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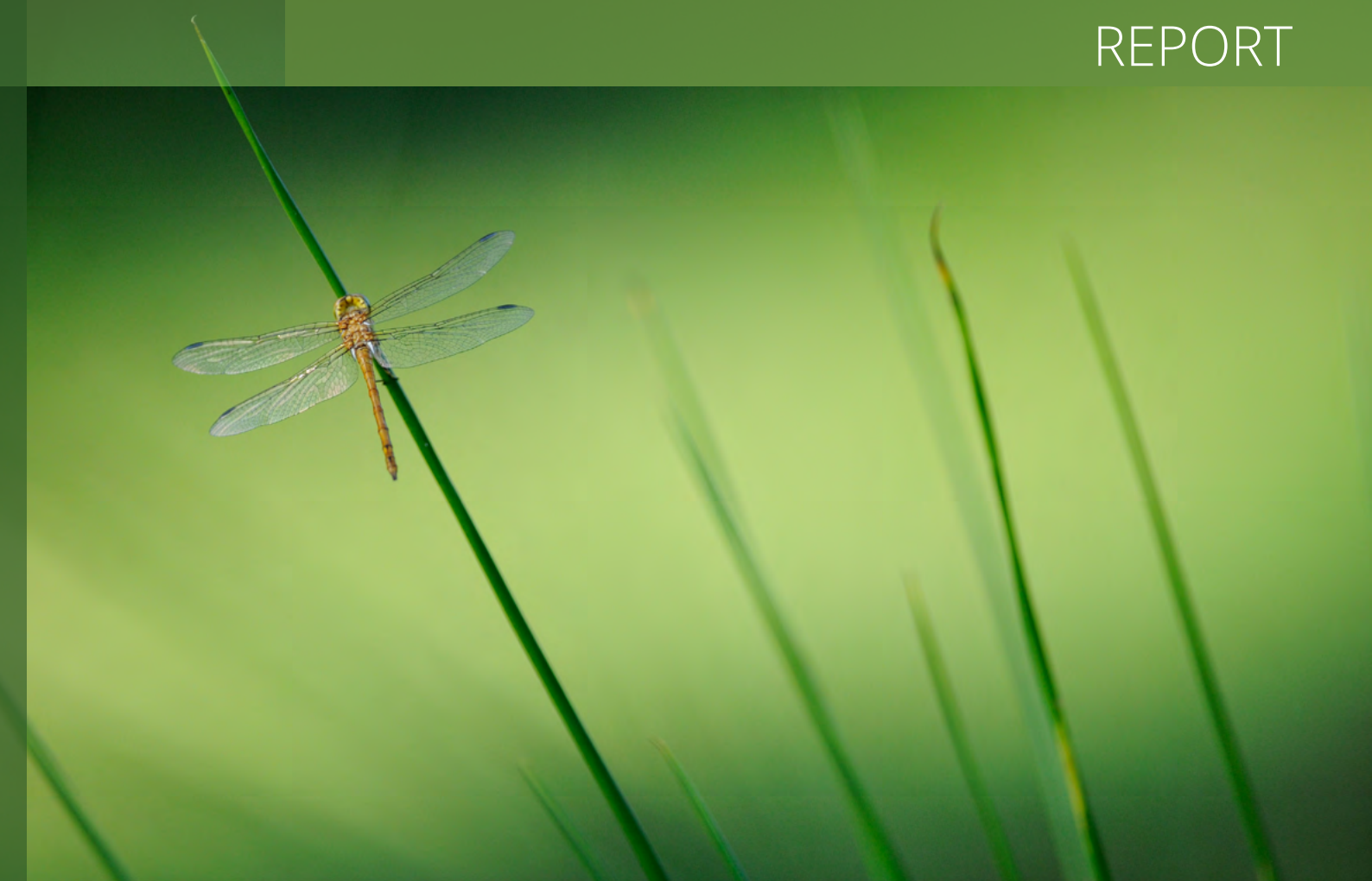
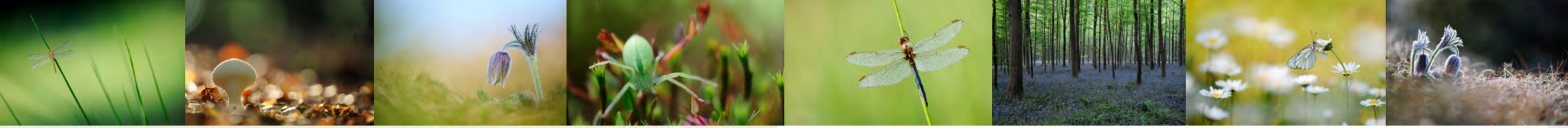
BELGIAN BIODIVERSITY PLATFORM

CONSERVATION RESEARCH MATTERS INITIATIVE

REPORT





"What is Conservation Biology? Although crisis oriented, conservation biology is concerned with the long-term viability of whole systems. (...) The intellectual challenges are fascinating, the opportunities plentiful, and the results can be personally gratifying".

M.E. Soulé[1], 1985

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Yvan Barbier : Cover & Banner
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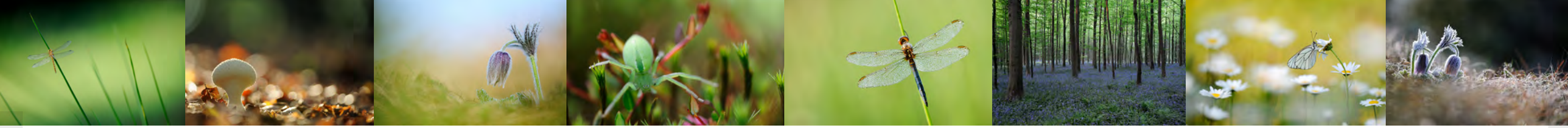
1 Soulé, M.E. (1985) What is Conservation Biology? BioScience 35(11) pp 727-734.

Contents

Conservation Research Matters Initiative



1. The Conservation Research Matters Initiative

In 2012-2013, the Belgian Biodiversity Platform highlighted the Belgian research on Biodiversity Conservation and launched the “Conservation Research Matters” initiative - an interdisciplinary horizon scanning exercise based on participatory approaches and on various supporting tools.

The exercise was conducted in three consecutive steps:

1. 150 stakeholders contributed to an online survey;
2. The survey analysis using Beryl, a dedicated webportal and database, and
3. Round table discussions during a conference where the stakeholders reflected on the survey outcome and produced research recommendations and suggestions on how to overcome the conservation challenges.

We hereby present the entire initiative, the research recommendations and solutions for conservation challenges.

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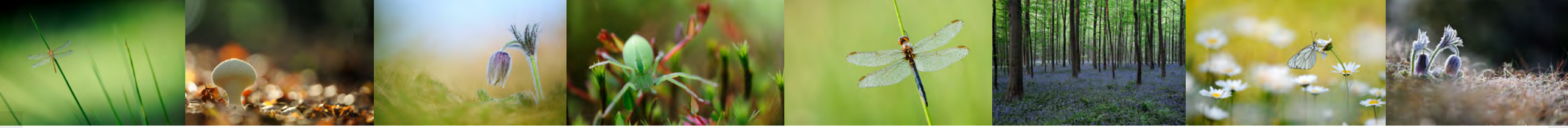
The Belgian Biodiversity Platform is an initiative that is funded by the Belgian Federal Science Policy Office. It is a science-policy interface for biodiversity research and provides services to the Belgian scientific community engaged in biodiversity research.

Among its activities, the Platform animates several relevant Communities of Practice, i.e. active transdisciplinary groups of researchers, policy makers and other stakeholders who collaborate on specific topical issues related to biodiversity. Besides connecting scientists working on the same topical issues and reinforcing their research, the Communities of Practice also act as science-policy interface and enable the active participation of concerned stakeholders into research planning and execution.



2. Introduction

Conservation Research embraces a wide range of disciplines from natural to social sciences, economics, education, politics and environmental law. It has increasingly gone beyond assessing the number of species in an area or mapping specific habitats, despite that these remain an essential basis. All these disciplines address issues fundamental to current conservation practices: they develop knowledge that may be used in support of maintaining and restoring biodiversity. However, the potential of conservation research is only effectively realised when research results are efficiently implemented in conservation policy and practices.

It has been frequently demonstrated that the impact of conservation research is enhanced when diverse stakeholders are involved and work in collaboration (e.g. Roux[1] *et al.* 2006, Balmford *et al.* 2003[2]). There are many different actors in nature conservation, as for example social and natural scientists, managers of natural sites, practitioners, private sector, administrations, policy makers, land owners, NGO's and volunteers. Collaboration between such diverse actors is a challenge, especially in regard to communication.

The **Belgian Biodiversity Platform**[3] organises meetings on topical issues in biodiversity science bringing together scientists from different disciplines, policy makers and stakeholders. As such, we hope to increase the societal impact of biodiversity research, and provide a sound knowledge base for the conservation and sustainable management of biodiversity and ecosystems.

In 2012, we decided to highlight Belgian research on biodiversity conservation to answer a demand from the Belgian conservation community involved in the Platform activities. We therefore launched the *"Conservation Research Matters*[4]*"* initiative. This initiative is an interdisciplinary horizon scanning exercise based on participatory approaches and the development of various supporting tools. More specifically, we first questioned the Belgian conservation community at large about their views on conservation research priorities and challenges. The outcome of this survey formed the baseline for round table discussions during the *'Conservation Research Matters Conference'*, which took place at BELSPO[5] on the 22nd of October 2013. We took advantage of investigating concurrently the obstacles and opportunities that people encounter while working on conservation issues. This helps to better understand and properly address the needs of the diverse actors.

