

**BiodivERsA
2010–2011 call
for proposals:**

***“Biodiversity and ecosystem
services, and their valuation”***



The Partners

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Fonds zur Forderung der Wissenschaftlichen Forschung, AUSTRIA

Belgian Federal Public Planning Service, BELGIUM

Bulgarian National Science Fund, BULGARIA

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Swedish Research Council for Environment, Agricultural
Sciences and Spatial Planning, SWEDEN

Swedish Environmental Protection Agency, SWEDEN

Ministry of Food, Agriculture and Livestock, TURKEY

Department for Environment, Food and Rural Affairs,
UNITED KINGDOM

Joint Nature Conservation Committee, UNITED KINGDOM

Natural Environment Research Council, UNITED KINGDOM

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From the Coordinator: The 2010–2011 call for proposals within BiodivERSA's mission



Xavier Le Roux, Coordinator
of BiodivERSA

Biodiversity is the living fabric of our planet. It includes all life forms on Earth, from domestic animals and bacteria to whales, which live in terrestrial, freshwater or marine environments and can be characterised from a taxonomic, genetic, evolutionary or functional perspective. It is our life support, delivering crucial services on a daily basis, such as the production of food and clean drinking water, the maintenance of soil fertility, the regulation of green gas emissions, and the support of recreational activities. According to the web site of the ICRISAT, at least 40% of the world's economy and 80% of the

needs of the poor are derived from biological resources. In addition, the richer the diversity of life, the greater the opportunity for medical discoveries, economic development, and adaptive responses to such new challenges as climate change.

BiodivERSA's aim is to build a dynamic and sustainable platform for encouraging excellent and policy-relevant biodiversity research on a transnational scale, which addresses the most pressing strategic issues that biodiversity and ecosystem services currently face.

However, biodiversity degradation and loss are accelerating at an unprecedented rate, and the ability of biodiversity and ecosystem services to withstand global change is still poorly known. Research is therefore urgently needed to acquire further knowledge and expertise to adequately respond to this major challenge. Adequate understanding and predictions should be developed by innovative research projects that address in particular four issues :

- biological sciences such as ecology, ecophysiology, microbial ecology, taxonomy or landscape ecology still have to open major black boxes to better understand and predict biodiversity dynamics. For instance, knowledge about the adaptation ability of diverse life forms to global change

over decades is scarce whereas this ability could greatly influence the fate of biodiversity during this century.

- biodiversity is not only an environmental issue, but also an economic, political, food-security, energy-security, and philosophical one. And it is a tool box for the resilience of human societies facing a changing and unsettled world. We thus increasingly need to promote new projects that cross disciplines such as ecology and biological sciences with economy, law, sociology, biogeochemistry, climate sciences, policy and management sciences, or philosophy to better understand the dynamics of socio-ecosystems.

- an increased dialogue and cooperation is warranted between biodiversity scientists and stakeholders and policy-makers involved in the conservation and sustainable management of biodiversity. This is a prerequisite to spur on the contribution of science to the development of more future-oriented, predictive approaches of biodiversity and the design and adaptation of effective policies and sustainable management practices.

- research projects have to address these issues at different scales, from local to national and international. In particular, the European level is a major one to be considered due to its importance from a biogeographical and policy making perspective. For instance, biological invasions can hardly be tackled at the sole national scale since introduced species in Europe often ignore borders!

To this end, the 2006 EU Biodiversity Action Plan called on the Community and Member States "to substantially strengthen the knowledge basis for conservation and sustainable use of biodiversity." It further stated that "this requires strengthening the European Research Area, its international dimension" for biodiversity. In this context, the FP7 European Research Area NET (ERA-NET) finances networks of national funding agencies that combine their efforts to encourage collaborative research projects across Europe. The BiodivERsA network belongs to the second generation of ERA-NET and focuses on biodiversity research. Its aim is to build a dynamic and sustainable European platform for encouraging, on a transnational scale, excellent and policy-relevant biodiversity research that addresses the most pressing strategic issues that biodiversity and ecosystem services currently face.

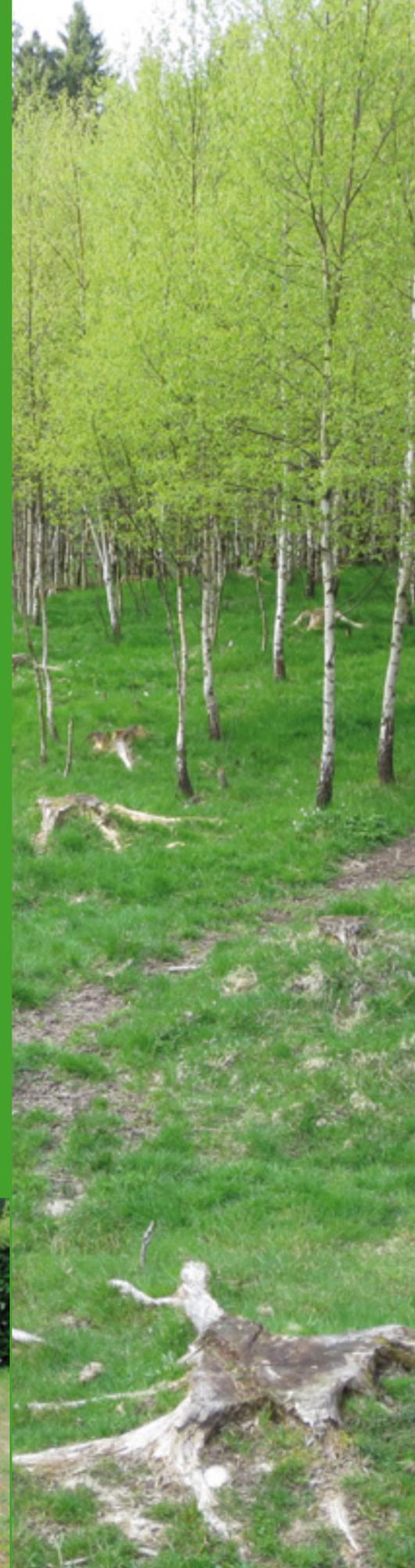
The BiodivERsA consortium has fulfilled two main achievements since November 2010, starting date for its second phase. First, BiodivERsA has developed an analysis of the major national and international strategies on biodiversity research, and has liaised with main European and international initiatives to ensure that BiodivERsA's strategy is coherent and relevant. BiodivERsA has established a transparent procedure for setting up an agenda that guarantees that the most relevant topics are prioritised.

Then BiodivERsA set up a recurrent funding mechanism that allows to launch annual calls for research proposals on prioritised topics that support pan-European biodiversity research with budgets averaging €8M to €10M per call. Over the 2010–2014 period, the ambition of BiodivERsA is to support European biodiversity research for €30M to €40M. The organisation thus works as a powerful means to allow national agencies to collectively fund research projects on a pan-European scale.

BiodivERsA is now launching annual calls for proposals on prioritised topics, supporting pan-European biodiversity research with budgets of approximately €8-10M per call.

The 2010–2011 joint call allowed the funding of seven projects for a total amount close to €9.5M across 8 countries.

Year after year, the projects funded by BiodivERsA demonstrate how our network promotes cross-border cooperation and funds excellent research projects in terms of scientific quality and societal relevance, thus providing hands-on solutions for tackling biodiversity loss and ecosystem degradation.



