Italian teams not being awarded.

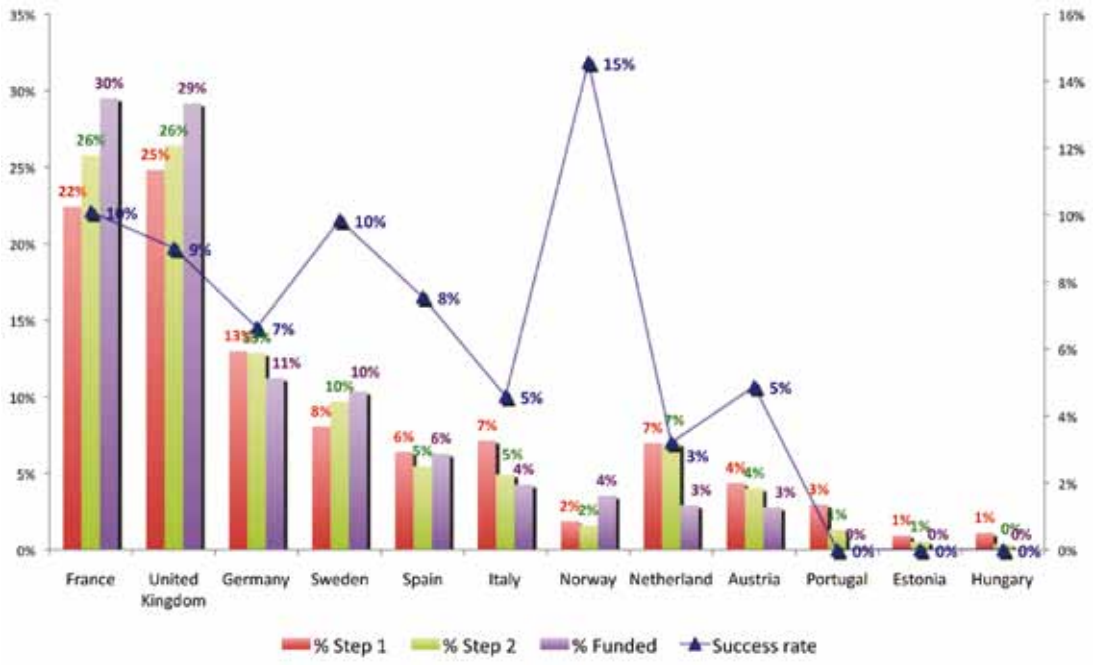


Fig. 5: Comparison of the percentage of requested budget in the proposals at the different steps of the call process, along with the success rate, between countries.

Funding model: flexibility of the funding partners

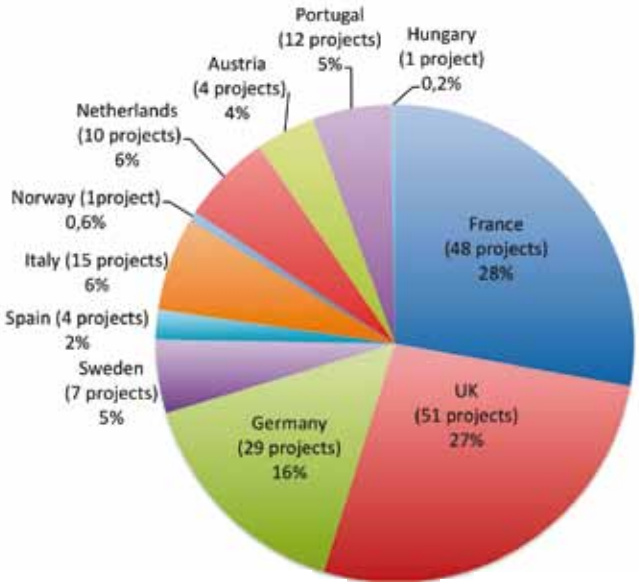
Eventually, it was possible to fund the 12 top-ranked projects thanks to the flexibility of some participating agencies, which either increased their own budget or funded some foreign research teams, in order to enable additional projects to go forward according to the scientific ranking.

Fig 6: Percentage of the total budget awarded through the call by agency awarded.

Country of the project coordinators

The majority of coordinators of the submitted pre-proposals were from France, UK and Germany (71%). Other countries with a significant number of project coordinators at that stage included the Netherlands, Portugal and Italy.
The funded projects were coordinated by UK, France, Germany and Spain.

Percentage of requested budget by coordinating country in the 182 submitted proposals



Percentage of requested budget by coordinating country in the 12 funded projects

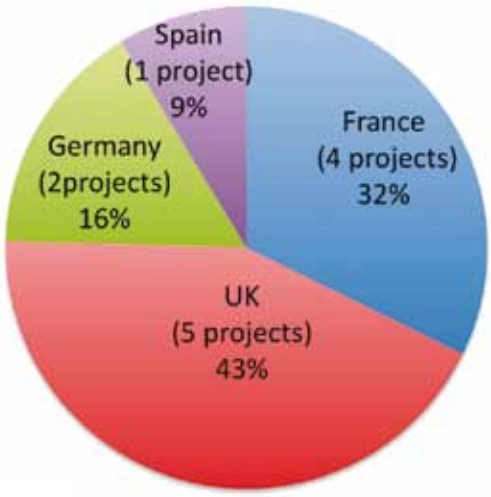


Fig 7: Percentage of requested budget according to the country of the coordinator, for submitted and funded proposals. The number of projects is also indicated.

Topics of the call addressed in the proposals

Most proposals dealt with more than one theme. But "global change and biodiversity dynamics" was the main theme addressed in the proposals submitted to the BiodivERsA call. The two other themes ("ecosystem services" and "ecosystem functioning") were still addressed but were less often the main theme of the proposal. Looking at the weight of the three themes throughout the evaluation procedure and keeping in mind the low number of proposals funded, it appears that the success of the proposals was similar among the three themes.

Weight of themes at different steps of the call process

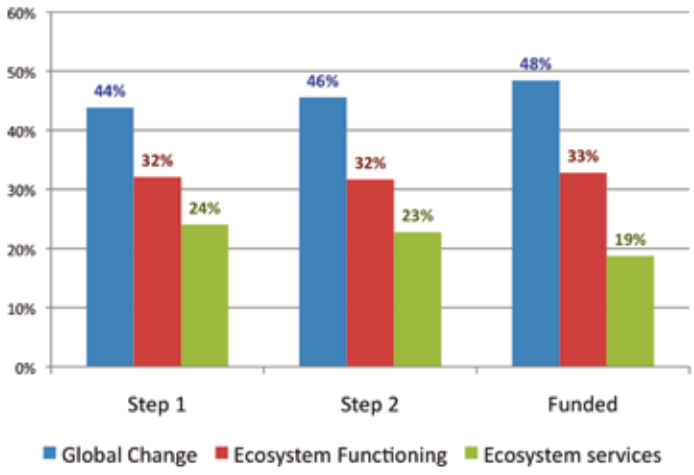


Fig 8. Variation of the distribution of submitted projects according to the main topic addressed throughout the different steps of the evaluation procedure. Weight of themes is used since one proposal can address several themes, to some extent.