Horizon scanning exercises can help to anticipate future research and management needs by identifying upcoming threats and gaps in scientific knowledge (European Environment Agency 2001[6]). They can help to explore novel and unexpected issues as well as persistent urgent problems or trends. The audiences that benefit from these kinds of exercises are practitioners in public, private and non-profit organisations, policy makers, research funding agencies and researchers (Sutherland *et al.* 2012[7]).

Within the Belgian field of conservation research, such an exercise has not been conducted so far. The Belgian Biodiversity Platform therefore launched the present initiative to feed into the Belgian and international conservation research agenda, to reinforce the visibility of biodiversity conservation research carried out by Belgian research teams, and to contribute to the dialogue between the different conservation actors in order to enhance the implementation of conservation research results in the field.

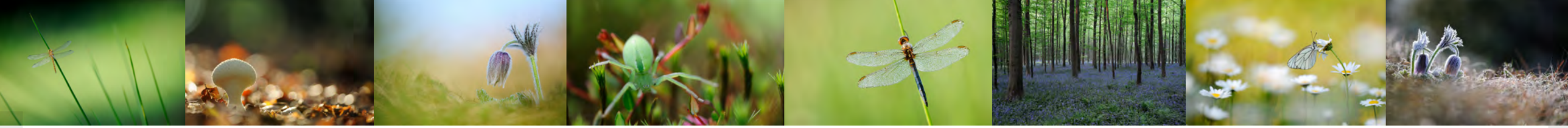
We decided to use **participatory processes**, which are based on the active participation of the diverse actors and a concerted decision making. A participatory approach invites for pluralism and aims to analyse the topic from a diversity of perspectives. Indeed, a great variety of experiences, knowledge, and competences is needed. The Conservation Research Matters initiative is based on the contribution of the diverse actors of the Belgian conservation community.

In order to give all conservation actors a chance to make best use of the initiatives outcome, we set up a dedicated database and web-portal, *Beryl*[8] (BElgian Research You are looking for) which allows browsing in the original survey replies.

In connection to the conference, we produced the **Conservation Research in Belgium brochure**[9] about the conservation research expertise at Belgian universities, research institutes and organisations. It not only intended to showcase, but also to serve as a concrete networking tool for the diversity of actors working in this field. We hope that this brochure can be useful to strengthen and expand the networks and collaborations of research teams, as well as to guide decision makers and practitioners who wish to underpin their conservation actions with scientific evidence.

Cover of the brochure : "Conservation Research in Belgium"

1 Roux, D. J., K. H. Rogers, H. C. Biggs, P. J. Ashton and A. Sergeant (2006) Bridging the science–management divide: moving from unidirectional knowledge transfer to knowledge interfacing and sharing. Ecology and Society 11(1): 4.
2 Balmford, A. (2003) Conservation planning in the real world: South Africa shows the way. Trends in Ecology and Evolution. Vol. 18. No. 9. pp 435-438.
3 www.biodiversity.be
4 www.biodiversity.be/conservation
5 Belgian Science Policy Office, Avenue Louise 231, Brussels
6 European Environmental Agency (2001) Late Lessons from Early Warnings: The Precautionary Principle 1896-2000, Environmental Issue Report No 22. Office for Official Publications of the European Communities, Copenhagen.
7 Sutherland, W.J. , Fleishman, E., Mascia, M.B., Pretty, J. and Rudd, M.A. (2011) Methods for collaboratively identifying research priorities and emerging issues in science and policy. Methods in Ecology and Evolution: 2, 238-247.
8 http://projects.biodiversity.be/beryl/
9 www.biodiversity.be/conservation/page/show/10



The ‘Conservation Research Matters’ initiative has been prepared with the support of and in collaboration with a **scientific advisory committee** (SAC), composed of several experts with diverse professional backgrounds. These experts ensured the proper scientific consistency of the conference and helped us to spread the information about the initiative through their respective networks.

By launching the Conservation Research Matters initiative, we hope to contribute to the collaborative conservation process and provide significant support to the sustainable conservation of biodiversity.

Members of the scientific advisory committee:

- Dr Jean-Philippe Bizoux
  Service Public de Wallonie – Département Nature et Forêt
- Prof Dr Marc Dufrêne
  Université de Liège – Gembloux Agro-BioTech
- Dr Sandrine Godefroid
  National Botanic Garden of Belgium – Conservation of endangered species
- Dr Machteld Gryseels
  Brussels Environment (IBGE-BIM). Director of the Direction ‘Quality of the Environment and Nature Management’.
- Dr Marc Herremans
  Natuurpunt – Head of departartment. ‘Dienst Studie’
- Prof Dr Maurice Hoffmann
  Instituut voor Natuur- en Bosonderzoek – Head of department ‘Biodiversity and Natural Environment’ Unit at Ghent University
- Prof Dr Grégory Mahy
  Université de Liège Gembloux Agro-Bio Tech – Head of Unit ‘Biodiversity and Landscape’
- Dr Els Martens
  Agentschap voor Natuur en Bos – Policy Coordination
- Dr Théodore Trefon
  Royal Museum for Central Africa – Head of Section ‘Contemporary History’
- Dr Aline van der Werf
  Belgian Science Policy Office – Manager of the Belgian Biodiversity Platform
- Prof Dr Linda Van Elsacker – Dr Zjef Pereboom
  Centre for Research and Conservation of the Royal Zoological Society of Antwerp – Van Elsacker*: Director for Research and Development/* Pereboom*: Head of Research*
- Dr Sabine Wallens – Dr Geert Raeymaekers
  Federal Public Service - Health, Food chain safety & Environment – Wallens: *Senior attaché in biodiversity/ Raeymaekers: senior attaché marine environment*

3. Methodology

The approach developed for this horizon scanning exercise involved several steps:

1. An online survey;
2. The analysis of the survey outcome;
3. The reflections during a one-day conference on the survey outcome resulting in research recommendations and suggestions on how to meet the challenges in conservation.

3. 1. The survey

The online consultation targeted the Belgian conservation community at large and was conducted from July to September 2012. About 1700 stakeholders from research (Belgian universities and research institutions), administration (regional and federal involved in environment and research), research funding agencies (federal and regional), management and practitioners (Life projects, nature reserves), private sector, nature NGO’s, and civil society (journalists) were contacted directly, and requested to forward the survey through their professional networks. The members of the scientific advisory committee did likewise. The survey was available in English, French, and Dutch and it was possible to answer in these languages and in German (survey, see annex 7.1).

Predefined survey domains:

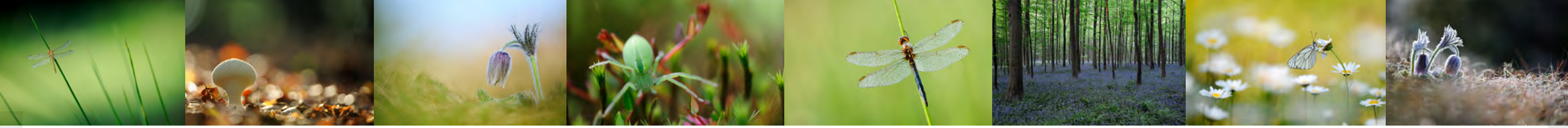
- Conservation and agriculture
- Conservation in the urban environment
- Conservation and industry
- Conservation and forests
- Conservation in Belgium
- Conservation in the tropics
- Marine conservation
- Conservation in the polar areas
- Restoration
- Conservation and public perception & awareness
- Conservation and governance

In the first part of the survey the participants were asked to share information about their professional background and expertise in conservation. It was optional to leave contact details or to stay anonymously. This section was dealt with in a multiple-choice format.

In the second part, the survey questioned the conservation community on the following aspects:

1. Identification of topics and priorities that urgently need to be addressed by research
2. Identification of obstacles and opportunities encountered while working on conservation issues

We used open-ended qwuestions in order to give the respondents freedom of expression. Several domains in conservation were pre-defined following the advice of the scientific advisory committee. In each of the subject domains, the respondents were invited to indicate up to three research topics, and explain why this subject was to be considered high order. Within each domain, we asked the people, what kind of obstacles and opportunities they encounter or expect while working in this field. This gives an overview



about the challenges linked to a specific subject. However, we also asked in the domain 'obstacles and opportunities' more general for the three main challenges people encounter in conservation. The survey ended with a last section inviting for general comments. It is important to note that even though this is a Belgian initiative, we are not dealing with conservation in the Belgian territory only; several Belgian research teams are conducting their research outside the Belgian territory and have an important expertise for example in conservation in the tropics, the marine environment and the Antarctic.

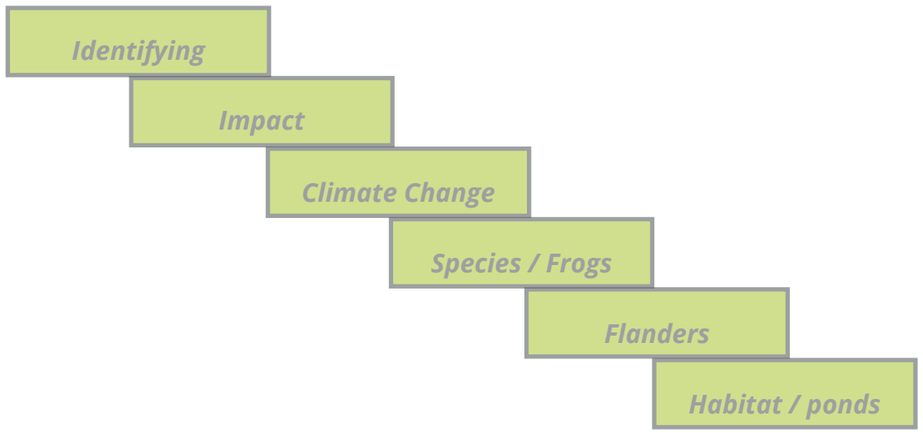
3.2. Data treatment & analysis

3.2.1 Data treatment

More than 1000 comments (research recommendations, challenges and obstacles) were received in three different languages within the proposed domains. All answers have been translated into English. The responses (original and English version) were entered into a dedicated database by the means of a web-portal, *Beryl* ('BElgian Research You are Looking for' see Fig.1) especially developed by our IT experts for this purpose. The search function allows to look for answers in a certain domain or to check via key words answers linked to a certain topic. The original answers are shown without indicating the author.