In addition, BiodivERsA is developing a mapping activity with a database that provides biodiversity research managers with access to the information on current and past European funding programmes for biodiversity research, allowing them to analyse funding trends and set future priorities. BiodivERsA is also developing a knowledge brokerage activity so project results can be used by policy makers and stakeholders who are interested in the relation between human activity and biodiversity and ecosystem services at a European scale. Policy briefs will be developed to reach this goal.

In this context, the 2010–2011 call of BiodivERsA focused on "Biodiversity and ecosystem services, and their valuation." This theme was identified as a very hot topic requiring the support of pan-European and cross-disciplinary projects.

This joint call represents a turning point for the network for several reasons. First of all, compared to the previous BiodivERsA 2008 joint call on "Biodiversity: linking scientific advancement to policy and practice" that comprised three sub-themes (*global change and biodiversity dynamics, ecosystem functioning, and ecosystem services*), the present call is much more focused. The *biodiversity and ecosystem services and their valuation* topic concentrates the network's efforts on a narrower scientific question, and responds to a clearly identified pressing issue that is being put forward by several international strategies for biodiversity.

Also, thanks to the experience of the first joint call and the flexible collaboration of several partners, the network has been able to efficiently allocate the reserved budget to actual funding, allowing the 2010–2011 joint call to support seven projects involving eight countries, for a total amount close to €9.5M.

In addition, negotiations leading to the decision to launch the call reached their conclusion during the final meeting of BiodivERsA's first period of European funding in March 2010, while the second period started in November 2010, which is when the call was launched and open to respondents. This implies that the network, strong from its first success in 2008, entirely developed this call in between the two periods, demonstrating the partners' motivation and ability to continue BiodivERsA's work despite a momentary lack of EU funds for cooperation. Given the shared ambition to become a sustainable and independent funding platform, this action is a particularly telling testimony to the network's eagerness and ability to achieve such an objective.

This document presents an overview of the 2010–2011 joint call, its development, the profile of submitted proposals, and the results of the proposals' evaluation process. A short presentation of each funded project is also provided. As you will see, a unique aspect of the network is that it funds pan-European projects of a medium size, with partners from three to five countries. The scale of BiodivERsA projects allows to strengthen the relationships between research teams and people working in fields that are linked to biodiversity.

You will also appreciate how BiodivERsA encourages innovative and cross-disciplinary approaches to address the interplay between human activities and biodiversity and ecosystem services at the European level. The broad range of scales and disciplines engaged by these projects reflects well the complex interactions through which biodiversity, human societies and their respective futures are intertwined (see Fig. 10, p. 12).

Following the 2010–2011 call, BiodivERsA has pursued its goal of launching annual calls and has implemented its third call for research proposals (2011–2012) on *biodiversity dynamics: Developing scenarios, identifying tipping points and improving resilience*, results of which will be known in the early summer 2012. I would like to thank a lot all the BiodivERsA members for their efficient investment in the 2010–2011 call and other BiodivERsA calls and activities.

Year after year, the projects funded by BiodivERsA demonstrate how our network promotes cross-border cooperations and funds excellent research projects in terms of science and societal relevance, thus providing hands-on solutions for tackling biodiversity loss and ecosystem degradation. With the development of a strategic and multi-annual vision of the network's priorities, and the annual launch of joint calls for research projects to implement this strategy, BiodivERsA partners are thoroughly pursuing the network's overall goal: to build a sustainable funding platform for an innovative and interdisciplinary biodiversity research responding to pressing societal and policy needs at the European level.

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Lyon, 15 May 2012



BiodivERsA's consortium

Development of the call text

BiodivERsA partners are committed to embedding their work in the wider context of biodiversity research and related pressing issues, would it be on a scientific, political or societal level. This implies a close attention to topics selected for BiodivERsA joint calls in the light of national and international strategies for biodiversity, as well as partner agencies' priorities.

Pursuing this philosophy, BiodivERsA has developed a mechanism for the selection of top priorities in the biodiversity field, which are included in the BiodivERsA rolling agenda. This mechanism, which has been adopted in its final version in early 2011, builds on existing partners' priorities, and involves the analysis of national and international agendas as well as the identification of possible gaps in the scientific knowledge. Also, this process calls for an early reflexion about the added value of addressing the topic at European rather than national level and about its relevance to policy and management.

The 2010–2011 topic emerged in a similar manner, although the mechanism per se was not yet fully operational. Close attention was paid to the different aspects, from the strategic relevance to the European added value and the socio-political relevance. Following the decision to pursue a topic on biodiversity and ecosystem services and their valuation, BiodivERsA started to develop the text of this call in March 2010. In order to build the axes of the call for proposals and the scientific rationale behind the selected topic, BiodivERsA was grateful to be able to rely on the input of independent experts from different countries. The Call Steering Committee adopted the final version of the call text in September 2010.

Summary of the 2010–2011 BiodivERsA call

The goal of the 2010–2011 BiodivERsA call for proposals was to support European scientific research projects that address two large issues:

1) The relationships between biodiversity and ecosystem services

There is increasing evidence that ecosystem services and biodiversity are linked, but these links are rather complex and can involve complex dynamics, non-linear responses to perturbation and can occasionally be subject to abrupt shifts between alternative steady states. Many studies available so far are strongly focusing on only a few organisms and ecosystem types, as well as on a few processes and services, and small spatial and temporal scales. The role of biodiversity at different levels (genetic, species, functional, trophic, ecosystemic, spatial diversity) and its relevance to a range of key services, remains insufficiently understood.

2) Valuation of biodiversity and ecosystem services (monetary and non-monetary), and better incorporation of biodiversity and ecosystem services into society and policy

To improve the sustainable delivery and use of ecosystem services, research is needed to assess the effectiveness and impact of available policy tools over time and in different sectors. The results from such research can provide the scientific basis required to promote the understanding of biodiversity and ecosystem services among prime users, and contribute to the development and implementation of alternative legislation and policy instruments.

These two topics have been identified as crucial to the understanding of biodiversity although they have remained under-studied. This call for proposals aimed to fill this knowledge gap. Eleven BiodivERsA partners representing eight countries decided to participate in the call: FWF (Austria), ETAG (Estonia), ANR and MEDDTL (France), DFG and PT-DLR/BMBF (Germany), RCL (Lithuania), NWO (The Netherlands), MINECO (Spain), and Formas and SEPA (Sweden).

The call was published on the 1st of November 2010; a pre-announcement of the call was sent out during the Summer 2010. The deadline for submitting proposals was the 17th of February 2011, and funding decision was published in June 2011. The earliest possible starting date of funded projects was in early Fall 2011.

Evaluation process and composition of the Committee

The evaluation of the research proposals was completed in two steps. On March 4, the members of the Evaluation Committee (EC) set up by participating agencies, met to organise the review of the 53 submitted proposals. Each proposal was evaluated by external reviewers through March–April. Then, on May 2nd and 3rd, the committee met again to complete the evaluation and produce the final ranking.

The EC was made up of international experts in the natural and social sciences and also of professionals from the field of biodiversity and conservation management. The members were divided between a scientific sub-committee and a policy relevance sub-committee respectively led by Kaisa Kononen (chair of the EC) and Peter Bridgewater (vice-chair of the EC).

Their evaluation followed specific guidelines and criteria established for each sub-committee: 11 criteria were allocated for the evaluation of the projects' scientific excellence, whereas 5 criteria were allocated to assess their policy relevance. Following this grid, each proposal received two marks (one for scientific excellence and one for policy relevance) on a scale from 1 to 5. Then the proposals were ranked according to their grades, with a predefined slight emphasis on scientific excellence over policy relevance.