Analysis by studied ecosystem(s) in the proposals : terrestrial, freshwater and marine environments

Over 50% of submitted proposals focused on terrestrial ecosystems, while 21% and 18% of the proposals focused on freshwater and marine environments, respectively.

Eventually, only one of the 12 funded projects studies the marine environment, in contrast with 9 projects on terrestrial ecosystems, and 2 projects on freshwater ecosystems.

The number of proposals focusing on marine ecosystems dropped significantly at the first step of the evaluation. One explanation for this seems to relate to the insufficient mobilization of some of the top-level teams working on marine biodiversity in key country. At the second stage, the analysis is more difficult, because the low number of proposals introduces purely stochastic effects in the results.

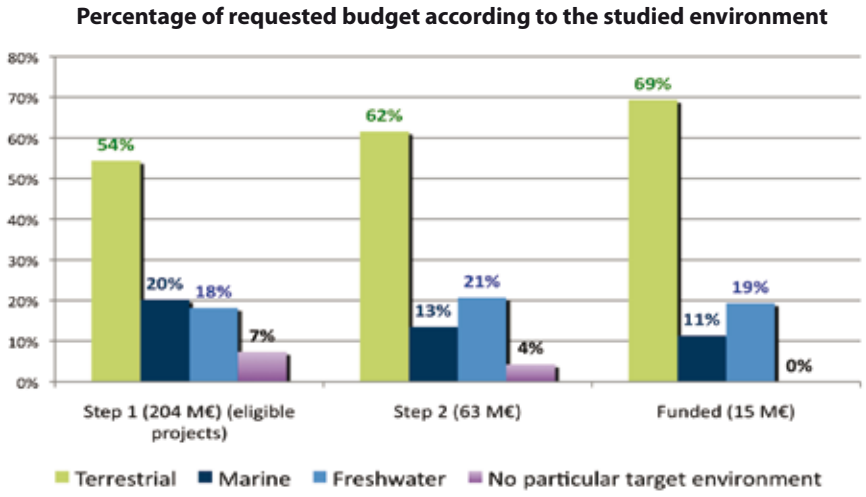


Fig 9. Distribution of submitted proposals according to the studied environment throughout the different steps of the evaluation procedure.

Except for Hungarian and Portuguese research, the most studied environments in the submitted proposals, and significantly so, are terrestrial ecosystems. The Portuguese research teams are clearly specialized in marine biodiversity, while freshwater ecosystems are important topics for the Hungarian, Austrian and Estonian research teams.

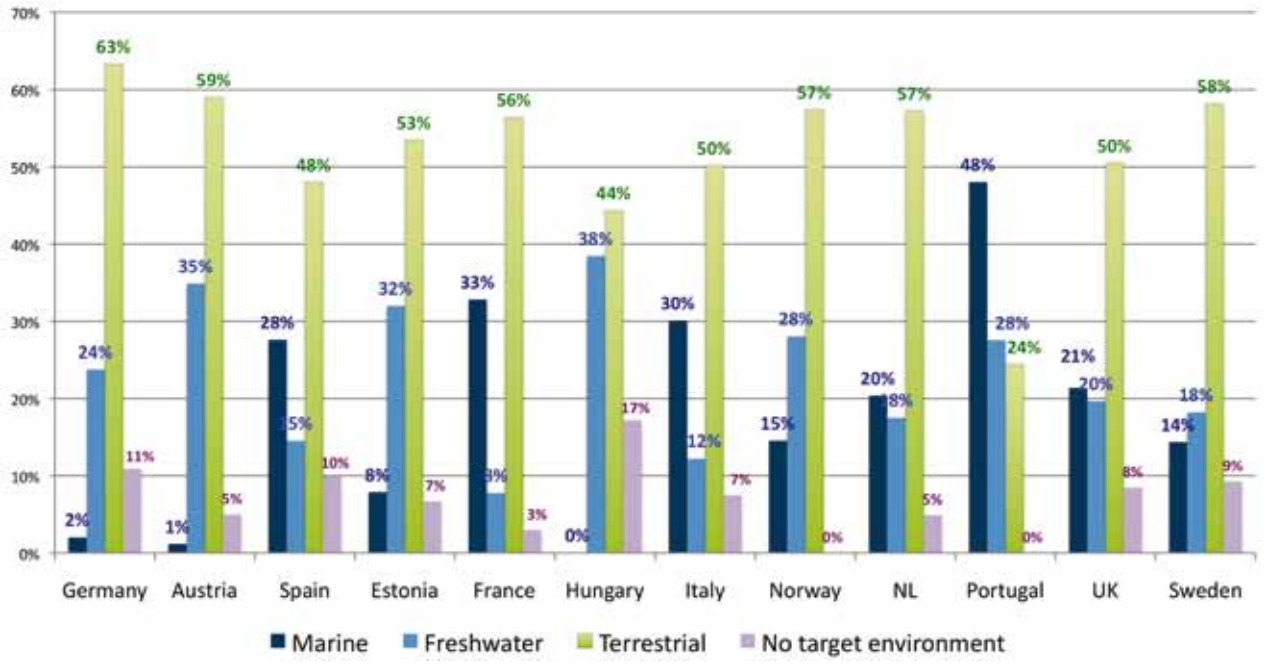


Fig 10. Percentage of requested budget in the submitted proposals by country according to the studied environment
Note: German teams did not participate in marine biodiversity projects, as this area was not eligible for funding by PT-DLR.

Scientific and administrative follow-up of the funded projects

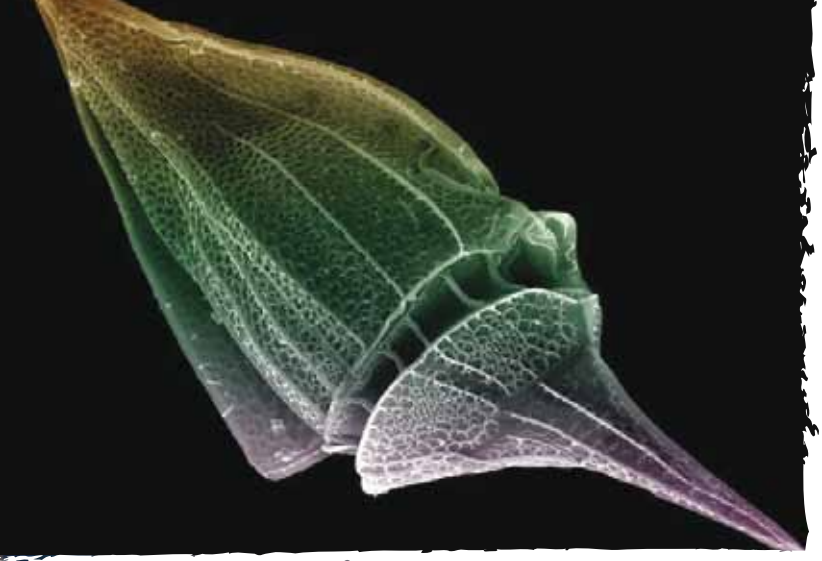
The kick-off meeting of the BiodivERsA 2008 call was held in Lisbon in September 2009 (see p.27). The 12 funded projects will run for 3 to 4 years. A BiodivERsA-specific reporting and monitoring scheme has been established, and the projects are followed up through an annual scientific and financial evaluation performed by a group of the BiodivERsA agencies funding the projects. Each national funding agency can also have its own reporting requirements for the teams funded by the agency.