Each response was broken down into one to several '**notions**'. These notions are the main key words associated to the response. Additionally, descriptive notions were added, reflecting the kind of action related to the response (e.g.: 'identifying', 'comparing', 'describing', *etc*). This allows in a network analysis to see what kind of action is related to the nouns (see example below).

"What is the effect of climate change on the frogs of Flemish pounds ?"



Additionally, each response related to conservation challenges was ascribed to categories, which were defined according to the descriptive terminology used by Lauber *et al.* 2011[10] (these categories were also considered as 'notions'). Main categories are listed below, with subcategories between brackets:

- Social foundation (dialogue, relationship building, agreement);
- Enabling processes (legislation, coordination);
- Necessary resources (labor-human work force, information base, funding);
- Actions (species, habitat or ecosystem manipulation);
- Conservation outcome (protected land and species, habitat or ecosystem restoration).

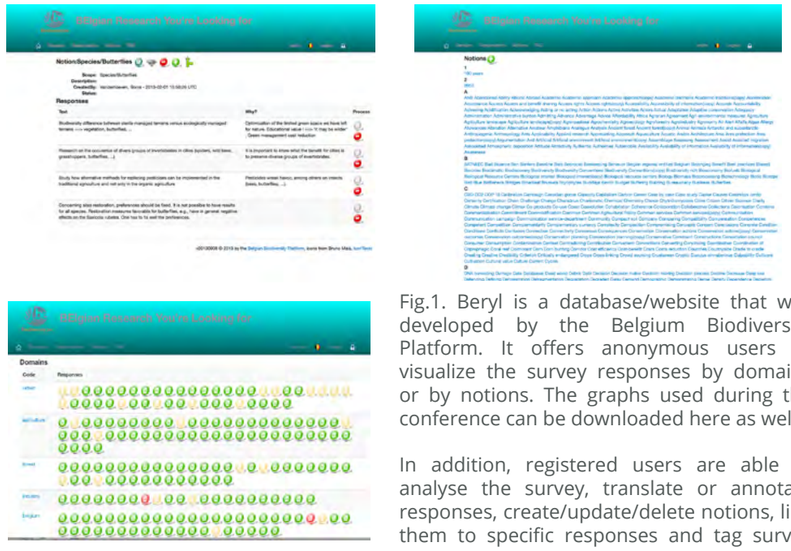
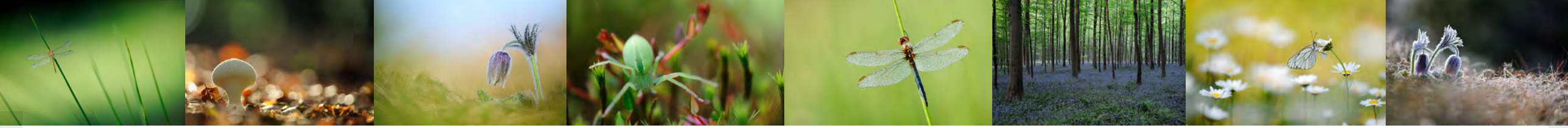


Fig.1. Beryl is a database/website that was developed by the Belgium Biodiversity Platform. It offers anonymous users to visualize the survey responses by domains or by notions. The graphs used during the conference can be downloaded here as well.

In addition, registered users are able to analyse the survey, translate or annotate responses, create/update/delete notions, link them to specific responses and tag survey responses.

To ensure a consisting coding of the survey with a harmonized vocabulary, the coding was done by two people who cross-read each other's coding efforts. The data treatment resulted in 1212 notions defined from the responses for both the research recommendations and the challenges in conservation.

10 Lauber, T.B., Stedman, R.C., Decker, D.J. and Knuth, B.A. (2011) Linking Knowledge to Action in Collaborative Conservation. Conservation Biology, Volume 25, No. 6.



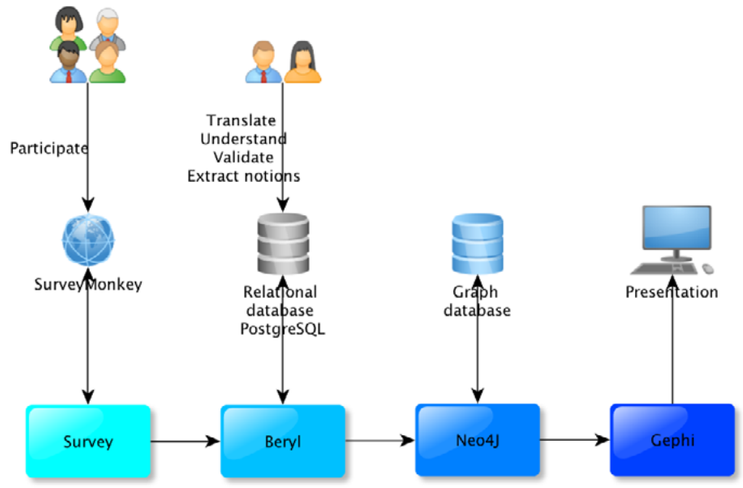


Fig.2. Schematic illustration of the survey process: information collection, data treatment (Beryl), and data analyses (network analysis), results visualisation (Gephi).

3.2.2 Data analysis and visualisation

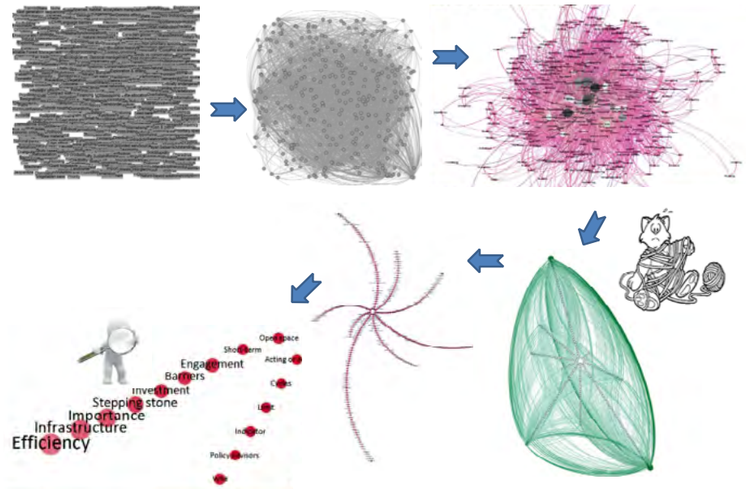
Answers to the open-ended questions resulted in a considerable amount of notions which were related to each other. Two different elements were judged important: the notions themselves but also the fact that different notions were suggested within a single answer. We considered two notions to be linked if they were provided within the same answer. In order to analyse the information provided in the survey, we used statistical methods and data visualisation which allows dealing quantitatively with an important amount of information.

Descriptive statistics were performed in order to classify notions according to their frequency, from the most cited to outliers containing unique propositions.

Additionally, a network analysis was performed for each domain. This analysis allowed us to link the notions that belong to the same response. We used *Gephi*, an open source software (Bastian *et al.* 2009[11]), to visualise the resulting network of notions. Specific modularity analyses (Blondel *et al.* 2008[12]) were used to identify groups of notions that were frequently associated within responses. This analysis was used to produce graphs of the research topics proposed per domain. These graphs were called 'stars' because of their particular shape. The notions of each domain form a 'star of notions' per domain.

11 Bastian, Heymann and Jacomy (2009) Gephi : an open source software for exploring and manipulating networks. International AAAI conference on Weblogs and Social media.
12 Blondel, V.D. Guillaume, J-L., Lambiotte, R. Lefebvre, E. (2008) Fast unfolding of communities in large networks. Theory and Experiment Vol. 10, P1000

As example the star for the domain 'Conservation and Governance' is shown in the annex (Annex 7.2), all stars resulting from the survey can be downloaded from Beryl. The stars are read the following way: notions that were mainly mentioned together form one 'branch'. The notions most often used are bigger in size and on the most outer part of the branch.



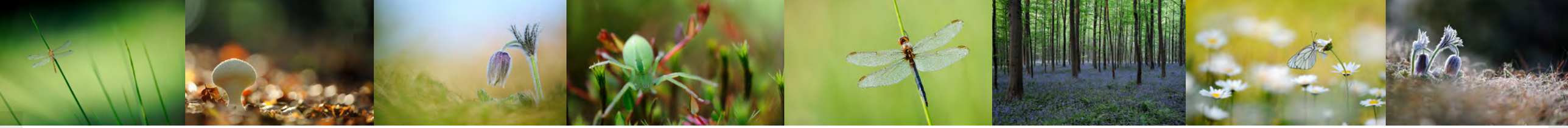
3.3. The conference

For the 'Conservation Research Matters' conference, actors from different disciplines and backgrounds were invited to reflect on the survey outcome. About 70 actors from the 3 regions in Belgium and from abroad took the opportunity to participate in this exercise (annex 7.3, participant list).

The conference had several aims:

- To update the conservation research agenda jointly by the diversity of conservation actors
- To reflect on how to overcome the impediments in conservation
- To create networking moments between the actors
- To inspire the Belgian conservation community with lectures about ongoing projects in the field

During the day we used two participatory processes, one focusing on research recommendations, the other on the challenges in conservation (conference programme, annex 7.4). Four keynote speakers inspired the audiences with experiences and best practices.