From the Evaluation Committee chairs

It has been nearly 3 years since the publication by BiodivERsA of the first round of successful projects, and a year since the Evaluation Panels set to sort and select the best projects from across Europe for this second round of funding by BiodivERsA.

Since the first round in 2008, BiodivERsA has become more familiar to natural and social scientists in Europe (and beyond) interested in the great questions around biodiversity and – increasingly – ecosystem services. This was the theme of the second call, with a focus on ecosystem services and valuation. We had 53 very good projects to evaluate, well elaborated in terms of the science, and eventually came to a decision on the seven projects described in this document. The novelty of this evaluation was that we worked in two separate panels with the policy and socio-economic sub-committee working in parallel with the science sub-committee, pooling our results at the end to find not only the best set of science-based projects, but also the ones which had good potential for underpinning policy development.

It is clear that the science of biodiversity, ecosystem services and valuation is developing rapidly in Europe, and the array of projects described in this brochure reflects this well. But in some cases the Evaluation Committee would have wished for more attention from the participants to address policy relevance and stakeholders' involvement in their projects. What the Evaluation Committee was looking for was a convincing statement as to why the project topic was policy relevant, in what ways the project could help policy and/or management development, and how the wider community could be engaged, if not in helping develop the project, certainly in applying its results.

There is evidence that BiodivERsA is helping project developers understand that good science is vital, and that it also needs those aspects of policy relevance to be built in, to recognize how stakeholders can be more involved so that the project results can be more quickly and effectively used.

We would like to congratulate the successful consortia, thank all fellow members of the Evaluation Committee who gave selflessly of their time and expertise to help in this process, and to thank the support from ANR (in charge of call development), BiodivERsA secretariat, and other funding agencies throughout this process.

Kaisa Kononen

Peter Bridgewater

Scientific evaluation sub-committee

ALGIRDAS Augustaitis – LITHUANIA
 ARBACIAUSKAS Kestutis – LITHUANIA
 BRADSHAW Richard – UNITED KINGDOM
 CASAMAYOR ORTEGA Emilio – SPAIN
 CRAMER Wolfgang – FRANCE
 GROS Philippe – FRANCE
 JONCKHEERE Inge – ITALY
 KALBITZ Karsten – THE NETHERLANDS
 KONONEN Kaisa (chair) – FINLAND
 LAMBIN Xavier – UNITED KINGDOM
 MACE Georgina – UNITED KINGDOM
 MILDAZIENE Vida – LITHUANIA
 MORALES Beatriz – SPAIN
 MOSBRUGGER Volker – GERMANY
 PAULSEN Sandra – SWEDEN
 PHAM Jean-Louis – FRANCE
 SCHAMINEE Joop – THE NETHERLANDS
 SILVAIN Jean-François – FRANCE
 WEBER Jacques – FRANCE
 ZIEGENHAGEN Birgit – GERMANY

Policy relevance evaluation sub-committee

BECK Erwin – GERMANY
 BEJA Pedro – PORTUGAL
 BRIDGEWATER Peter (vice chair) – UNITED KINGDOM
 GAUTHIEZ François – FRANCE
 KORN Horst – GERMANY
 MANRIQUE Esteban – SPAIN
 VAN OPSTAL Sander – THE NETHERLANDS
 VON TEUFFEL Konstantin – GERMANY



Kaisa Kononen



Peter Bridgewater

Analysis of the research projects submitted

Overall figures of the call

With 53 full proposals submitted, 329 participating teams, and 1,067 individual participants, the response to the 2010–2011 BiodivERsA call for research proposals was very satisfactory. Reaching a success rate over

	No. of proposals (No. of teams)	Budget
Submitted proposals	53 (329)	€66.8M
Selected proposals	7 (51)	€9.5M
Success rate (% of submitted)	13.2%	14.2%

13%, this call resulted in the selection and funding of seven excellent pan-European projects for a total of €9.5M. Thanks to a good anticipation of the required budget for each participating country and to the flexibility of several partners who agreed to increase their budget when needed, final funding figures were quite close to the total reserved budget.

Nationality of applicants

87.5% of the teams that submitted a proposal were countries participating in the funding of the call. While there were a few proposals, including self-financed teams from other geographical areas, the majority of applicants was from EU-15 countries (87.8%, Fig. 1), and close to 95% of all applicants came from the EU-27 countries. This result is consistent with one of the major goals of this call that is to better integrate European research on this topic.

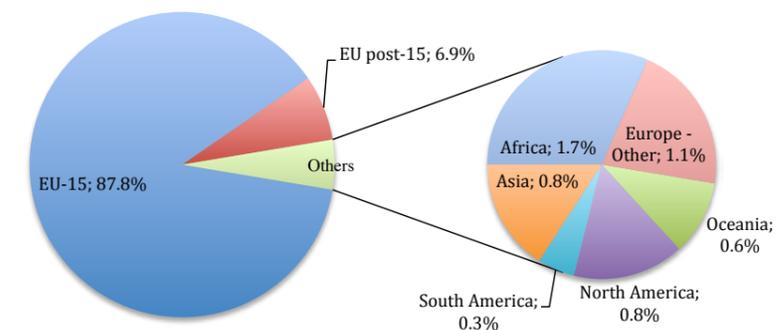


Fig. 1: Geographical origin of participating teams in the BiodivERsA 2010–2011 call: Countries in the EU-15: Austria, Belgium, Denmark, Finland, France, Germany, Portugal, Spain, Sweden, The Netherlands, United Kingdom;

Countries in the EU-post 15: Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland;

Europe – others: Norway, Switzerland;

Others: Oceania (Australia, New Zealand), North America (Canada, USA), South America (Brazil), Asia (Cambodia, Philippines, Thailand), Africa (Cameroun, Congo, Madagascar, Senegal, Tchad)

Reserved and requested budgets, and funding model

Although the publication of the reserved budgets by agencies during the announcement of the call might have influenced some of the budget requests made by applicants, it is deemed here that BiodivERsA partners had quite well anticipated the responses to the topic of the call from their respective national scientific communities (Figs. 2 and 3). Indeed, the highest values of both reserved and requested budgets were observed for France, Germany, and Sweden, and to a lesser extent for Austria, The Netherlands, and Spain (Figs. 2 and 3). When the reserved budget proved insufficient as for example with German partners, this did not cause any issue during the funding process thanks to the flexibility of the partners. This explains that it was possible to fund the 7 top-ranked projects, and that funding decisions strictly followed the ranking established by the evaluation committee.