To conclude, a few lessons that can be derived from these figures and analysis are outlined below:

- the large number of submitted proposals clearly highlights the size of the research community and the need for sustained financial support to transnational research projects in the field of biodiversity;
- the amount of funding that a country commits to such a call is a major driving force to promote the participation of its national scientific community;
- promoting participation of the top-level teams from a given country is a key for success of national teams; thus, information and incentives to the national scientific community by national agencies have an important role;
- promoting the emergence of specific topics such as ecosystem services is difficult in the context of a wider call, where the best projects are distributed according to the present strength of the different sectors of the scientific community.
- funding projects with different agencies together includes some risks, as the failure of one agency (MIUR) can have impact on some of the funded projects; securing the commitments of the funding partners before the call is of paramount importance.

Through this 2008 call, the BiodivERsA partners have funded 12 pan European projects on research on biodiversity of more than 1 million Euros each in a single call, which is a first experience in this research theme.

Considering the huge response and the very good quality of many proposals, there is a clear need to establish a recurrent funding scheme to launch pan European calls on a regular basis. The efficiency and credibility of such a recurrent scheme requires to base the choice of topics on common biodiversity research strategies and a rolling agenda shared by funding agencies



Projects funded by BiodiverSA partners 2008 Call

BeFoFu

European Beech Forests for the Future

BeFoFu aims at developing scientific knowledge to develop novel cross-national strategies for coherent beech forest conservation in Europe with a focus on Natura 2000. At the EU level, the conservation of European beech forests is most prominently addressed by the Natura 2000 protected area network. It highlights beech forests as one forest type of community importance. Member states are obliged to achieve and maintain favourable conservation status of target habitats within the protected beech forest areas. Natura 2000 does not, however, necessarily and directly result in safeguarding beech forest biodiversity at the local level. Across the EU, the implementation process of Natura 2000 has been impaired by conflicts and diverging stakeholder interests regarding forest management. The financing of Natura 2000 protected areas, particularly on privately owned land, remains a particularly crucial issue.

The European beech, *Fagus sylvatica*, is one of the most important broadleaved tree species in Europe and a diverse array of plants animals and other organisms depend on it. Functioning as a keystone species in the habitats it defines, and as an 'umbrella species' in conservation prioritisation, beech is of fundamental importance for European biodiversity. For instance, the total number of plant species associated with European beech forest exceeds 500.

Befofu has an interdisciplinary approach, which evaluates the ecological as well as institutional background for beech forest conservation and management in selected European countries.
In this sense, one project group will analyse the effects of different management and conservation strategies employed in various EU member states under Natura 2000 on beech forest biodiversity, and assess the impacts of global climate change on beech forest ecosystems. Another project group will analyse institutional structures and processes – including the various conflicts – of Natura 2000 implementation at different policy levels in order to understand the policy-relevant effects of the Directive and its effects on beech forest biodiversity conservation. A third group will evaluate existing market-based instruments on ecosystem services provided by beech forests and explore new financing mechanisms.

Protected Beech Forest, Vilm Island, Germany
Photo: Georg Winkel

Altogether, the project team will conduct a synthesis of the research results and will, together with various stakeholders and experts from different disciplines, deliver recommendations for innovative management, conservation and governance strategies for European beech forests and their related biodiversity. The research will be carried out in a comparative manner in selected countries, which represent the range of European beech forests.

The results of the project will be highly relevant for various stakeholders such as forest and nature conservation administration at different policy levels, NGOs, land owners and other interested groups.

Header Photo: Georg Winkel

Partners

Albert-Ludwigs-Universität Freiburg, GERMANY - coordinator
Wageningen University, THE NETHERLANDS
French Institute for Forestry, Agricultural and Environmental Sciences , FRANCE
University of Stirling, UK
University of Natural Resources and Applied Life Sciences, AUSTRIA
Technische Universität München, GERMANY

Duration: May 2010 – May 2013
Total Grant: 1,395,721 Euros
Further information: Dr. Georg Winkel
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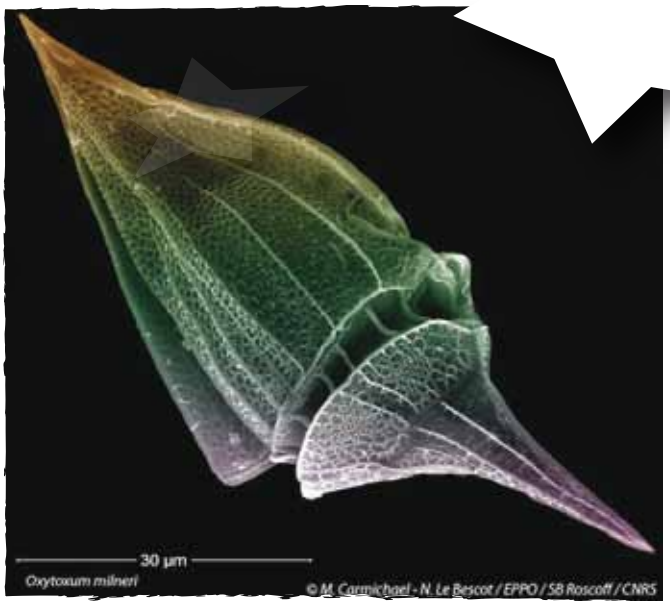
BioMarKs

Biodiversity of Marine Eukaryotes

BioMarKs assesses the taxonomic depth, environmental significance, human health and economical implications of arguably the least explored biodiversity compartment in the biosphere: the unicellular eukaryotes or protists. Marine protists typically live in huge populations with rapid turnover. They are microbial organisms which may build complex (in)organic skeletal structures which profoundly impact biogeochemical cycles and climate; they have complex genomes with thousands of genes producing molecules which influence marine ecosystem functioning, human health and economy, and which represent outstanding potential for future green energies, pharmaceutics and cosmetics. Based on phenotypic data, marine protists comprise <200k "species".



BioMarKs will assess protist biodiversity at 3 depths (subsurface, deep-chlorophyll maximum, surface sediment) in 9 EU coastal water sites from Spitzbergen to the Black Sea using massive rDNA sequencing (454 sequencing technologies). We will use both rDNA and reverse transcribed rRNA general eukaryote and group-specific markers, in order to analyze both diversity and abundance/activity of marine protists at different taxonomic levels. A suite of physical, chemical, and biological metadata from the same samples will allow statistical analyses of the ecological forces shaping marine protist biodiversity.