3.3.1 Participatory process on research recommendations

Prior to the conference day, the participants were invited to choose among the domains also used in the survey to insure they could contribute to their field of expertise and main interest. Several discussion groups of up to 10 participants and one facilitator were proposed:

- Conservation and agriculture
- Conservation in the urban environment
- Conservation and ecosystem services
- Conservation and forests
- Conservation and governance
- Conservation and public perception & awareness
- Conservation in the tropics
- Restoration
- Conservation in Belgium

Two different tools were provided to inspire the identification of research recommendations covering both emerging issues and current urgent knowledge needs: the star graphs derived from the network analysis of the notions, and a list of raw data extracted from the survey. The participants chose the tool they felt most comfortable with and discussed during 90 min. All discussion results were captured on flipcharts. The output resulted in a list of research recommendations for each domain. Participants were asked to prioritise the recommendation developed within their domain/discussion group and to present the five most important recommendations to the entire group. These recommendations are listed below; identical recommendations from different domains have been merged to avoid redundancy. Likewise some recommendations in specific groups were more general, and were therefore moved to the "general recommendations" section. Recommendations are ordered from more general to more specific but the order does not reflect a range of priority.

3.3.2 Participatory process on conservation challenges

The survey revealed a lot of information regarding obstacles and opportunities in conservation ranging from challenges in governance, research, management, implementation in the field, public perception, relationship and collaboration. In total, 292 comments regarding obstacles and opportunities were collected (183 within the different research domains and 109 in the domain 'obstacles and opportunities'). This input was likewise translated into notions. Additionally we labelled the different challenges with a terminology following a model presented by Lauber *et al.* (2011). Lauber and collaborators analysed successful conservation projects and the key factors that were crucial for the success. The challenges identified in our survey fall mainly into three of the categories identified by Lauber *et al.*: 'necessary resources', 'social foundation' and 'enabling processes'. We also received comments in the category 'actions' with species, habitat and ecosystem manipulations from one side and land acquisitions and easements from the other side.

Social foundation includes the relationship building between collaborators, which improves the dialogue and the agreement. A positive social foundation enhances the enabling process, which includes coordination (joint decision making) and legitimation (approval of authorities, landowners *etc*.). This process has an impact on the necessary resources as they are funding, labor and information base. A well-functioning enabling process gives access to funding and enhances the efficiency of labor; which has again a positive impact on the information base. The information base includes scientific and non-scientific knowledge, its accessibility and availability.

Elements that were reported in the survey and have not been mentioned as such by Lauber *et al.* were added to suitable categories: Challenges linked to legislation and policy are retaken in enabling processes. The communication to a wider audience has been classified within information base, in the category necessary resources.

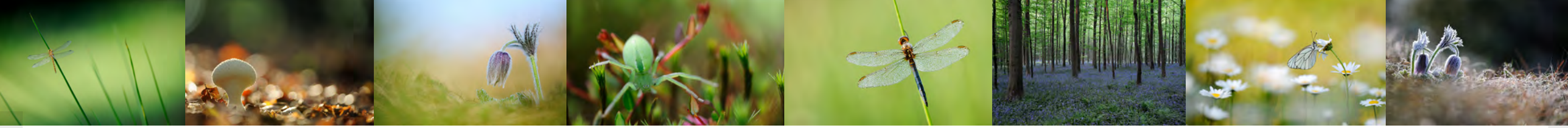
For the conference day we produced four different posters on which we quoted more than 40 conservation challenges from the survey; for enabling process and social foundation each one poster and two for necessary resources as we received here major input. The quotes were representative for the categories and triggered the discussions during the conference day for the participatory process on conservation challenges (annex 7.5, posters). These posters were displayed in 5 different stations in the conference room and served as basis for group discussions. The participants were grouped in small teams of members with various backgrounds (at least one policy maker, one scientist and one practitioner when possible) in order to tackle the challenges benefitting from the different experiences present and to provide a networking moment. The participants were asked to discuss and write down potential solutions to address the identified impediments. The participants formed 10 small groups and came up all together with about 100 suggestions on how to overcome the impediments. The suggestions are presented below; some of them were similar or redundant and therefore regrouped.

3.3.3. Keynote presentations[13]

Four speakers gave insight from international and national initiatives efficiently supporting conservation.

Dr. Thomas Brooks, IUCN[14] Head of Science and Knowledge, described the application of knowledge products mobilised through IUCN to inform policy and practice.

13 The presentations are available on the Conservation Research Matters website www.biodiversity.be/conservation/page/show/5
14 www.iucn.org



Dr. Steven Dessein, general director of the Botanic Garden Meise[15], presented the purpose of the plant Red Listing illustrated with examples from Brazil and Congo.

Dr. Lynn Dicks from the University of Cambridge shared experiences of a problem-based approach with research prioritisation of pollinator conservation, and a partnership-based approach, the Cambridge Conservation Initiative[16].

Dr. Sarah Rousseaux reported on the Biodiversity Knowledge[17] project which, among others, surveyed people involved in conservation in Belgium in order to describe the conservation knowledge and funding flow between stakeholders and organisations.

During the conference breaks, a self-running presentation by **Ir André Heughebaert**, Belgian Biodiversity Platform, showed an example of tool developed by the Platform in support of conservation: the Bio-GR data portal[18]. This biodiversity portal of the Greater Region gives a trans-boundary view on protected species observations related to the Birds and Habitats Directives.

15 www.br.fgov.be
16 www.conservation.cam.ac.uk
17 www.biodiversityknowledge.eu/
18 www.bio-gr.eu

4. Results

4.1. Survey outcome

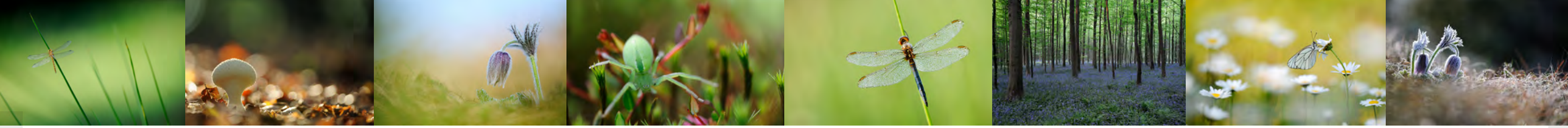
More than 400 experts from various domains and backgrounds showed interest in the survey and left their contact details. 153 of them provided concrete input regarding research recommendations and conservation challenges (1/3 female; 2/3 male). We received as much answers in French as in Dutch and few in English. Mainly senior experts made the effort to reply to the survey. However, we also received input from junior experts and newcomers in the domain.

The respondents were asked to give information about their professional background (annex 7.6). It showed that many respondents hold different positions either simultaneously or in different steps of their career (ex. a researchers being manager of a natural reserve, a policy maker involved as volunteer in restoration actions ...). Respondents seem to cover of all kind of sectors (public, private, funding body, management, NGO, politics, practitioners, research, science policy, volunteers and others). The sector that gave most input in the research topics were researchers (67), followed by volunteers (50), NGOs (49), and the public sector (48).The respondents covered all domains and geographic areas proposed in the survey, with most experts working on Belgian conservation, forests, public awareness and agriculture (annex 7.7).

A total of 778 research recommendations were reported. The domains receiving most input were: agriculture (110 recommendations), urban environment (96), conservation in Belgium (88) and forests (88). Most challenges per domain were likewise reported in these fields with most comments for urban environment (30) and agriculture (26) (annex 7.8). 109 respondents took the opportunity to report on three main challenges in the domain 'obstacles and opportunities in conservation'.

Dr. Kristina Articus - Lepage

Dr. Sonia Vanderhoeven



4.2. Conference outcome

4.2.1. Research recommendations[19]

Here, we report on the research recommendations identified as priorities by the participants during the round table discussions (first participatory process). These recommendations are meant for the update of the national and international conservation research agenda; to inspire academia, funding agencies and policy makers.

I. General research recommendations

The *general research recommendations* presented here have been developed in the discussion groups regarding *conservation in Belgium*, *conservation and governance*, as well as in *public perception and awareness*.

In order to improve the policy and science policy interface for **conservation**, research is needed on:

- how to identify and set targets for conservation
- how to improve the policy framework and process
- emerging policy instruments that could improve biodiversity conservation and its integration into society, including knowledge management instruments, economic instruments, new compliance mechanisms and inter-sectoral cooperation
- designing clear criteria for evaluating participatory governance processes
- assessing the weight of scientific results in political decisions and their actual impacts in the field
- tools/methods for conversion of academic knowledge to policy relevant information for conservation. These tools should address facilitation, implementation, evaluation and spatial mapping/ prioritizing.

In order to improve education & awareness raising on conservation, research is needed on:

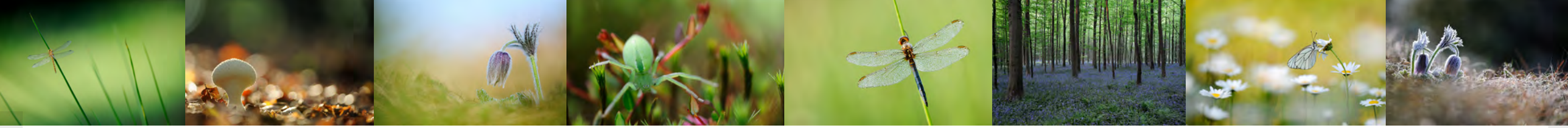
- investigating the perceptions of biodiversity by people (e.g. incentives to protect biodiversity; e.g. human health), in particular to spur societal and cultural change and identifying barriers and incentives to induce a change of attitude
- innovative and participatory communication tools (e.g.; citizen science, development of codes of conduct), engaging different stakeholders
- developing new messages for biodiversity conservation: wording and values (positive, ecosystem services) not only negative, alerting.
- methods to increase the critical mind of the general public (from children to adults) to deal with complex scientific questions (not all black or white); this includes intelligent gaming and inquiry based learning (problem based learning).
- monitoring methods to assess the efficiency of communication campaigns and quantify the change of attitude
- assessing lessons learned from existing methods and tools
- explore attitude towards and awareness of invasive species

In order to improve knowledge on biodiversity loss, research is still needed on

- exploring beyond the trends and further investigating drivers of species decline.
- in addition, some specific attention should address the development of tools and governance/policies for protecting biodiversity and acknowledging the importance of green infrastructure as in temporary nature (nature that develops temporarily on land awaiting industrial, residential or other uses)

A major enabling action for all these recommendations is the importance of engaging human/social sciences and in particular to explore what contribution social sciences could have in transdisciplinary research to support conservation policy. Participants also highlighted that funding agencies should include a follow-up component in their funding proposals to facilitate the translation of research results into practice.