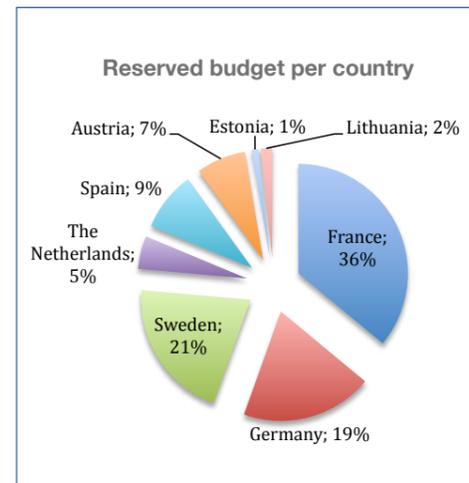
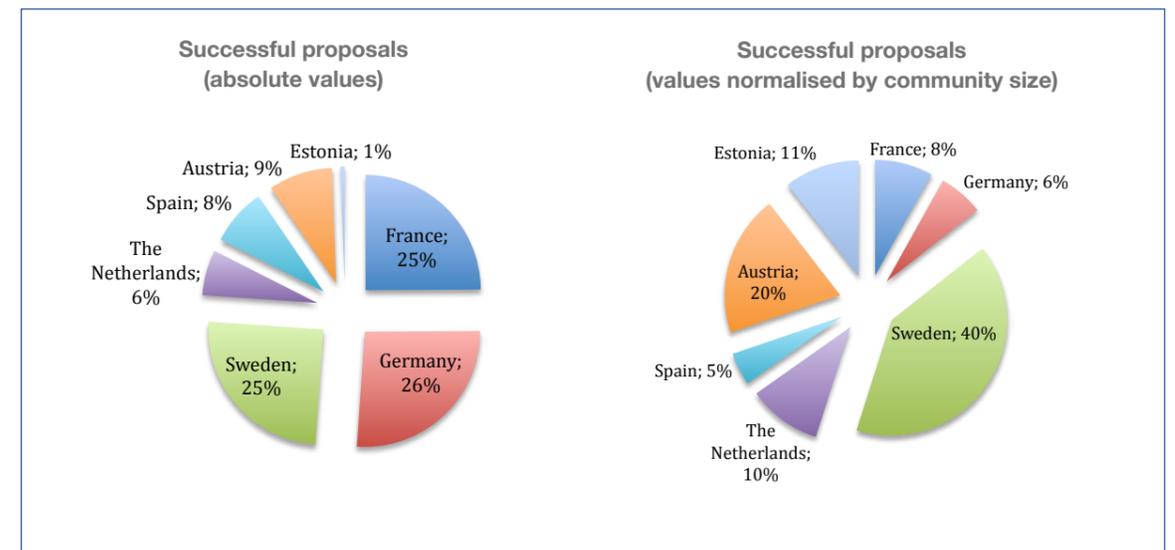
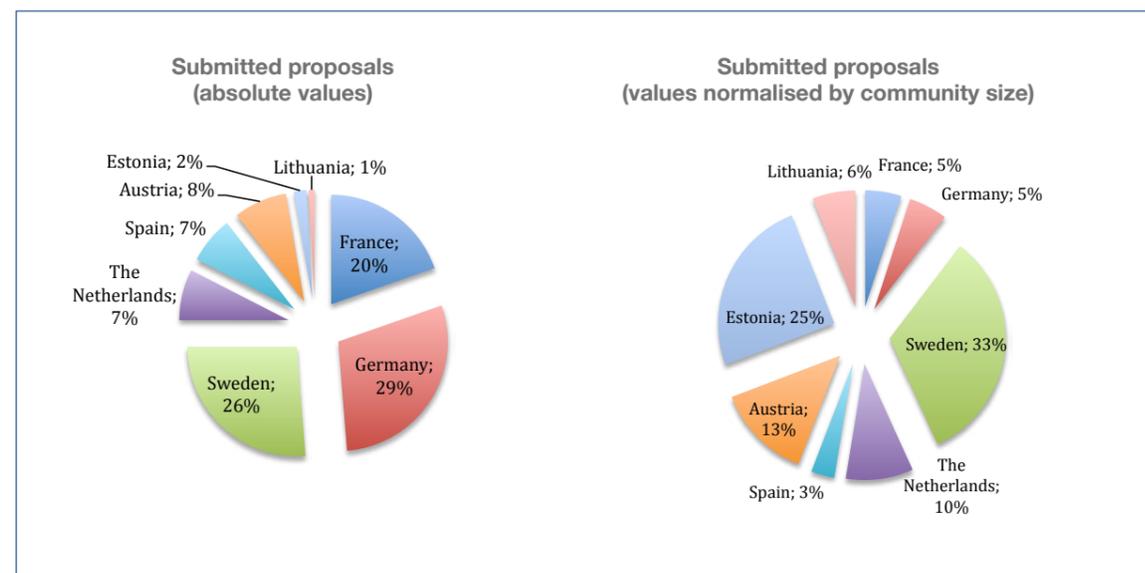


Fig. 2: Distribution of the reserved budget from each country



The 2010–2011 call funded teams from 7 different countries (Fig. 4). A large proportion of applicants and funded teams comes from countries corresponding to the largest funders of the call. Again, it is worth comparing the funding amounts between countries in terms of both absolute values and amounts normalised according to the estimated number of researchers from all scientific areas in each country. In the end, only one participating country (Lithuania) had no research team involved in the 7 funded projects. However, one Lithuanian team ranked in the top 10 projects recommended for funding, but partners' budgets fell short earlier in the list.

Fig. 4: Distribution of awarded budgets to the successful applicants by country in (left) absolute values, and (right) normalised according to the size of the national scientific community (Full Time Equivalent unit; – source: Eurostat 2009)



Despite a relatively low participation in absolute budget terms, we notice that the biodiversity scientific communities from Lithuania, Austria, The Netherlands, and Estonia, actually responded well to this call once the budget requests are normalised according to the estimated number of researchers from all scientific areas in each country. Unfortunately there is no available data to know precisely the size of the specifically targeted biodiversity research community within the overall research community of each country (Fig. 3).

Fig. 3: Budget requested by applicants among countries, in (left) absolute values, and (right) normalised according to the size of the national scientific community (Full Time Equivalent unit; – source: Eurostat 2009)

The Austrian, Estonian, Spanish and Dutch research teams applying to this call were particularly successful as demonstrated by their success rate (i.e. ratio of granted to requested funded amounts) (Fig. 5). However, these figures should be viewed with caution given the relatively low number of proposals for each country.

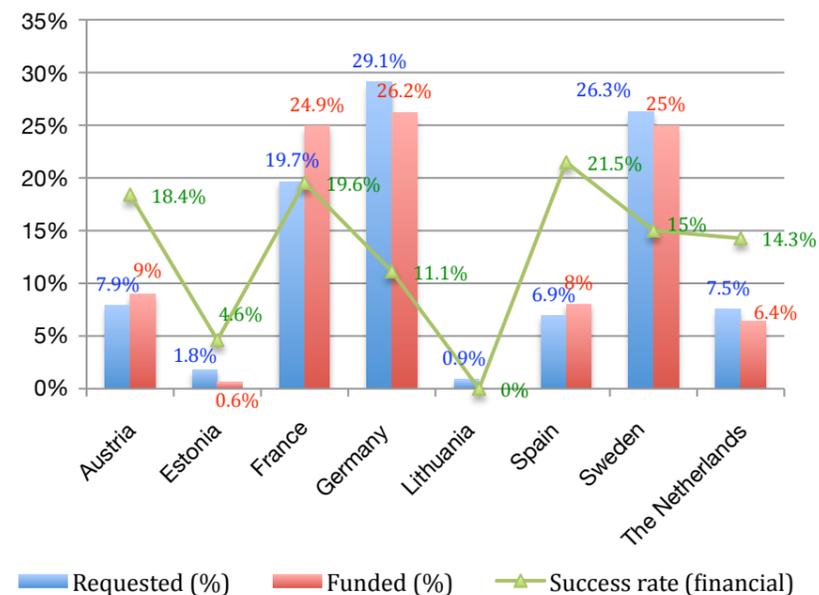


Fig. 5: Comparison of the percentage of budgets in the proposals between countries at the submission phase (requested) and after selection (funded), along with the financial success rate.