This general strategy will be used to (i) establish a baseline of protist biodiversity in EU coastal waters, (ii) measure biodiversity change in marine protist communities facing ocean acidification, (iii) evaluate the impact of ballast water and pollution on marine protist biodiversity.
In addition BioMarKs will provide baseline data and new methods for future surveys of marine biodiversity change and for evaluation of its ecological and economic cost. The data retrieved in the frames of BioMarKs will become the largest world community resource on marine unicellular eukaryotic biodiversity, providing a reference platform for current and future projects dealing with this important biodiversity compartment, and elevating the European community to the forefront of marine eukaryote microbial ecology.

BioMarKs will actively promote the diffusion of its data and new methods to a wide range of stakeholders and for scientific and public education. In order to better characterize the taxonomic, ecological, and/or economical value of their own data and analyses, stakeholders, and then the full public will be provided with open access to the BioMarKs datasets. In term of policy, the BioMarKs results will be relevant for several EU legislative framework, including marine transport regulation, coastal management and tourism and sea food safety.

Header Photo: Christophe Boutte

Partners

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University of Exeter, UK
Structural & Genomic Info.Lab., CNRS, FRANCE
Villefranche-sur-Mer Oceanography Laboratory, CNRS, FRANCE
University of Oslo, NORWAY
Self-financed partner
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Duration: July 2009 – December 2012
Total Grant: 1,569,444 Euros
Further information: Dr Colomban de Vargas
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www.sb-roscoff.fr/BioMarKs/

CLIMIGRATE

Integrating ancient DNA and ecological modelling to quantify the impact of climate change on biodiversity

Projected changes in global temperatures have led to widespread concern for the survival of many mammal species in Europe, with current model-based forecasts predicting high rates of extinction over the coming 100 years. However, such predictions are controversial due to uncertainties in how species respond to changes in habitat availability. CLIMIGRATE propose a novel and multi-disciplinary approach to investigate the underlying mechanisms that determine the probability and extent of climate-induced habitat tracking in European mammals. CLIMIGRATE will combine recently developed ancient DNA approaches with species distribution models to construct a detailed investigation of habitat tracking in nine model species in real time through the last 40,000 years. This will allow us to establish the tempo and mode of population response to climate change, as well as to evaluate, adjust and improve existing forecasting models to more accurately predict future responses.

Love Dalén holding an Arctic fox, Iceland
Photo: Rivka Perez

CLIMIGRATE will generate ancient DNA datasets for 1) water vole (*Arvicola sp.*), 2) red fox (*Vulpes vulpes*), 3) true lemming (*Lemmus* sp.), 4) collared lemming (*Dicrostonyx sp.*) and 5) reindeer (*Rangifer tarandus*). In addition, we will collate and complement existing datasets on 6) brown bear (*Ursus arctos*), 7) arctic fox (*Alopex lagopus*), 8) Woolly mammoth (*Mammuthus primigenius*), 9) red deer (*Cervus elaphus*).
These datasets include both temperate and arctic species, which are likely to display contrasting responses to changes in climate. While the ranges of temperate species expand during warm periods and contract during cold periods, arctic species are likely respond in the opposite way. However, the dynamics of the large Scandinavian and North American ice sheets, which grew during glacial periods and shrank during interglacials, are likely to have induced inter-glacial expansions and glacial contractions in range also for arctic species. This means that changes in past climates are likely to have caused simultaneous range expansions and contractions in both temperate and arctic species. In some cases, it is even likely that climate-induced expansions of one species have driven simultaneous contractions of another species, have driven simultaneous contractions of another species, due to inter-specific competition.

CLIMIGRATE's aim is to enhance the accuracy of the models used to predict future faunal responses to climate change, by examining how faunal populations reacted to past climate change. Using mathematical models of how habitats changed during the last 40,000 years, combined with ancient DNA analyses on fossil material to examine the extent that these populations were able to move in concert with changes in habitat. The results from these analyses will also allow us to adjust and improve the mathematical models that are currently being used to predict how global warming will affect European mammals over the coming 100 years.

Header Photo: Rivka Perez

Partners

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Duration: May 2009 - May 2013
Total Grant: 843,595 Euros
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CLIMIT

CLimate change impacts on Insects and their MITigation

CLIMIT aims to assess the combined impacts of human-induced changes in climate and habitat (area, isolation, patch quality) on some of Europe's most specialised and threatened grassland insects that depend on ants (myrmecophiles). CLIMIT will study their local adaptations, changing niches and different needs across a gradient of local climates from the Mediterranean to the North/Baltic seas. CLIMIT will compare the fates of these species under different scenarios of climate and land use change, which also includes the study of their potential to evolve adaptations to new environments. Finally CLIMIT wants to test current ideas for adaptive management to conserve myrmecophiles on large-scale sites and landscapes and to model potentials for mitigation of global change impacts.

The study species include seven social parasites of ants and three mutualistic butterflies together with the main foodplant(s), ants and parasitoids with which each directly interact. Sampling and experimental sites cover a large spatial scale from the Mediterranean to the Baltic and a range of different habitats and management schemes. A combination of methods including empirical fieldwork, experimental lab assays and different modelling approaches will be applied to achieve the goals of the project. In this context long term monitoring data sets from different European regions and other data from previous projects will be re-analysed. Major outputs of CLIMIT will be

(i) studies on the changing niches, local adaptations, and different needs of the study species across a European climatic gradient,

(ii) models of the processes that constrain each system's (meta-)populations,

(iii) predictions of the impacts of future scenarios of land use, climate and socioeconomic change in different regions,

(iv) new model predictions about how to mitigate the harmful impacts of multiple drivers on biodiversity,

(v) tests of management recommendations using existing large-scale habitat manipulations, and

(vi) general conclusions about the changing needs of myrmecophiles (estimated about 100.000 species globally) and non-myrmecophileous butterflies.

Polyommatus bellargus
Photo: Karl Heyde

The majority of deliverables will be designed as scientific papers to facilitate rapid knowledge exchange within the scientific community. Scientific results of CLIMIT will be translated to easily understandable forms (best practices, recommendations, guidelines) and published through popular science journals, newsletters and brochures. Beside the use of traditional media most CLIMIT outputs will be provided via open access. This includes the use of an online geographically referenced registration tool for the CLIMIT study systems, new open access scientific journals, and the accumulation of all relevant open access output in an online library.

Header Photo: Steffen Caspari

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CoForChange

How, why and where will tree species survive increasing pressure: providing diagnosic and decision-making tools to attenuate the effect of global change on biodiversity in the Congo Basin forests

The Congo Basin's tropical moist forests (TMFs), of world importance, are at risk of being severely degraded and fragmented in the near future through global change – anthropogenic pressure and climate change.
CoForChange aims to explain and predict the possible fate of tropical moist forests (TMF) of the Congo Basin, and to improve the effectiveness of African national and European policy and programs for conservation and sustainable management of their biodiversity.
CoForChange will use existing data, in particular extensive pools of satellite imagery and a unique database on forest inventories, and will acquire new paleoecological data on sediment cores and soil profiles, analyse new archaeological sites and implement controlled drought and light experiments on the main tree species of the Congo Basin region.