19 Research recommendations presented here do not reflect the opinions of the report authors but the priorities identified by the conference participants based on the results of the survey.



II. Research recommendations on ecosystem services and conservation

In order to improve understanding and implementation of the concept of **ecosystem services in relation to conservation**, research is needed on:

- tools and methods:
  - to implement biodiversity and especially ecosystem services in the Life cycle assessment (LCA); cf ecological footprint)
  - to implement ecosystem services in Strategical Environmental Assessment (SEA) or Environmental Impact Assessment (EIA). I.e. structure SEA and EIA by using Ecosystem services (also at local level)
  - for integrated valuation (monetary and non-monetary) of ecosystem services
- how to further develop and implement interdisciplinarity on ecosystem services and in particular how to make interdisciplinarity policy relevant
- how to address the differences between social sciences and “exact sciences” and close the gap
- the “danger” of the interpretation and possible abuse of ecosystem services in policy
- the links between resilience and ecosystem services
- how to communicate on ecosystem services to non-scientists; the identification of more “iconic” examples of ecosystem services (more than the usual water purification or pollination). E.g. research on benefits of green spaces for public health
- assessment of the risks of monetarising nature

III. Agriculture and conservation

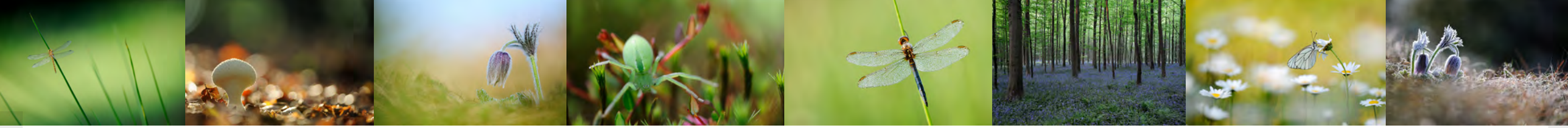
In order to improve conservation in **agricultural lands**, research is needed on:

- landscape level
  - performing comparative studies on more traditional, extensive versus modern intensive farming methods. Such research presents an opportunity to initiate cross-boundary projects, which compare traditional methods (while still) in use in Western Europe with those in Eastern Europe, and study its effect on biodiversity, the environment, local communities, etc
  - designing pilot farms for performing experiments and monitoring at landscape scale.

    The development of pilot farms offers the possibility to study the effect of different (more ecological) farming practices in a broader context and allows rigorous and long-term follow-up (cfr. Long Term Ecological Research sites). Comparable projects have been set up by INRA (The French National Institute for Agricultural Research) and could present opportunities for cross-boundary collaboration.
- understanding motivations of farmers to change their practices towards more nature-friendly agricultural practices.

  Studies into the factors driving farmers to adopt changes in farming practices could both focus on how different farmers apply different techniques and how they perceive the way their practices influence biodiversity and the environment.
- assessing the efficiency of current agro-environmental schemes.

  Assessment of existing environmental programmes involving all actors including farmers, farmer advisors, researchers, naturalists (particularly birdwatchers)



IV. Conservation in the urban environment

In order to improve biodiversity conservation in the **urban environment**, research is needed on:

- Urban Pathogens Dynamics including the link between green spaces and human health
- Meta-approach/System approach of urban environment including all stakeholders
- How to reduce city dependency from countryside? (e.g. food supply)
- Qualitative and quantitative study of green spaces
- Ideal scale of urban centres and green areas (granularity)
- links between biodiversity and ecosystems functions specifically for urban ecosystems

V. Conservation in forests

In order to improve biodiversity conservation in **forests**, research is needed on:

- a more holistic approach of forests – i.e. not only taking into account the species in the forest, but also the ecosystem services, the interactions between the species, trade-offs, social aspects etc.
- identifying typical forest species and characteristics to determine forest hotspots.
- the impact of timber production on forest biodiversity, and of bio-energy
- the interaction of forests and the surrounding landscapes (not focusing on the forest itself, but also taking into account the impact it has on the landscape surrounding the forest, and vice versa)
- how to better integrate traditional knowledge with scientific research
- on resilience of forests and their species to climate change

VI. Conservation and restoration

In order to improve the role of **restoration for biodiversity conservation**, research is needed on:

- environmental and landscape conditions, emphasizing “ecotone” relevance at relevant spatial and temporal scales
- in depth baseline for monitoring and monitoring focusing on generating general lessons for further restoration and management measures
- the use of ecosystem approach instead of a species approach for restoration
- scenario planning

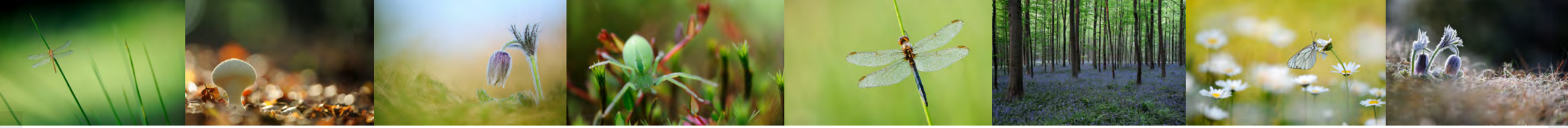
For restoration, a major enabling action is the promotion of multidisciplinary research with involvement of sociology, economics, site management and ecology.

VII. Conservation in the tropics

In order to improve biodiversity conservation in the **tropics**, continued research efforts to fill in knowledge gaps on species diversity are required and should focus on the inventory of biodiversity, development of new/better identification techniques and monitoring of biodiversity change.

In addition research is needed on:

- ecosystem functioning at three levels: a) understanding and documenting the ecosystem existential value, b) quantifying the anthropocentric value (e.g. ecosystem services) and c) assessing the impacts of climate change.
- local, regional and / or global application of above policy tools facilitating the implementation of conservation research is required. This research should focus on capacity building, knowledge systems and biocultural diversity (biodiversity and diversity of human culture in interconnection)
- Research on ways to reconcile development and conservation of biodiversity in the tropics (which includes a strong focus on sustainable development and human wellbeing).



4.2.2. Conservation challenges and solutions[20]

The conference participants discussed the impediments mentioned in the survey in the second participatory process and shared their experiences, best practices and solutions to overcome them. This brainstorming exercise resulted in keywords listed below. The order does not reflect a prioritisation.

1. Social Foundation

Social foundation focuses on the dialogue between actors, agreement finding and relationship building. Several recommendations were given to enhance the dialogue between parties, to collaborate successfully and to find agreements:

- Develop or improve the interface between different actors
- Facilitate the communication between managers and scientists
- Create networking opportunities between scientists and practitioners
- Map the different stakeholders and engage them in project design
- Develop capacity building
- Create a formal framework on touchy issues
- Implement adaptive management
- Make use of participatory methods such as the Delphi method (a method to question stakeholders)
- More case studies are needed:
- Identify examples where a small (cheap) change of management has a large benefit
- Identify success stories (show that it could work)
- Identify real case studies to show that working with businesses can help biodiversity

2. Enabling process

Enabling process of conservation projects comprises legitimation and coordination, including legislation issues. The participants gave several examples on how coordination and legislation processes could be improved:

Legislation, legitimation and integration of policies

- Use clear indicators
- Facilitate procedures to scientists given cautions are taken; ISO certification ISO 9000 clear procedure;
- Ensure a dynamic update of laws – i.e. adapt to biological reality e.g. species not protected yet by law --> role of facilitation
- Delay between policy/legislation and research: Organise regular meetings between policy and stakeholders (symposium)
- Identify and develop more long-term visions independent from legislation timing
- Identify charismatic ambassadors (e.g. a new biodiversity Al Gore) to make biodiversity become a major concern to authorities
- Promote research on how to rationalize/harmonize (existing) legislation

Coordination of actors, prioritising, research management

- Build on consensus from science (regional if possible); build on IPBES outcomes
- Improve coordination within EU directives; more long-term projects
- Develop bigger calls at EU level: more partners; more coherent work
- Harmonize EC subsides: rural development plans, Life projects, Green infrastructures, Ecosystem services

3. Necessary Resources

Necessary resources for conservation projects include funding (of research, actions, labor), information base (scientific and other information) and labor (human work force, capacity building). Information base is further split in availability & accessibility of scientific information, as well as knowledge transfer and communication. Availability concerns the (non-)existing of knowledge and knowledge production, and access to existing knowledge. This category received most input in the survey, especially the element 'information base'. The conference participant shared their experiences and developed new strategies to overcome the challenges:

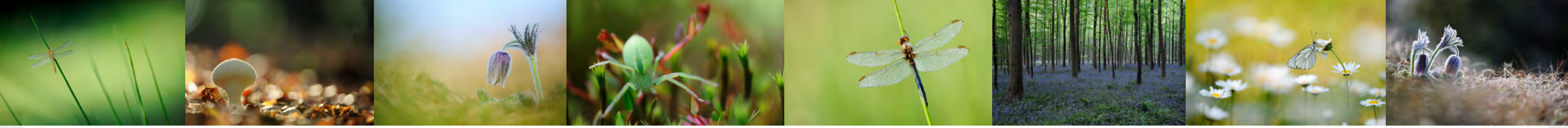
Funding, including collaboration & funding strategies

- better organize biodiversity research lobbying – e.g. scientists learn how to cherish/flatter their M.E.P.'s and other decision-makers
- Make Cost actions better (move money)
- Engage more with the Fund for Scientific Research Flanders (FWO)
- Develop more active links between researchers and the Belgian biodiversity platform
- Avoid duplication of research in Wallonia and Flanders
- Maintain funding agencies/calls for fundamental research
- Maintain baseline funding for the collection of biodiversity data in the field (country side survey)
- Fund more long-term projects even if this means less projects
- Support the biodiversity community to improve its capacity to project its funding needs (e.g. how much do we need for global plant taxonomy?)
- Importance of government funding for basic research e.g. taxonomy
- Create opportunities by sharing data (perform transparent research)
- Make taxonomy more sexy by coupling to ecology
- Promote private funds, but keep independence (a blind trust fund)

Labor - human work force, including capacity building, assessing careers and lack of staff

- Find a way of assessing/ evaluating scientists for their conservation impact not just for their publications
- Review evaluation of research: not only on paper but also on vulgarisation and outreach/communication, advise reports and policy briefs
- Fund people/projects based on past results/efficiency instead of detailed [means 'not risky, not innovative'] project
- Support more long-term staff
- Promote more democracy and transparency between politics and administration

20 Conservation challenges and solutions presented here do not reflect the opinions of the report authors but the reflections of the conference participants based on the results of the survey.