Number of proposals' coordination

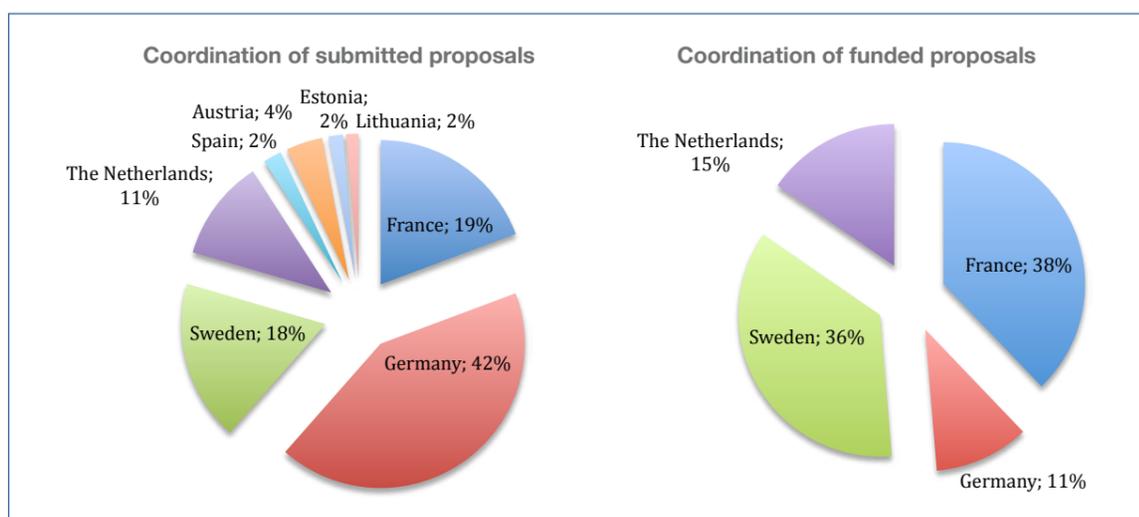


Fig. 6: Percentages of requested budget according to the country of the coordinators, for (left) submitted and (right) funded proposals

88% of the projects' coordinators of submitted proposals were from Germany, France, Sweden, and The Netherlands (Fig. 6 left), and the coordinators of the funded proposals happen to be from these countries as well (Fig. 6 right). Again, these figures should be viewed with a lot of caution given the very small number of coordinations (respectively 53 and 7 for the submission and funding phases).

Call themes addressed by the proposals

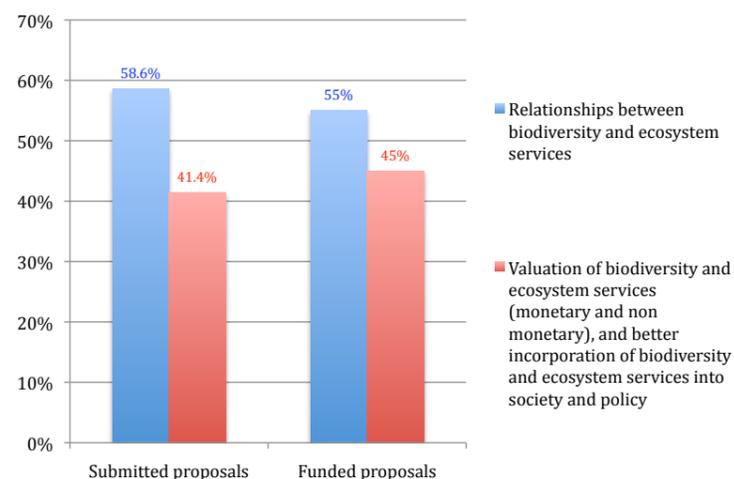


Fig. 7: Proportion of the proposed research topics themes between submitted and funded proposals. One proposal can address both themes.

During the submission phase, an indication of the relative importance of the theme(s) addressed by each proposal was given by the projects' leaders. This allowed us to have a clear view of the way each theme was considered (Fig. 7). Most submitted proposals addressed both themes, even if overall the "relationship between biodiversity and ecosystem services" topic was more often the main focus than the "valuation of biodiversity and ecosystem services" one (Fig. 7). The two themes were close to equilibrium in the funded proposals, although the theme on relationship was still predominant.

Types of studied environments

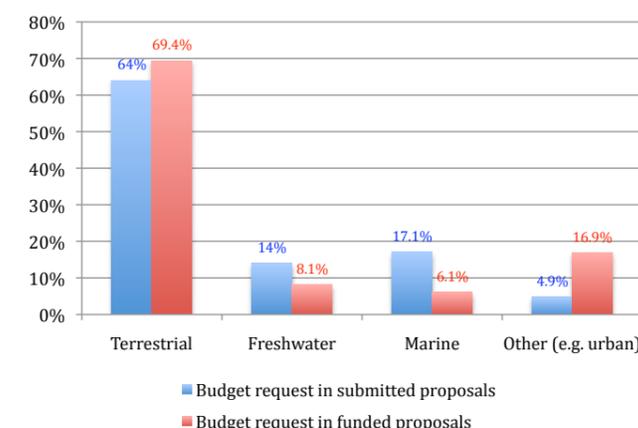
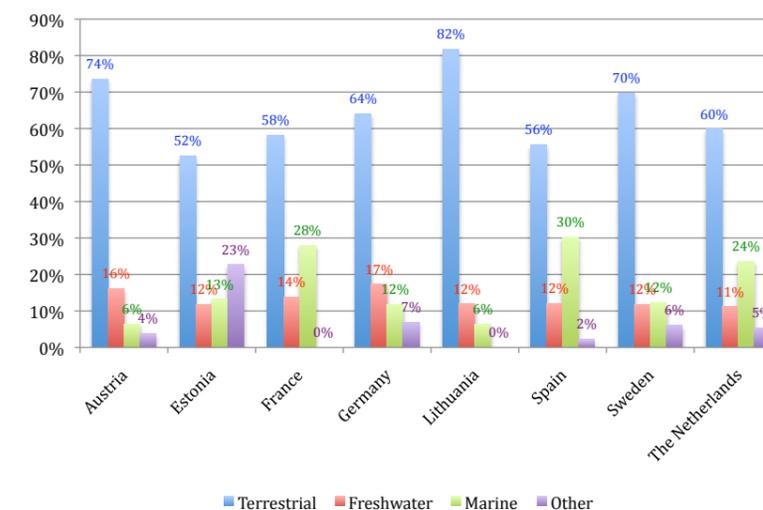


Fig. 8: Distribution of budget in submitted and funded proposals according to the studied environment. One proposal can study several environments.

The majority of submitted and funded projects focused on terrestrial ecosystems (Fig. 8). Fewer proposals included freshwater and/or marine ecosystems, and very few studied exclusively these water ecosystems. Again we remind the reader that the figures for funded projects should be viewed with caution given the small number of projects (7). However, it is particularly noticed that very few researchers in marine fields applied to this call. This might be because there are other well-known funding resources available for marine research at the European level. It should be noted that a significant proportion of the evaluation committee members belonged to the marine research field, ensuring that marine proposals were not counter selected. BiodivERsA is currently working to generate a stronger interest within the marine scientific community for its calls.

Fig. 9: Percentage of requested budget in the submitted proposals by country according to the studied environment.



In figure 9, it can be observed that the scientific communities from Spain, France, and The Netherlands have the highest number of submitted research projects on marine ecosystems, while Estonia had the highest proportion of freshwater focused projects. Finally, Lithuania, Austria, and Sweden were among the countries with most proposals studying terrestrial ecosystems, even if all countries had quite high proportions of proposals for this environment.