The Congo Basin's TMF, of world importance for their diversity and their major ecosystem services, are experiencing past and ongoing effects of climate and anthropogenic changes. How, why and where will tree species survive a drying trend and an increase in resource use in this region is a challenging issue for Europe – both a consumer and producer of African timber - , most involved in policy-making on biodiversity conservation, sustainable forest management and carbon storing issues.

Three objectives to address the challenge:
(1) to elucidate whether climate or anthropogenic disturbance is the main global change driver of TMF characteristics: composition, specific and functional diversity, size structure;
(2) to project changes in TMF characteristics with global change, and
(3) to produce decision-making tools for conservation and sustainable management strategies, to adapt to consequences of global change.

The two core alternative hypotheses concern the main factors, and associated drivers, that govern spatial and temporal variation of TMF characteristics in the region, either: (H1) water availability, driven by climate, water table depth and soil properties; or (H2) light availability, driven by anthropogenic disturbance.

Buttress rooted *Ceiba pentandra* (Bombacaceae) , Congo
Photo: Cirad, Charles Doumenge

CoForChange will provide operational tools -
(i) thematic maps identifying the oldest, less resilient, faster-developing or more biodiverse communities;
(ii) maps outlining the possible impacts of various scenarios of climate and anthropogenic change on future tree species distributions
(iii) databases on important species environmental requirements, and
(iv) identification of endangered species or groups of species.
These tools will address decision-makers' needs to reason, on a sound basis, conservation strategies and sustainable management of forests – comprising timber logging rules - and to adapt their related territories and forest management policies.

Header Photo: Dominique Louppe

Partners

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Ecocycles

Interacting impacts of land use and climate changes on ecosystem processes: from cyclic herbivores to predators of conservation concern

In recent years, evidence has emerged that dramatic changes in ecosystem processes and functioning are taking place across Europe under the joint impact of climate change and human-induced shift in land use. One of the most spectacular change concerns the populations of keystone herbivore species such as voles and moths with cyclical dynamics that took place nearly simultaneously in much of Europe in the 1990s. Changes in small herbivore dynamics have the potential to lead to ecosystem re-organisation and therefore represent a challenge for the conservation of biodiversity. Acquiring a better knowledge of these complex interactions appears to be essential for designing effective conservation initiatives for top predators and the communities to which they belong. Ecocycles will tackle both fundamental and applied issues.

Ecocycles

Xavier Lambin watching a long tailed Skua
Photo: Rolf A Ims

Ecocycles' project encompasses ecosystems as diverse as Lapland tundra, Fennoscandian taiga forest, UK upland grassland, agricultural plains of France, and agro-steppe in Spain, where small rodents are widely seen as key-stone species for a diverse guild of predators, including species of high conservation concern such as Artic fox, hen and Montagu's harrier or red kite. Interestingly, the dynamics of voles or lemmings have lost their large amplitude and regular cycles in northern areas during the last decades (Norway, UK, France), while the first outbreaks were recently recorded in the south (Spain). The impact of the rodent cycle is likely to be transmitted in the food web of these ecosystems by indirect interactions through, for instance, prey-switching by facultative generalist predators to alternative prey and might lead to a profound re-assembly of predator, parasite and plant communities.

Understanding how ecosystem processes are affected by the cascading effects of changing small herbivore dynamics is a knowledge gap with tremendous conservation implications.

Acquiring a better knowledge of these complex interactions appears to be essential for designing effective conservation initiatives for top predators and the communities to which they belong. This European collaborative project has been designed around five nested work packages that progress from fundamental to decidedly applied issues.

Ecocycles will establish a National Consultation Forum (NCF) in each country, comprising of conservation professionals, researchers, key stakeholders, and policymakers at local and national levels, including Agricultural, Environmental or Forestry administrative authorities, hunters associations, managers of natural reserve, local NGOs and farming organisations. They will be involved in the design, implementation and conclusion of the research as it impinges on management issues at the national level. Ecocycles will develop best practice guidelines for each study system and a review of findings and their policy implications, agreed by the respective fora. Finally, this project will support the European-wide development of capacity for ecosystem-scale approaches to conservation and policy.

Header Photo:: Xavier Lambin

Partners

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FIREMAN

Fire management to maintain biodiversity and mitigate economic loss

Fire is a natural disturbance agent of many forest and grassland ecosystems that contributes to species dynamics and diversity, physical structure and ecosystem function. Many European heathland systems owe their origin and maintenance to burning, and fire is a key disturbance agent in both Mediterranean and boreal biomes that impacts the biodiversity of ecosystems, species and genetic structure. Fire-ecosystem relationships are altered by changing climate and earlier European fire regimes are now heavily modified by human activities to generate both biological and socio-economic problems. Intense or inappropriate fire can wreak enormous damage and following recent extreme fire years in parts of Europe, there is an urgent need for a co-ordinated European policy on fire management.

Significant components of the biodiversity are adapted to a moderate fire and browsing regime, so the current build-up of fuel and development of woody successions is changing the fauna and flora.

FIREMAN's working hypothesis is that 'baseline' fire regimes in the three vegetation types (boreal forests, wet upland heathlands/moorlands, and Mediterranean shrub-forest) vary with climatic change but maximum 'authentic' species diversity is associated with 'intermediate' fire regimes.

FIREMAN plans to impact management and policy in three ways. Firstly through the well-established contact networks administered by our two private sector partners. Secondly, by incorporating results into European Environmental Agency biodiversity policy documents and thirdly by joining the EU FIRE PARADOX consortium FIREMAN will gain contact with the influential European stakeholder group organised in that project.

Research on past and future conditions, in collaboration with stakeholders, is needed to develop appropriate fire regimes that will reduce the risk of severe, uncontrolled damage and favour biodiversity with a long history.

Richard Bradshaw sampling soft sediments for fossils and charcoal to investigate species composition over time, Eriksberg Reserve, Sweden.

The main aim of FIREMAN is to generate policy guidance and management tools for the appropriate use of fire to foster biodiversity in three major European ecosystems.

Anticipated major outcomes will be characterised 'base-line' fire regimes, local and regional models of fire-biodiversity-climate relationships that are used to explore likely future scenarios and assessments of reactions of local communities to fire and biodiversity management. These tools will be developed in close conjunction with local managers and be used to impact policy to favour biodiversity.

Header Photo: Mats Nicklasson

Partners

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LinkTree

Linking genetic variability with ecological responses to environmental changes: forest trees as model systems.

LinkTree studies genetic variation of ecologically relevant genes and their effects in natural forests. LinkTree will elucidate differences in morphological and functional traits in trees growing under different environmental conditions in model European forest systems. Sites include widespread and contrasted groups of forest trees (Mediterranean pines, temperate oaks, fir and spruce) and major environmental drivers (forest fires, drought, low temperatures, etc). Permanent experimental plots will be installed in model forest systems in Spain, France, Italy, Germany and Sweden, providing field stations for long-term ecological and genetic research in a variety of biomes widely represented in Europe. LinkTree will develop or adapt integrative models to simulate the evolutionary dynamics of tree populations across a few generations under different realistic climatic scenarios in order to investigate the different responses of species and functional types to future environmental changes.