- Lack of scientific staff: Make use and promote knowledge of ‘amateurs’ by e.g. mentoring schemes
- Lack of science policy interface: Provide training in policy mechanisms for scientists/lobbying

4. Information base

Availability of information

- Make mandatory the use of interdisciplinary approach for projects
- Link with universities
- Analyse good practices from transdisciplinary projects
- Develop qualitative and quantitative methods
- Lack of data and insufficient models: Increase research and funding on modelling and make a priority of addressing this lack of data and models
- Translate complexity:
  - Better communicate uncertainty to decision-makers and the media
  - Make use of existing international institutions (e.g. IUCN) to ensure this role of translator

Accessibility of information

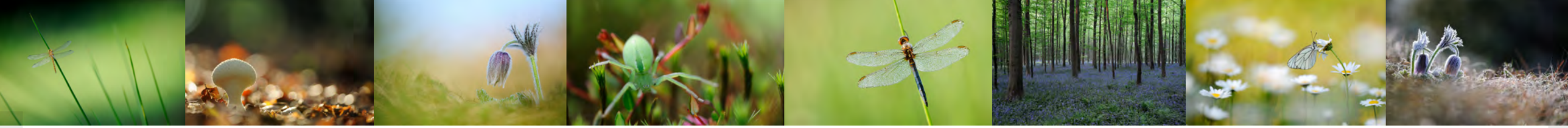
- Promote Open Access to literature, data and expertise
- Ensure more information is accessible via internet
- Develop initiatives to digitize old publications

Knowledge transfer

- Organise regular symposia for networking and exchange of information (promote networking)
- Knowledge integration by all actors: Look for guidance by high level institutions, e.g. IUCN specialist group and organise topical workshops
- Develop a centre for conservation evidence and funding
- Develop policy briefs
- Implement a clearing house mechanism
- Support facilitators between policy and science
- Reinforce the interaction with IUCN and strengthen the regional IUCN
- Promote action research (as e.g. collaboration in a community of practice)
- Promote the involvement of policy makers in the scientific community
- Identify and engage all actors (e.g. who is the practitioner?)
- Develop more incentives to translate research & policy reviews on individual and institutional level Promote more collaborative approach (1+1= 3)
- Involve professional agencies or people for scientific vulgarization and communication OR better reward scientists for this job. Improve the incentives for scientists to engage in these activities: academic benefits especially for young scientists.
- Create a new EU program ‘midterm scientists follow up their results in ministry of x for 24 months’ to meet the insufficient match between research and policy
- Identify knowledge needs for policy -> instrument
- Intermediary science (state of the art) leading to policy

Communication, including awareness raising, collaboration with the media

- Invest in vulgarisation
- Diversify targeted groups
- Make use of social media
- Engage with youth/schools. e.g. in taxonomy
- Use emotion as it has a different impact than rationale
- Link up with Journals like Natuurpunt focus (for general public)
- Promote innovative environmental education based on local practices and participatory approach
- Learn from abroad (ex. successful tv programs of the BBC)
- Find new channels for communication
- Develop global communication strategy (with all stakeholders; assess the effectiveness of communication campaigns
- Build on iconic topics
- Develop a user friendly “FAQ system”
- Build capacity of skilled journalists on scientific methods and results
- Develop media training for scientists so that they have the capacity to address the media, but also to be better communicators with the general public and policy makers
- Attract media based on scientific knowledge



5. Conclusion & Outlook

The Conservation Research Matters initiative was launched following a demand from the Belgian conservation community involved in the Belgian Biodiversity Platform activities. Indeed, bringing together the different actors and updating the conservation research agenda seemed urgently needed.

During the different steps of the process, we witnessed a deep involvement by the different parties resulting in openly sharing knowledge and experiences based on a professional mix. The dedicated engagement in both the survey and conference went much beyond expectations. Participants invested a lot of energy sharing innovative research ideas and concerns regarding the challenges in conservation, playing along in the participatory process and not being afraid to share innovative ideas with other participants, who could have been perceived as potential competitors.

The conference participants were asked not to produce an individual 'wish list' related to their own field, but to step back and consider the larger picture. This was very well done and resulted in research recommendations requiring interdisciplinary collaborations and concrete socio-economic consideration.

The contacts initiated during the conference and supported by the Conservation Research in Belgium brochure will be intensified in the future. By ensuring a wide spread of the initiative's results to concerned parties, we hope to update and inspire the conservation agenda. A series of publications would be desirable to develop further the recommendations achieved so far. A publication describing the original methods and tools that were used is also foreseen.

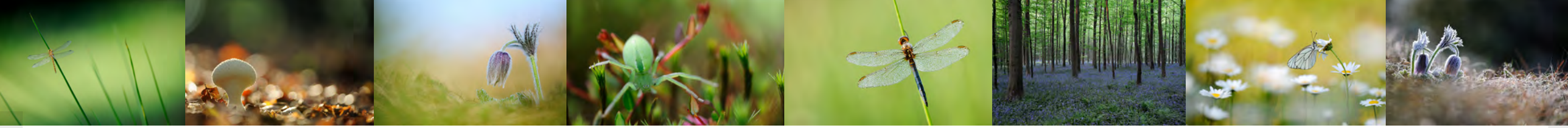
The work done so far is an important step in the right direction and has to be taken up and developed further by concerned parties. We are convinced that the general enthusiasm we observed along the whole Conservation Research Matters initiative is a promising element that will contribute to the necessary collaboration in support to sustainable conservation of biodiversity.

6. Acknowledgement

We would like to thank the scientific advisory committee for the support and input along this project.

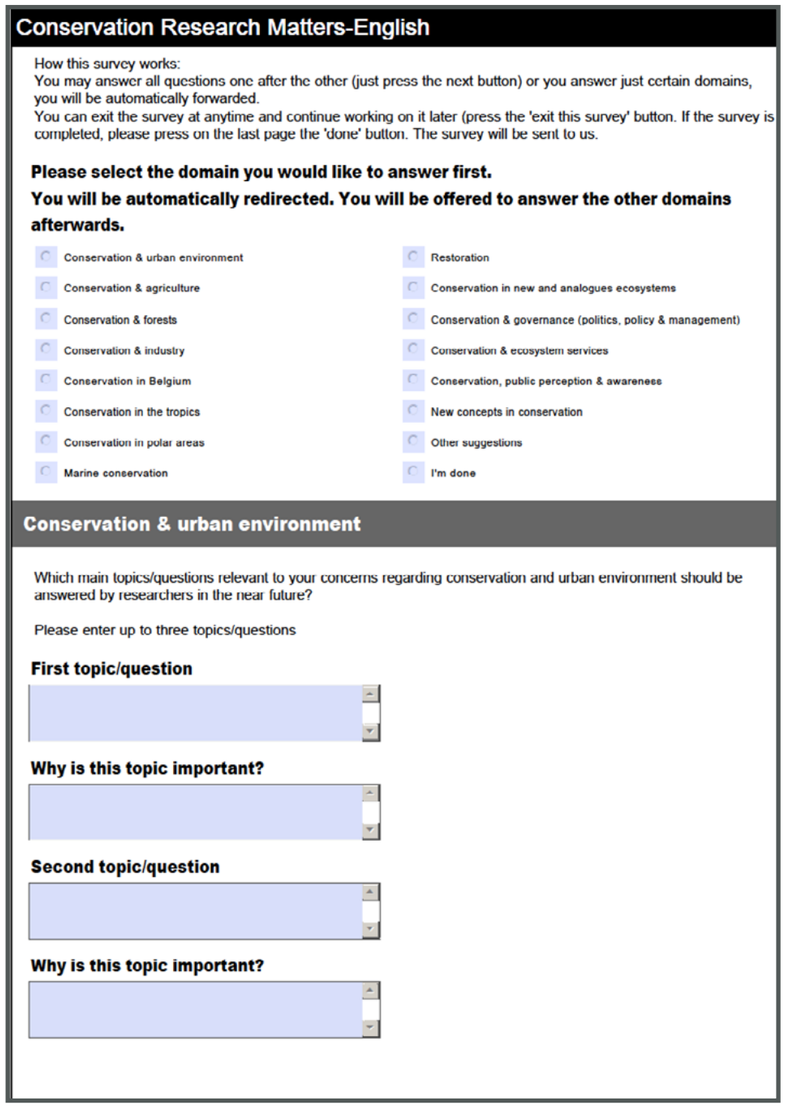
All survey respondents are thanked for their valuable input; without their work this exercise would not have been possible. We also thank the conference participants for their willingness to share their experiences and to contribute to this horizon scanning exercise. We likewise thank all contributors to the Conservation Research in Belgium brochure. The external facilitators are thanked a lot for their work during the participatory processes.