Scientific disciplines mobilised by proposals

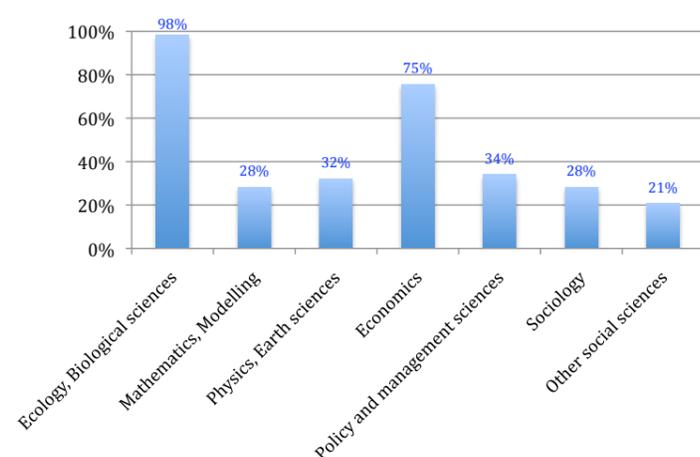


Fig. 10: Percentage of submitted proposals including skills and approaches from different disciplines. Physics and Earth sciences: include biogeochemistry and chemistry, hydrology, physics, oceanography and remote sensing. Other social sciences: include anthropology, architecture, geography, history, law, and philosophy.

One striking feature of the 2010–2011 BiodivERsA call was its ability to generate proposals including a range of scientific disciplines (Fig. 10). Not surprisingly, almost all proposals included ecology and other biological sciences. However more interestingly, 75%, 34% and 28% of the projects included economics, policy/management sciences, and sociology, respectively. And 21% included other social sciences like anthropology, architecture, geography, history, law, and philosophy. This is clear evidence that BiodivERsA is promoting the emergence of original and pluridisciplinary research networks at the European scales.

Scientific and administrative follow-up of the funded projects and dissemination of results

The kick-off meeting of the projects funded thanks to this joint call was held in Stockholm from 31st of May to the 1st of June. All these funded projects have a duration of 3 years (with possible extension if the need is justified). The scientific and administrative follow-up of projects is performed by the Call Steering Committee with support of the Secretariat of this call located in ANR (France). Project results and highlights are disseminated through the BiodivERsA website (<http://www.biodiversa.org>). In addition, BiodivERsA develops policy briefs around the themes addressed by funded projects once they have sufficiently progressed in order to disseminate hands-on results and solutions to European policy-makers.

Conclusion

These various figures point out to several lessons specific to this BiodivERsA call, but which can be useful for future ones too:

- The narrower scientific topic of the call allows a satisfactory success rate from the consortium point of view.

- The funding amount reserved by a given country has some influence on the number of applicants, but it should be noted that promoting the participation of top-level national research teams is a major driving force when considering the success in funded proposals.

- Successful projects have reached an equilibrium in addressing both themes of the call.

- BiodivERsA received and funded many proposals of high quality and with strong cross-disciplinary approaches. This demonstrates how mature biodiversity research is to address such a complex and important topic.

Through this call, BiodivERsA partners have made a significant step towards demonstrating the capacity of the network to launch financially consequent annual calls for biodiversity research while learning from past experiences. The network goes even further now by achieving its intention to launch every year fairly focused calls that target the most pressing issues linking biodiversity to societal challenges.



Partners:

Swedish University of Agricultural Sciences, SLU, SWEDEN, *coordinator*
Helmholtz Centre for Environmental Research, UFZ, GERMANY
University of Innsbruck, AUSTRIA

Duration : 2012-01-01 2014-12-31

Total grant : €732 708

Further information: Mattias Jonsson
email: mattias.jonsson@slu.se



APPEAL – Assessment and valuation of pest suppression potential through biological control in European agricultural landscapes

Biological pest control provided by natural enemies is an ecosystem service of immense economic value, threatened by agricultural intensification. It is a service for which great amounts of background information have been gathered and it is, therefore, an excellent study system for exploring generalities of delivery, stability and value of services in relation to land use, biodiversity, and society.

APPEAL investigates a) the relationship between land use and biodiversity, b) biodiversity and the ecosystem service of biological control and c) provide a framework for estimating the value of biological control. As a model pest, APPEAL uses cereal aphids, which are among the economically most important insect pests in Europe. These aphids are attacked by a range of natural enemies such as lady beetles, ground beetles and spiders, and the biological control service provided by these species is known to be substantial.

APPEAL uses historical records and current data to analyze how changes in the natural enemy fauna are influenced by land-use change. In order to achieve understanding on a mechanistic level, a food-web approach is used, employing molecular methods and field experiments. A valuation framework will be developed that can model biocontrol of cereal aphids across European landscapes.

Key research questions that are addressed within APPEAL are:

1. How do natural enemy communities vary temporally and spatially and how does this affect the stability of biocontrol services?
2. Are food-web structure and interactions affected by landscape composition, and what implications does this have for biological control?
3. How do biocontrol services vary across agricultural landscapes and where are areas with a surplus or deficit of the services located across Europe?
4. What are the advantages and disadvantages of biological control in terms of monetary and non-monetary values as compared to conventional plant protection?

APPEAL is developing a modelling tool that can be used both by pest management practitioners (to design integrated pest management programs) and policy-makers (to explore the impact of land-use change on biocontrol services and crop production). The results generated by APPEAL will lead the way to assess multiple ecosystem services by providing a clear and easily adaptable structure for incorporating ecosystem service values into land-use change scenarios.



CONNECT – Linking biodiversity conservation and ecosystem services: Advancing insights in tradeoffs and synergies between biodiversity, ecosystem functioning and ecosystem service values for improved integrated biodiversity policy

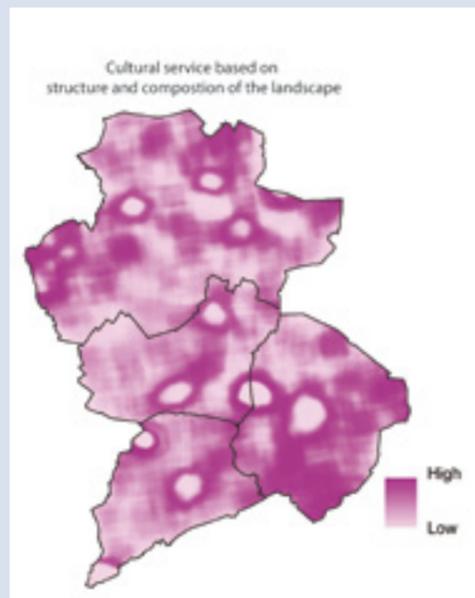
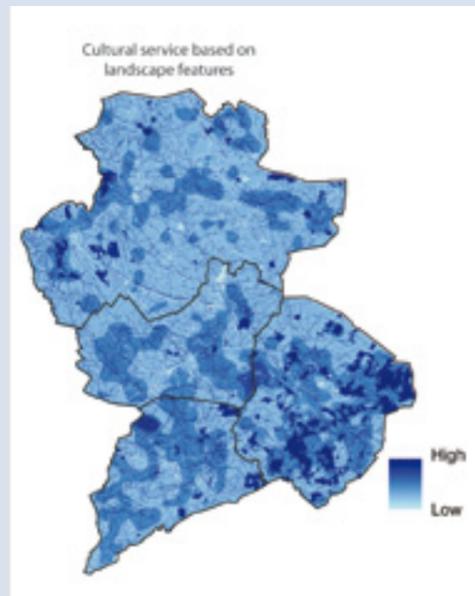
Biodiversity policy is increasingly influenced by evidence about the role of biodiversity in the provision of ecosystem services. However, the current state of scientific knowledge and empirical evidence is inconclusive and does not provide a sufficiently robust basis to make definite statements about whether securing the provision of specific ecosystem services will also guarantee biodiversity conservation, and vice versa. Conserving land for biodiversity purposes is often beneficial for some ecosystem services but at the expense of other ecosystem services. This is especially the case in many European landscapes where human activities have since long shaped biodiversity and landscapes. CONNECT aims at improving and integrating existing research methods from natural and social sciences for the analysis of potential synergies, conflicts and associated tradeoffs in support of effective policy and management.