Mont Ventoux, France
Photo: INRA Avignon

Forests cover approximately 25% of Europe, roughly 117 million ha, and are important reservoirs of genetic diversity, playing a decisive role in climate change. Impacts of global change on European forests are expected to be acute, resulting in notable changes in species range, ecosystem functioning and in the interactions among species. Forest trees and their associated organisms can disappear, disperse to other places or adapt locally to the ongoing climatic change over a reduced number of generations. To adapt in such a short period of time, trees would need to rely more on standing genetic variation and recombination than on new mutations. If enough genetic variation exists, the process of adaptation to new environmental conditions could be rapid in trees, mitigating at least partially the impacts of climate change. Underestimating the potential for rapid adaptation could lead to unnecessary if not damageable recommendations. Overestimating this process would be equally problematic, if no mitigating measures are taken and tree populations decline massively and prove unable to regenerate.
LinkTree will contribute to the current international initiatives to assess biodiversity at all levels of organization by identifying potential candidate genes of ecological significance in keystone tree species. LinkTree would like to provide the scientific community, especially evolutionary biologists and ecologists, with a deeper understanding of the importance of tree genetic diversity for the sustainability of forest ecosystems and how this variation i) is structured in nature and ii) will respond to environmental change. From a practical point of view, LinkTree would like to provide forest managers, nature conservationists and policy makers with indicators and/or guidelines to manage forest ecosystems and resources that are under pressure from global change and with effective tools for adaptive diversity monitoring using high-throughput genotyping techniques. In addition, LinkTree expects to contribute to the choice of appropriate 'minimum requirements' to select forest ecosystems and stands that will be recognized and managed as conservation units at the European scale, a current concern of EUFORGEN, the European Program for Conservation of Forest Genetic Resources.

Header PhotoSantiago C. González-Martínez

Partners

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PEATBOG

Pollution, Precipitation and Temperature Impacts on Peatland Biodiversity and Biogeochemistry

Peatlands are the world's largest soil carbon pool, support a unique biological community, and provide important ecological, economic and protective functions, such as groundwater recharge and pollutant removal. Maintaining these critical functions depends upon protecting the integrity of the whole ecosystem. Peat cutting, drainage, and land conversion are all clear threats to peatlands. But peatlands are also highly vulnerable to 'unseen' threats such as changes in precipitation, temperature, and nutrients.
The projected change in the climate of many northern peat-forming regions toward warmer air temperatures, drier summers and more frequent droughts, are exactly those that have been shown to cause peatlands to degrade and begin to lose, through erosion, decomposition, or fire, the carbon that they have been accumulating for hundreds or thousands of years.

Peatlands are also highly sensitive to air pollution, particularly nitrogen deposition. Reactive nitrogen from fossil fuel combustion or intensive agriculture can contaminate rain and snow, causing soil acidification, nutrient enrichment, and a decline in species that are sensitive to these conditions. Even the 'average' levels of these pollutants in a typical rural countryside have been shown, over the long term, to lead to a significant decline in biodiversity. Finally, there is good evidence that the combined impact of elevated nitrogen deposition and a warming climate could exceed the sum of the individual stressors and lead to a dramatic decline in the biodiversity of mosses, sensitive vascular plants, and microbes, potentially leading to catastrophic peat loss.

PEATBOG aims to understand how nitrogen pollution and changing climate, individually and combined, will affect the biodiversity and ecosystem properties of peatlands. We also aim to develop meaningful indicators of risk to these impacts that are of use to conservation managers and policymakers.
To address these aims, we first, through surveys, determine relationships between peatland species richness and nitrogen deposition across northern Europe and the Alps. Second, by manipulating, in the field, the water table and temperature of two peatlands in areas receiving different levels of nitrogen pollution, we investigate whether peatlands

PEATBOG partner Luca Bragazza (left) with post-doctoral researcher Bjorn Robroek in the Migneint, North Wales.
Photo: Nancy Dise

that have received historically high nitrogen loads are more sensitive to drought and warming than less polluted peatlands. Impacts on nutrient cycles and carbon accumulation are examined at various levels of detail across the survey sites, field manipulation sites and in controlled laboratory experiments. Changes in microbial community composition and function are also determined across the different scales of inquiry, and linked to changes in the vegetation and soil. Finally the survey, field, and laboratory investigations are integrated to develop models, at various scales and for a range of applications, of the response of peatlands to elevated nitrogen deposition and climate change. .

Header Photo: Chris Evans

Partners

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RACE

Risk Assessment of Chytridiomycosis to European amphibian biodiversity

18 of 81 European amphibian species are experiencing some degree of extinction threat and even widespread species are disappearing from large portions of their ranges.
The RACE team has found that a newly emerged infectious pathogen, *Batrachochytrium dendrobatidis*, a previously undiagnosed threat to Europe's amphibians, is infecting over a third of European amphibian species and at least 10% of our amphibians are dying in the wild from the disease, chytridiomycosis. Nevertheless the extent that this invasive infectious disease is impacting on amphibian biodiversity is almost completely unrecognised by European conservation agencies, governments and academic institutions.
RACE will assess the risk that chytridiomycosis poses to European amphibians and will implement the first pan-European attempt to mitigate disease.

Midwife toad and Common toad mortalities resulting from chytridiomycosis

A core objective of RACE is to establish a mapping project that will act as a real-time repository of data from *B. dendrobatidis* surveillance programmes throughout Europe. Using field-data on the prevalence, intensity and timing of infection/mortalities, spatial-genetic information will be used to identify the timing, and frequency, of *B. dendrobatidis* introduction(s) into Europe, as well as assessing the differential virulence of genotypes.
These spatial and genetic data will be used to parameterise mathematical models focused on defining the principle drivers of chytridiomycosis including identifying the importance of introduced non-native amphibian species in vectoring spread of the disease into Europe. The environmental envelope associated with chytridiomycosis will be identified and projected using current models of climate change in order to assess future risk. Where appropriate, *ex situ* captive breeding programs may be recommended for highly at-risk species, and in tandem we will be developing antifungal based therapies to treat infected populations.

The global trade in amphibians is substantial. Many of these widely-traded species are known to vector *B. dendrobatidis* and several have established themselves as invasive non-native species: principle culprits are the African clawed frog *Xenopus laevis*, the North American Bullfrog *Rana catesbeiana* and the Cane toad *Bufo marinus*.

RACE aims to train and mentor the development of new national chytridiomycosis-surveillance efforts, and collaborators involvement in RACE will be used to leverage region-specific funding from government and non-governmental organisations. In this manner RACE will develop approaches to understanding where *in situ* and captive-breeding conservation efforts are most necessary to mitigate the effects of chytridiomycosis and to preserve amphibian biodiversity; these approaches will be formalised into a European Threat Abatement Plan (ETAP).
RACE's overarching goal is to identify and prioritise conservation efforts in the light of this novel and devastating panzootic disease.