We thank the Wallonia region for the printing of the brochure 'Conservation Research Matters'. We thank Belspo for hosting and funding the conference.

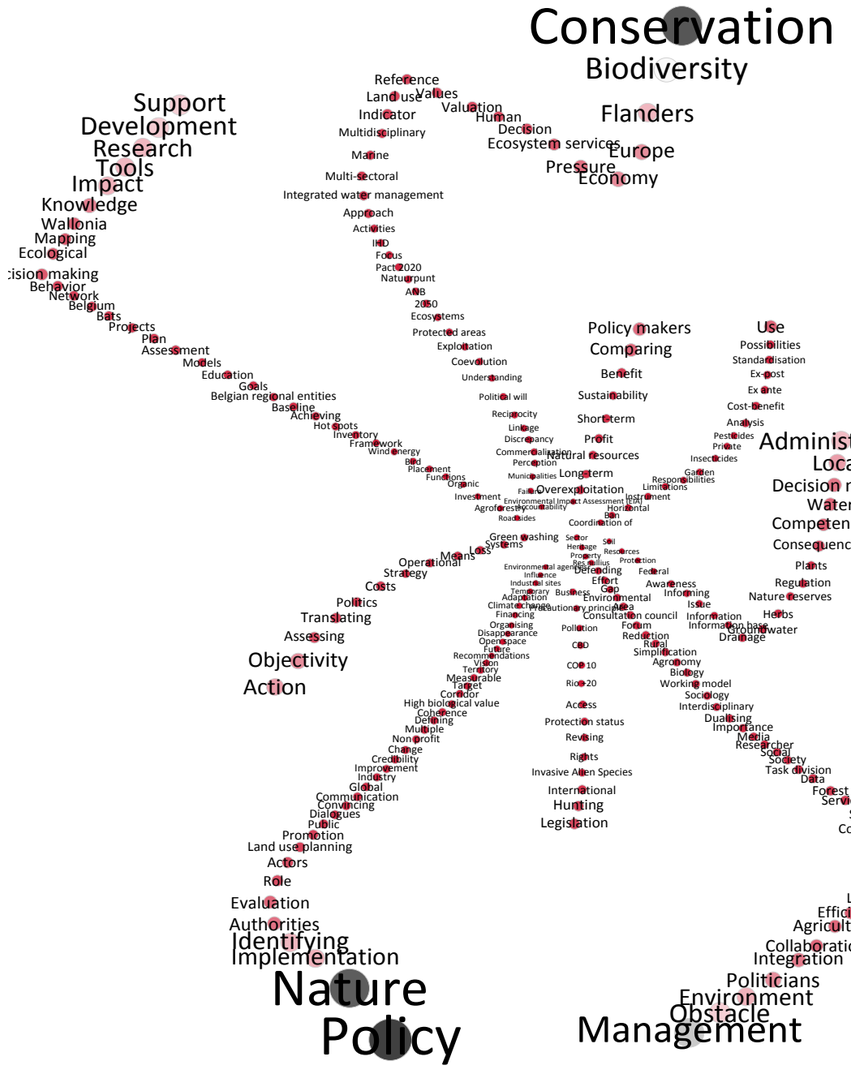


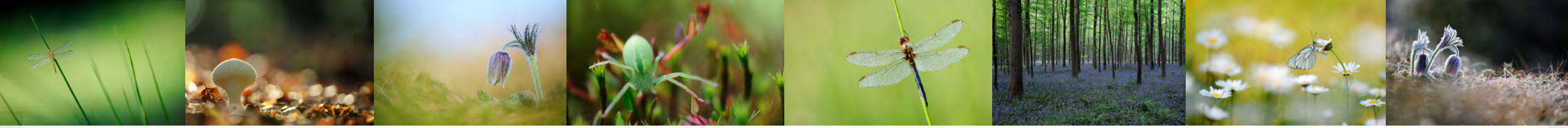
7. Annexes

7.1. The survey



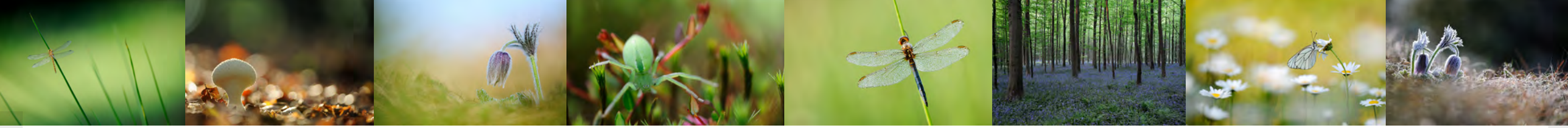
7.2. 'Star of notions' of the domain 'governance' (all 'stars' can be downloaded from Beryl)



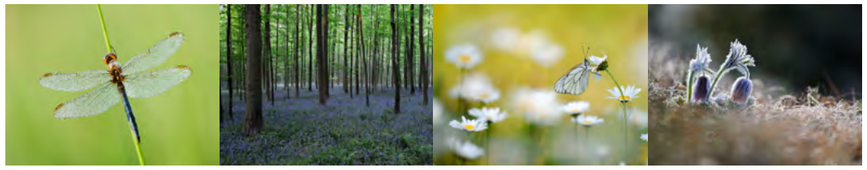


7.3. List of participants

PARTICIPANTS LIST - Conservation Research Matters		
Andries	Tom	Prospect C&S - Astrale
Articus-Lepage	Kristina	Belgian Biodiversity Platform
Balian	Estelle	Belgian Biodiversity Platform
Beenaerts	Natalie	Centre for Environmental Sciences, Universiteit Hasselt
Benitez	Francisco	APNA - Vrije Universiteit Brussel
Berhault	Angélique	Belgian Biodiversity Platform
Beudels-Jamar	Roseline	Royal Belgian Institute of Natural Sciences
Bizoux	Jean-Philippe	Département de la Nature et des Forêts - SPW
Born	Charles-Hubert	Université Catholique de Louvain
Branquart	Etienne	CiEi, Département de l'Etude du milieu naturel et agricole
Brooks	Thomas	International Union for Conservation of Nature
Brosens	Dimitri	Belgian Biodiversity Platform
Cigar	Julien	Belgian Biodiversity Platform
Cliquet	An	Universiteit Gent
Dessein	Steven	National Botanic Garden of Belgium
Dewever	Aaike	Belgian Biodiversity Platform
D'Hondt	Bram	Belgian Biodiversity Platform
Dicks	Lynn	University of Cambridge
Dufrêne	Marc	Université de Liège Gembloux Agro-Bio Tech
Eggermont	Hilde	Belgian Biodiversity Platform
Galbusera	Peter	Royal Zoological Society of Antwerp
Ghyselen	Céline	Universiteit Gent
Godefroid	Sandrine	National Botanic Garden of Belgium
Godin	Marie-Céline	Brussels Environment IBGE-BIM
Gryseels	Machteld	Brussels Environment IBGE-BIM
Hardwick	Richard	Outlook on Agriculture
Hautier	Louis	Centre wallon de Recherches agronomiques
Helsen	Philippe	Royal Zoological Society of Antwerp
Herremans	Jean-Paul	Prospect C&S - Astrale
Herremans	Marc	Natuurpunt
Hertenweg	Kelly	FPS Health, Food Chain Safety and Environment
Heughebaert	André	Belgian Biodiversity Platform
Hoffmann	Maurice	Research Institute for Nature and Forest (INBO)
Hugé	Jean	Universiteit Antwerpen
Jacquemart	Anne-Laure	Université Catholique de Louvain
Jadoul	Gérard	LIFE Project coordinator
Janssens de Bisthoven	Luc	Royal Belgian Institute of Natural Sciences
Kempenaer	Salima	FPS Health, Food Chain Safety and Environment
Kervyn	Thierry	Département de l'Etude du milieu naturel et agricole
Larridon	Isabel	Universiteit Gent
Lebrun	Julie	Université de Liège Gembloux Agro-Bio Tech
Lens	Luc	Universiteit Gent
Leponce	Maurice	Royal Belgian Institute of Natural Sciences
Louette	Gerald	Research Institute for Nature and Forest (INBO)
Maes	Dirk	Research Institute for Nature and Forest (INBO)
Mahy	Grégory	Université de Liège Gembloux Agro-Bio Tech
Martens	Els	Agentschap voor Natuur en Bos (ANB)
Massart	Wendy	Biologist
Mergen	Patricia	Royal Museum for Central Africa
Mormont	Marc	Université de Liège
Mukherjee	Nibedita	Université Libre de Bruxelles & Vrije Universiteit Brussel
Nijs	Griet	Natuurpunt
Noé	Nicolas	Belgian Biodiversity Platform
Paquet	Jean-Yves	Natagora
Peeters	Alain	RHEA
Percsy	Christiane	Université Catholique de Louvain
Pereboom	Zjef	Royal Zoological Society of Antwerp
Peres	Adrian	European Commission
Piqueray	Julien	Université de Liège
Popa	Florin	Université Catholique de Louvain
Prévot	Céline	Département de l'Etude du milieu naturel et agricole SPW
Raes	Dirk	Agentschap voor Natuur en Bos (ANB)
Raeymaekers	Geert	FPS Health, Food Chain Safety and Environment
Rochette	Anne-Julie	Royal Belgian Institute of Natural Sciences
Ronse	Anne	National Botanic Garden of Belgium
Rousseau	Sandra	HUBrussel & Katholieke Universiteit Leuven
Rousseaux	Sarah	TECHNUM
Schtickzelle	Nicolas	Université Catholique de Louvain
Segers	Hendrik	Belgian Biodiversity Platform
Sérusiaux	Emmanuël	Université de Liège - Natagora
Somers	Ben	Katholieke Universiteit Leuven
Stubbe	Dirk	Belgian Coordinated Collections of Microorganisms
Susini	Marie-Lucie	Royal Belgian Institute of Natural Sciences
Tack	Jurgen	Research Institute for Nature and Forest (INBO)
Teixeira	Ricardo	Universiteit Antwerpen
Toebat	Johan	Agentschap voor Natuur en Bos (ANB)
Trefon	Theodore	Royal Museum for Central Africa
Van der Werf	Aline	BELSPO/ Belgian Biodiversity Platform
Van Dyck	Hans	Université Catholique de Louvain
Van Elsacker	Linda	Royal Zoological Society of Antwerp
Vanden Broeck	An	Research Institute for Nature and Forest (INBO)
Vanderhoeven	Sonia	Belgian Biodiversity Platform
Verhaegen	Gerlien	Université Catholique de Louvain
Verheyen	Erik	Royal Belgian Institute of Natural Sciences
Verheyen	Kris	Universiteit Gent
Volckaert	Filip	Katholieke Universiteit Leuven
Wallens	Sabine	FPS Health, Food Chain Safety and Environment