The main outcomes of CONNECT are: 1) an empirically tested decision-support framework for analysis of synergies and tradeoffs between biodiversity, ecosystem services and associated socio-economic benefits, and 2) practical guidelines for the design of effective conservation policies based on improved scientific understanding of the relationship between ecosystem services and biodiversity.

CONNECT examines which dimensions of taxonomic, phylogenetic and functional diversity contribute to ecosystem functioning and hence to ecosystem service provision. Assessment of synergies and tradeoffs between biodiversity and ecosystem services conservation is based on improved spatial modelling and mapping procedures. The project also uses socio-economic valuation methods that are grounded in a better understanding of the complex interaction between ecosystem functioning and societal demand for ecosystem services. Improved theoretical and empirical insights will be translated into generic understanding that can support the development and implementation of policy instruments aimed at biodiversity conservation and the sustainable provision of ecosystem services.

Five case studies and an EU-wide assessment are used to apply the methods and test the findings for operational management. Case studies include an interactive stakeholder process to reveal the role of current policies. The effectiveness of alternative strategies and policies to conserve biodiversity is assessed while accounting for the tradeoffs and synergies between biodiversity and ecosystem services. The results and their implications for biodiversity governance will be discussed during a policy workshop and will contribute to science-policy networks such as TEEB and IPBES.

**Spatial variation
in ecosystem service provision**



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FarmLand – European network on farmland heterogeneity, biodiversity and ecosystem services

Agricultural landscapes occupy 40% of the available land area in Europe. They also play an important role in providing habitat for wild plants and animals that contribute significantly to agricultural production through services such as crop pollination and control of crop pests. In many regions farm fields are becoming ever larger, and many agricultural regions are now dedicated to a small number of crop types. How did these changes in farmland pattern affect farmland wildlife and the services they provide for agriculture? Are there policies which, if followed, would improve habitat for farmland wildlife and the services it provides without compromising food production? FarmLand addresses these questions by bringing together teams from France, Germany, Great Britain, Spain plus one from Canada.

Previous work demonstrated that agricultural landscapes which contain significant areas of semi-natural lands have higher wildlife diversity and better ecosystem services than farmlands with less semi-natural lands. These results led to policies encouraging semi-natural field margins or semi-natural strips within crop fields. Such policies require taking crop area out of production. This is often not feasible. It has been suggested that, in addition to the area of semi-natural habitats, the spatial heterogeneity of the cropped lands may be positively related to wild plant and animal diversity and to their provision of ecosystem services. If this is true, then it may be possible to develop new policies for agriculture that restore biodiversity and associated ecosystem services by increasing farmland heterogeneity, without reducing cropped area. The aim of FarmLand is to test this idea and to help develop such policies. This has not been attempted so far at such a scale and through such an integrated approach.

The objectives of FarmLand are to: (1) disentangle the relationships between landscape heterogeneity and plant or animal diversity in seven European agricultural regions (one in Germany, four in France, one in the United Kingdom and one in Spain) plus one Canadian region; (2) assess the links between landscape heterogeneity and ecosystem services such as pollination and/or biological control across these regions and (3) study the diversity of farming systems, and the farmers' mental models of the ecological functioning of their farms. FarmLand will promote the collective build up of acceptable recommendations for policy-makers that enhance biodiversity and ecosystem services in farmland.



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INVALUABLE – Integrating valuations, markets and policies for biodiversity and ecosystem services

While the use of “market-based instruments” (MBIs) for the management of biodiversity and ecosystem services (B&ES) is currently booming, the definition and underpinning theory of these tools are matters yet to be settled. Among MBIs, Payments for Ecosystem Services and biodiversity offsetting are increasingly regarded as promising tools, but evidence regarding their performance is still far from being conclusive. More research is required to understand which policy and legal frameworks are supportive of their development. Furthermore, public policies have an essential role to play in ensuring that the main types of ecosystem values are identified and taken into account. To this end, economic valuations may be helpful for allocating public spending, and for setting guidelines and regulation in offset-schemes, just to name a few examples.

In this context, the overall goal of INVALUABLE is to clarify the potential of MBIs to better integrate B&ES into society, based on appropriate institutional arrangements for relevant public policies and an improved utilisation of economic valuation approaches.

The project objectives are:

- **Clarify** the nature and meaning of the heterogeneous group of MBIs, (including Payments for Environmental Services as a broad category)
- **Inform stakeholders**, including decision makers, about the relevance (or conversely) of using MBIs with associated strengths and weaknesses
- Provide an analysis of the **emergence of MBIs in societal discourses** in relation with their theoretical foundations
- Research the **impacts of their implementation** on agents’ motivations, institutional arrangements, environmental efficiency, social equity, legitimacy, reinforcement of environmental public policies
- Investigate the **use of scientific information** (e.g. economic valuations) **for decision making** and especially through existing Science-Policy Interface bodies
- Study the role of legal / institutional frameworks in improving the use of scientific information and other types of knowledge for MBIs.

In order to guarantee the societal integration of these results, the INVALUABLE consortium will carry out analyses of the emergence and spread of MBIs, followed by stakeholders’ interviews on successful and unsuccessful science-policy interface processes. It will then identify key methods for the uptake and effectiveness of results by stakeholders. Policy briefs will also be developed as part of the project’s dissemination plan, and seminars will be conducted at international and national levels for a presentation of the results to key stakeholders in the policy field.



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SmallFOREST – Biodiversity and ecosystem services of small forest fragments in European landscapes

In many parts of Europe, the original forest cover has strongly reduced and forests presently occur as small fragments, often embedded in an intensively used agricultural matrix. Despite their small size, these forest patches often act as refugia for biodiversity and may provide a wide range of ecosystem services (ES) to human society. Biodiversity and ES of small forest fragments are mutually dependent as they are determined by a similar set of drivers. However, the nature and strength of the relationships between biodiversity and ES will vary, depending on the taxonomic group and ES under consideration, and on the landscape context including the type and intensity of the surrounding land-use and the land-use history. Moreover, the value attributed to an ES will differ between different regions. All these sources of variation remain largely unknown and their effects on human perception, hence on decisions about management, planning and policy, is poorly understood.

Therefore, the main objectives of SmallFOREST are to:

- quantify ES and biodiversity in small forest fragments among agricultural landscapes and across different regions in Europe,
- analyse how their mutual relationships vary between landscapes and regions, and
- assess the extent to which ES are valued differently.