Header Photo: Matthew Fisher

Partners

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TenLamas

The value of Ecological Networks and different LAndscape Management ApproacheS

'Habitat loss and fragmentation not only reduce biodiversity in terms of species numbers, but also may affect genetic structure and viability of a single species. It is crucial to understand how organisms are able to effectively disperse in largely human affected landscapes (landscape connectivity), and what would be the impact of management decisions.

TenLamas' is a project in which empiricists and modellers cooperate in order to develop a better mechanistic understanding of the behavioural performances of the different approaches currently used to predict dispersal across heterogeneous landscapes. Two organisms, for which suitable long term data exist, have been selected as model species. These are the bog fritillary butterfly (*Proclossiana eunomia*) and viviparous lizard (*Lacerta vivipara*).

Butterfly site.
Photo: Virginia Lepetz

TenLamas will evaluate alternative models for assessing the value of particular ecological networks and to compare different scenarios of landscape management. The final objective of the project is to deliver recommendations for the suitability of different tools to evaluate connectivity of landuse scenarios and projected networks. TenLamas will achieve this goal by testing the relative performance of the different approaches currently used to predict dispersal across real heterogeneous landscapes, i.e. landscape connectivity.

TenLamas will evaluate the relative accuracy of three concurrent connectivity estimates for selected model species in test landscapes with respect to the required level of precision in landscape and organism information. Practically, this evaluation will be performed by supplying dispersal matrices generated by three approaches to a simple model, using metapopulation viability and genetic structure as dependent variable. TenLamas expects that precision will decrease from individual-based models to pattern-based algorithms to structural connectivity estimates. Both the metapopulation and the metacommunity concept emphasize the importance of dispersal respectively for the persistence of species in fragmented landscapes and the functioning of ecosystems. Landscape connectivity is considered as mirroring this crucial role in practical landscape management measures. Accordingly, current methods used to build ecological networks consist of looking for ecological structures based on the continuity of broadly defined ecosystems (forests, wetlands) at wide spatial scales.

The main problem with this top-down approach is that it is by no means a possibility to predict if such structures limit isolation and enhance metapopulation viability. We propose to adopt bottom-up logic for ecological network implementation: their design should start from the real ecological problem - the isolation of populations within landscapes – and we want to provide a toolbox that generates clear statements about the relative accuracy of predictive tools of functional connectivity.

Header Photo: Virginia Lepetz

Partners

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VITAL

Ecosystem serVIce provision from coupled planT and microbiAL functional diversity in managed grassland

Extensively managed or restored grasslands are key elements of European landscapes, and meet many multifunctional objectives. In spite of this, basic understanding of ecological constraints and opportunities for multifunctionality are missing. VITAL explores the hypothesis that the delivery of multiple ecosystem services in semi-natural grasslands, and its vulnerability to changing management, can be explained by the coupling among plant and soil microbial functional diversity, and its impacts on carbon and nitrogen turnover. VITAL's core objective is therefore to build a conceptual model of relationships among plant and microbial functional diversity, and multiple ecosystem service delivery.

Alpine meadow, Lautaret, France.
Photo: Serge Aubert

Given increasing political and public concern for the environment, and resulting changes in legislation and policy, European agriculture is challenged to provide ecosystem services (ES) such as carbon storage and protection of water quality, along with biodiversity conservation and maintenance of economically viable production.

VITAL studies mountain grasslands where abandonment of manuring, mowing and grazing, or conversely management intensification, alter plant species and functional diversity, soil microbial activities, soil Nitrogen availability and Nitrogen transformation processes. These changes have the potential to fundamentally shift the ES that these agroecosystems can provide, and thereby the livelihood and development potential for local economies. Research is conducted at three sites in the French Alps, Austria, and the UK, providing a representative range of management and natural conditions. VITAL addresses six specific objectives:

1. identify key ecosystem services associated with the maintenance of fertility in mountain grasslands, identify how these are perceived to be affected by management, and linkages among different services.
2. obtain functional indicators of plant strategies for nitrogen use and impacts on soil microbes, and of corresponding microbial genetic and functional diversity along management gradients.
3. develop a conceptual model linking plant functional responses to management, their effects on microbial functional diversity, and their coupled effects on ecosystem services.
4. validate the processes and linkages demonstrated in mesocosm conditions to natural systems across the three sites.
5. develop land use scenarios using a participatory approach and understanding of feedbacks from ES to management decisions. The impacts of these scenarios on plant and microbial functional diversity and on ES will be modelled and landscape projection maps generated.
6. identify and meet the needs of local stakeholders, land managers and policy makers.

Header Photo; Richard Bardgett

Partners

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Lisbon Project Leaders Workshop

BiodivERsA call for research projects on biodiversity: linking scientific advancement to policy and pratice.
Lisbon 21-22 September 2009

Following the first joint call of the ERA-Net BiodivERsA, the Steering committee of the call (funding partners) decided to organize a project leaders workshop. It was held in Lisbon on 21st and 22nd September, 2009.

This workshop, entitled "BiodivERsA call for research projects on biodiversity: linking scientific advancements to policy and practice", was organized by an international committee and hosted by the Portuguese Foundation for Science and Technology (FCT).

Organizing committee

· Per Backe-Hansen,
Research Council of Norway

· Peter Bridgewater, Chair,
Evaluation committee of BiodivERsA joint call

· Flora Pelegrin, French Foundation for Research on Biodiversity, BiodivERsA secretariat

· Catarina Resende, Portuguese Foundation for Science and Technology

· Susanne Stoll-Kleemann, Evaluation committee of BiodivERsA joint call

Report of the workshop

The objectives of the workshop were not only to introduce the twelve selected projects, but also to encourage the networking between the projects and the exchange of information on how to address policy relevance and involvement of stakeholders within the projects. This event was the first time that BiodivERsA partners could meet the project leaders and some members of the evaluation committee also attended, keen to see the projects they assessed actually starting.

In his introductory talk, Dr. Xavier Le Roux, coordinator of BiodivERsA, reminded the assembly of the main steps that lead to this transnational call, and of the efforts the BiodivERsA partners mustered to fund the 12 top-ranked proposals. He then showed some general statistics on the call, and highlighted some options for the future of the ERA-Net.

Following Xavier Le Roux, Dr. Peter Bridgewater, Chairman of the evaluation committee, discussed the topic of policy-relevance in research. Indeed, this was a major requirement of the BiodivERsA call and proposals were evaluated against both scientific and policy relevance criteria. Dr. Bridgewater explained that assessing the latter aspect had been a challenge for the evaluation committee. He then outlined some personal considerations about scientific advice to policy, which can take many different forms (prescriptive, relevant, neutral, ambiguous, etc.). Giving some choices is a more suitable way for science to give advice than providing THE answer to THE question. Simple rules can get the message from the scientists to the policy makers right: understand the real problem a policy maker has, be clear in the recommendations, and write in plain language. Science-policy interfaces aim at managing inter-relations between research and policy decisions, to provide effective knowledge systems for managing complex issues. Peter Bridgewater argued that the most efficient "science-policy interfaces" are networks of interfaces of different institutional types and functions, with complex, partly redundant and layered institutional arrangements.