The project is built on a unique database covering ~650 forest patches in sixteen 5 km x 5 km landscape sampling windows in southern France, northern France, Belgium, northwestern Germany, northeastern Germany, southern Sweden, central Sweden and Estonia (2 windows per region). This sample design covers the entire European temperate forest biome through a SW-NE transect. For each patch standardized data are already available on the occurring vascular plant species, its history, the surrounding land cover, and its spatial characteristics. During the project, additional data are collected to quantify the structural, functional and taxonomic biodiversity and to determine a well-chosen set of ES (including provisioning, regulating and cultural services) delivered by the patches. The valuation of the ES considered is assessed through a combination of local data collection and benefit transfer approaches, using innovative tools such as cognitive mapping.

To achieve their goals, FarmLand partners will rely on interviews and workshops with key agricultural stakeholders (farmers, and farming organisations). They will implement a strong dissemination plan to convert results into socially acceptable and economically feasible policies that benefit biodiversity and ecosystem services.

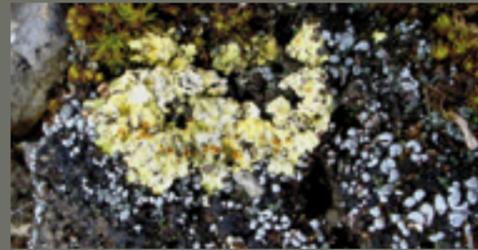
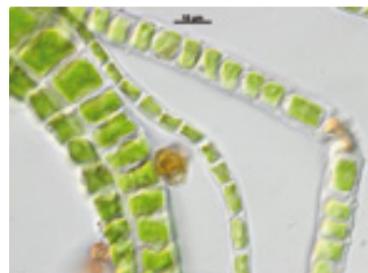


**Soil Crust InterNational (SCIN) –
Understanding and valuing biological
soil protection of disturbed and open
land surfaces**

Bare ground is not just bare ground; in fact, the soil surface in areas free of normal vegetation is often covered with a skin made up of a complex community of microorganisms, like cyanobacteria (blue-green algae), lichens and bryophytes – the biological soil crust (BSC). BSCs can be the only living cover in arid and semi-arid regions such as hot and cold deserts or xerothermic steppe vegetation. They are also the first colonizers of disturbed soils and have major impacts on the soil properties through stabilization, erosion limitation, and facilitation of colonization by higher plants. Despite these immensely important properties that provide protection to large, particularly marginal areas, soil crusts are neither well understood nor well appreciated by conservation and regularity authorities who are missing opportunities for improved policies and actions in the area of land protection.

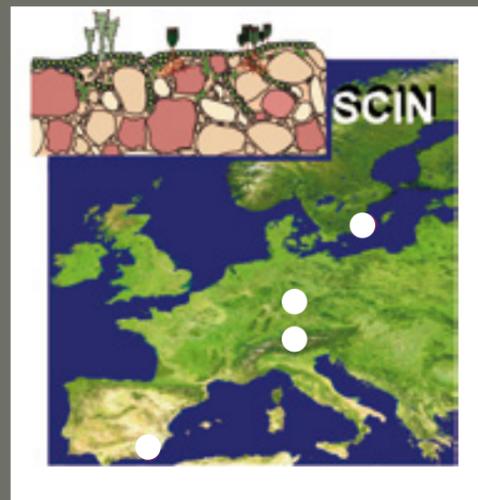
The aim of SCIN is to achieve both better appreciation of the functioning and importance of BSCs in Europe and to add value by contributing to the development of better and simpler soil protection practices and policies. SCIN will provide a much improved understanding of BSC functionality from the severest deserts to the alpine ecosystems.

Functional studies will be backed by detailed biodiversity assessments that aim to reveal the key organisms in BSC functioning over a wide latitudinal, altitudinal and climatic range. Information transfer to stakeholders will be achieved through a series of consultations and reports including highly visual material supporting their work.



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**URBES – Urban biodiversity and ecosystem
services**

URBES addresses significant scientific knowledge gaps on the role of urban biodiversity and ecosystem services for human well-being. This is of importance for building the ability of European cities to adapt to climate change and reduce their ecological footprints. URBES focuses particularly on functional diversity, urban ecosystem services, institutions, economics, and resilience science. It strives to translate cross-disciplinary research insights into principles, land use scenarios, landscape designs and applications. In addition, URBES pioneers the development of the TEEB approach in an urban context. This project is innovative in integrating monetary and non-monetary valuation techniques. It also studies the implications that these results might have on governance, and develops guidelines for implementation in urban landscapes.

URBES is developing a tool box that intends to promote sustainable management of urban biodiversity and generation of ecosystem services. In doing this, it involves and communicates the results of biodiversity research to important stakeholders. Several cities are used as sites for the empirical studies: Berlin, Stockholm, Rotterdam, Salzburg, and to some extent, Helsinki and New York City. URBES consists of nine research institutes in Europe well placed to take on the challenging cross-disciplinary tasks of the project. Two other institutes (University of Helsinki and The New School in New York City) are also participating in this project.

To achieve the ambitious goals of URBES, the scientific objectives of the project address the most pressing research questions in the field, in a cross-disciplinary way. They are:

- Relationships between urban biodiversity, ecosystem services and land use;
- Valuation of biodiversity and ecosystem services, including monetary and non-monetary evaluation approaches of separate ecosystem services, where indicator sets are developed and integrated in a multi-criteria analysis;
- Governance and management of urban biodiversity and ecosystem services;
- Communication and training.

URBES is developing a professional communication and training program together with ICLEI and IUCN. It will actively liaise between important policy mechanisms and contribute to global partnerships with e.g. CBD, TEEB, IPBES, as well as with the EU on the post-2010 EU Biodiversity Strategy, and on the Thematic Strategy on the Urban Environment. It will also provide inputs into national strategies regarding biodiversity and environmental issues.



Next BiodivERsA Calls for Proposals



In November 2010, with the launch of the joint call on “*biodiversity and ecosystem services and their valuation*,” BiodivERsA entered its second phase characterised by the strengthening of a coherent strategy and the launch of regular joint calls.

In order to reach this goal, a mechanism to identify priorities for joint calls on a yearly basis was established and used in its final version for the first time in Spring 2011. This recurrent process implies the commitment of BiodivERsA partners’ agencies

to propose topics based on their own strategic priorities and those existing at the international level. These proposals are then analysed and ranked by the whole consortium.

Following this process, the June 2011 General Assembly established a common rolling agenda with priority topics. These topics are divided into two large groups of priority, and topics within the same group are deemed of equal priorities. You can find the priority topics identified by BiodivERsA at <http://www.biodiversa.org/70>. In addition, the consortium selected **the topic of the 2011–2012 joint call: “Biodiversity dynamics: developing scenarios, identifying tipping points, and improving resilience.”** Eleven BiodivERsA partners from ten countries participated in the call. Further information on this call and selected projects is available at <http://www.biodiversa.org/101>.

In 2012, the updated common rolling agenda is expected by the end of May, when BiodivERsA’s General Assembly will meet. Prior to this, partners have been invited to propose new topics or to improve those that were included in the previous common rolling agenda. The whole consortium will also decide on the **topic for the 2012–2013 joint call, to be launched in November 2012** following the provisional calendar below:

July 2012: Pre-announcement of the joint call 2012–2013
Early November 2012: Launch of the joint call 2012–2013
December 2012: Deadline for pre-registration
February 2013: Submission deadline for proposals
March-May 2013: Evaluation
June 2013: National funding decisions

Photos and illustrations from the funded projects were provided by the projects’ coordinators. Photos p. 2: © MAITRE Christophe / INRA. All other photos: Elisabeth Paymal. © BiodivERsA, 2012



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