Following this introduction, the rest of the day was dedicated to the presentation of 11 of the 12 BiodivERsA projects, which, in addition to a general presentation, had been specifically required to address four questions :

1. Who are the main anticipated users of the results of your research and how would you expect them to use your results?
2. How do you intend to involve stakeholders in your project - from inception to uptake of results?
3. How will your project outputs be designed in order to maximise appropriate use?
4. What do you consider might be the long term impact of your research?

Peter Moll, Georg Winkel, Martin Musche & Santiago Gonzalez-Martinez

Tools developed in the projects to promote links with knowledge users and stakeholders range from websites and modeling platforms to toolkits and exhibitions to the wider public. One project is developing a participatory process, through continuous consultation and information of stake-holders. Another one is focusing specifically on how to manage interacting policy levels (European/ national/local), from recommendations to the policy-makers to the implement-ation of a policy and to the effects on biodiversity at the local level. Relationships with stakeholders are not always easy : one project mentioned conflicts with stakeholders in their research field, but is working to resolve the issues and involve them.

On the 22nd of September, two keynote speakers had been invited to give additional insights, in relation with the topic of the workshop, "linking scientific advancement to policy and practice".
The first speaker, Dr. Peter Moll (Science development) was invited to discuss methods of stakeholder engagement. He took the example of a project on wild coffee in Ethiopia, seeking to develop ways to conserve the coffee in situ (coffee gene pool). A number of lessons were drawn from working with the many stakeholders in the coffee chain. First, the success of working with stakeholders depends on engaging with them from the outset of the project. Research questions should be defined with them, and their interests should be clearly identified. Secondly, good knowledge doesn't just "trickle down" of its own. A communication strategy should be developed for each target-group. Dr. Moll advised to collect the knowledge already accumulated (including the emotional & policy relevant aspects of the topic) and build the project on it. Thirdly, the solution and project design should be target-oriented, because it makes the implication of the stakeholders easier. However, this was the most difficult aspect in working with academics. Bridges can be established by making use of border organizations, and interaction with end-users should be regular, with short messages. Finally, responsibility should be transferred step by step from science to stakeholders. If possible, key implementation targets should be defined, and space and options created for possible implementa-tion, to ensure the post project continuity, and post project funding.

In reaction to this presentation, the audience came up with several questions and comments.
· Marcello Buiatti stressed the difference between a relationship in which scientists have the knowledge and teach the stakeholders what to do, and dialogical communication, which costs more time and requires changes in the research, but yields results that people are able to use.
· Graham Tebb wondered whether requesting scientists to engage stakeholders effectively in short time frames was not asking too much of them. Peter Moll advised to be modest with the targets of stake-holder engagement, and to scale objectives down to something which is workable.
· Rainer Sodtke asked how the projects should be structured to involve the right people, including the border groups which help relationships with stake-holders.
· Peter Moll answered that there should be someone dedicated to managerial work and communication. Scientists cannot combine management with the pressure of having to publish.
· Matthew Fisher commented that, quite often, stakeholder involvement depends on the personal passion of the scientists, which lead them to personally engage.

Richard Bradshaw presenting FIREMAN

Header Photo: Flore Jeanmart, other photos Flore Jeanmart/Flora Pelegrin

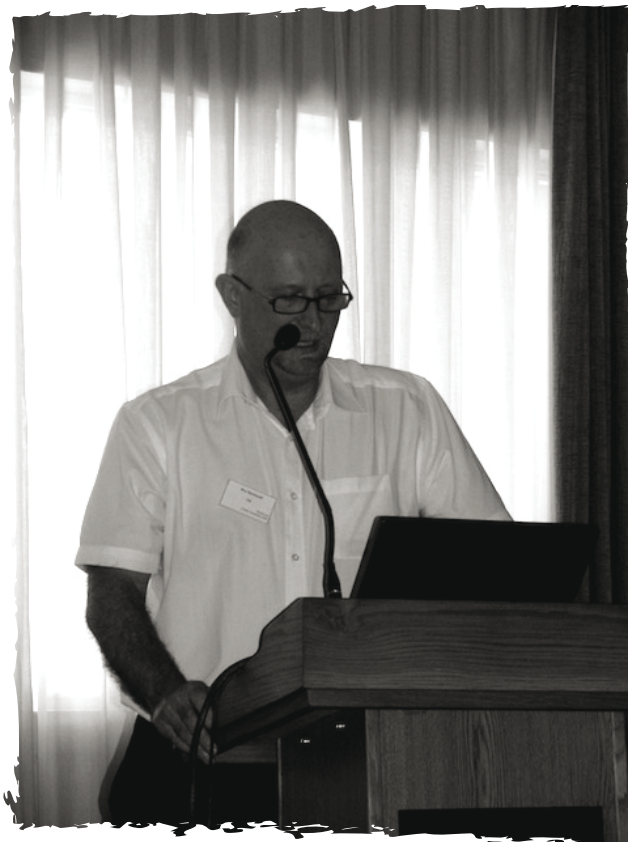
Peter Bridgewater, Helena Freitas and Xavier Le Roux
Photo: Flore Jeanmart/Flora Pelegrin

The second keynote speech was given by Dr. Ron MacDonald, from the Scottish Natural Heritage, on the contribution of research to conservation work in Scotland.
He introduced his talk with some general comments on biodiversity policy. He said that the voice of biodiversity is weak in the discussions on sustainable development and that the link between biodiversity and well-being needs to be established clearly. He added that the combination of EU policy framework and national policies can be quite complex. Moreover, the role and contribution of science are also increasing, with a major cultural change in scientific organizations, aiming to bring 75% of the research to become policy relevant.

Dr MacDonald went on to present a series of examples of biodiversity related policies in Scotland and how science contributes:
- Climate change: how to deal with conflicting issues and policy dilemmas
- Invasive species: example of control/eradication programme
- Habitat fragmentation: example of ecological mapping and online decision making tools which land managers can use
- Pollution : dynamic models to analyse the impacts of nitrogen deposition on some habitats and species, to help reduce the diffuse pollution from agriculture
- Sustainable use of resources : marine spatial planning project and Model Ecosystem Framework project (to help understand the interactions and key dependencies between habitats, biodiversity, land use and services provided by the environment).

Dr. MacDonald highlighted the importance of knowledge transfer in Scotland: research outcomes are shared through the website **www.knowledgescotland.org** , developed by the Scottish government, and through workshops on responses to climate change, biodiversity, rural development etc.
He concluded by saying that horizon scanning of future research needs to look well beyond the next research strategy for three policy issues (climate, globalization, natural assets). Exploring the link between biodiversity and ecosystem services is an opportunity to bridge the gap with society and policies, and it is an exciting moment for biodiversity science.

Flora Pelegrin & Flore Jeanmart



Dr. Ron MacDonald addressing the Lisbon Meeting
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SIXTH FRAMEWORK PROGRAMME

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Bees, Elizabeth Watson; Beech Forest, Georg Winkel; Scientists in field, Nancy Dise; Butterflies, Steffen Caspari