7.4. Conference programme



PROGRAMME

Conservation Research Matters

Tuesday 22nd October 2013

Belspo, Avenue Louise Louizalaan 231, 1050 Brussels

08:30-09:00	Registration & coffee
09:00-09:40	Welcome & introduction Dr. Aline Van der Werf, Belgian Biodiversity Platform - BELSPO Dr. Sonia Vanderhoeven, Belgian Biodiversity Platform - DEMNA, SPW Dr. Kristina Articus-Lepage, Belgian Biodiversity Platform - ULB
09:40-10:00	**Dr. Thomas Brooks**, Head of IUCN Science & Knowledge 'Biodiversity conservation knowledge products and the science-policy interface'
10:00-10:50	Participatory Process I: Research Priorities Facilitated by Estelle Balian, Belgian Biodiversity Platform - RBINS
10:50-11:20	Coffee break
11:20-12:00	Continuation of Participatory Process I
12:00-12:30	Plenary reporting on research priorities
12:30-13:30	Lunch – Illustration of Bio-Gr by André Heughebaert, Belgian Biodiversity Platform - ULB
13:30-13:50	**Dr. Steven Dessein**, General Director *ad interim* of the National Botanic Garden of Belgium 'Red Listing Plants: How and why does it matter?'
13:50-14:10	**Dr. Lynn Dicks**, University of Cambridge 'Working together to protect biodiversity: processes that generate effective collaboration'
14:10-14:30	**Dr. Sarah Rousseaux**, former Belgian Biodiversity Platform, now Technum 'Mapping the Network of Knowledge on Conservation in Belgium'
14:30-15:45	Participatory Process II: Challenges in conservation
15:45-16:15	Coffee break
16:15-17:00	Plenary reporting on conservation challenges
17:00-17:30	Closing of the event

Biodiversity.be

7.5. Posters of the participatory process on challenges regarding social foundation, enabling process and necessary resources

Necessary Resources

Information Base

Accessibility to scientific knowledge

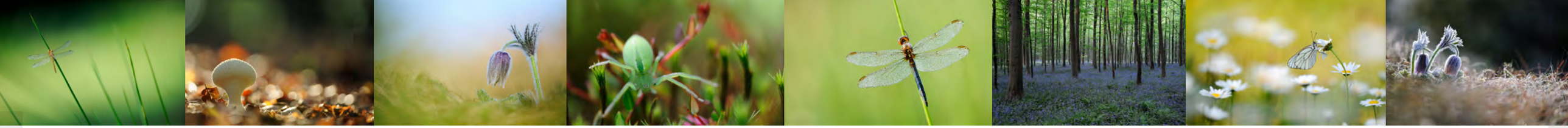
- Access to the scientific results needs to be paid - **limiting distribution**
- Research is performed at different locations by different researchers from different disciplines. As a result **output is scattered** and it is

Translation of scientific knowledge

- Policy and legislation follow research with a **delay** - there should be a way to translate **state-of-the art research into applicable policy**
- **Translate complexity** into political decisions
- Lack of an **international institution** collecting and **spreading/ translating knowledge** on nature conservation
- **Insufficient match** between research outcome and opportunities for concrete political measures
- Too little **connection between the academic world and other spheres**: importance of scientific publications almost unknown by

Challenges - making knowledge available

- **Complexity of the process**, e.g. pollination - necessity of botanic and entomological knowledge
- **Lack of knowledge**, e.g. regarding the impact of intensive agriculture on health and environment
- **Lack of data and insufficient models**, e.g. difficult to compare and describe in a quantitative way certain ess, as the cultural value. The existing models are insufficient for this. Lack of data to calibrate and validate the models
- **Forecast**, e.g. a major challenge is to improve our understanding on how species will interact with each other in future environments



Necessary Resources

Funding

- **Collaboration**: there is the need to set up some money to meet others, to exchange knowledge and to build projects
- **Implementation**: Complete lack of proper funding to generate the research output and to implement mitigation measures in the field
- **Fundamental research**: Shift in funding strategy from fundamental to applied research - Innovation can also come from unintended spin-offs!
- **Restriction of the calls**: Financing and project calls often request a quantitative approach - there is the need for a qualitative approach of the problems. Limited funding opportunities to study priority species. Taxonomic research is not 'sexy' enough and does not get funding
- **Short-term vision**: Lack of funding for long-term conservation research. Forest conservation is a long-term process, project funding is short-term.

Labor - human work force

- **Short-term perspective**: Uncertainty about long-term funding makes it impossible to conduct long-term, multidisciplinary research involving several researchers.
- **Career development**: Access to funding for interface activities and valuation of the career of the staff doing this kind of job?
- **Lack of scientific staff**: It is difficult to find sufficiently skilled staff in modelling. Lack of taxonomic specialist for the work in the tropics.
- **Lack of science policy interface:** There are not enough people working at the science-policy interface (e.g. advisors at INBO, consultancy at NGOs). This is a bottleneck, with the results being delivered very slowly
- **Lack of intermediators**: Difficult to involve many scientists, educated intermediators are needed to perform communication to the public in a professional way

Social Foundation

Dialogue

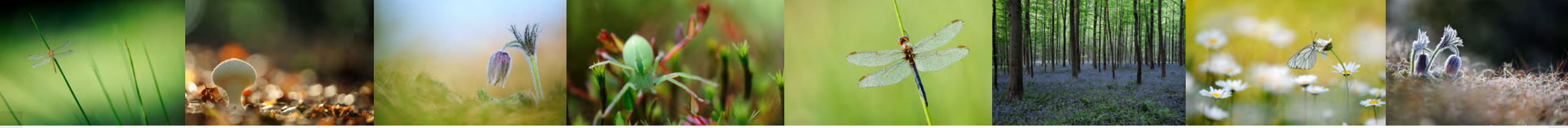
- **Scientist-managers**: Ideally a greater dialogue between scientists and managers where either group can express itself and learn from each other. The large distance between scientists on one hand and managers on the other
- **Scientist-practitioners**: Difficult communication between **s**cientists and practitioners. It is imperative to develop more participatory approaches based on case studies that directly affect people/ society
- **Scientist-volunteers**: The relationship between scientists and volunteers. The relationship between scientists and volunteers
- **Scientist, public authorities and NGOs:** Lack of communication between research, public authorities and NGOs
- **Authorities, NGOs, industry**: How can knowledge exchange be organized between authorities, NGOs and industry?

Agreement

- **Timing**: Long decision making procedures
- **Conflict of interests:** Fear of private sector to favor biodiversity and being restricted in activity due to the presence of protected species
- **Compromises on 'touchy' issues**, e.g. discussion about introductions and translocations of species
- **Knowledge integration by all actors**, e.g. concerning the hosting flora and fauna by architects/contractors and the "pesticides" culture of some municipalities

Communication

- **General public**: Lack of communication towards the general public in order to induce change in behaviour. Environmental education not present enough.
- **Scientist-media**: The media seem well aware, but without detailed knowledge



Enabling Processes

Legislation

- **Integration of policies**: Importance of biodiversity must become a major concern for national and regional authorities and must be integrated at the European scale
- **Implementation**: Should less voluntary measures be applied if goodwill shows not to be sufficient?
- **Restrictions impacting research**, e.g. increasing and excessive legal difficulties for the sampling and export of organisms
- **Adaptation of laws**, eg. the law of land lease is problematic for the biotope restoration of the fauna in the agricultural environment
- **Lack of laws**, e.g. there are no rules regarding water drainage
- **Impact**, e.g. from a legal perspective, some scientific discoveries can constitute significant obstacles for some and generate considerable costs. Industry will move elsewhere where the law is less restrictive.

Coordination

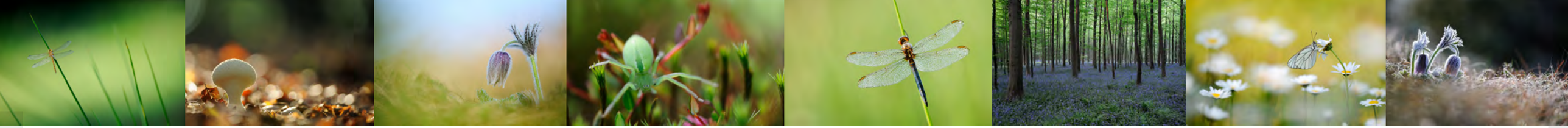
- **Prioritisation**: Lack of vision and support from politics, lack of governance clarity, lack of management priorities
- **Evaluation procedures**: Continuous evaluation of current nature policy/management by researchers to detect more quickly if policy is based on outdated insights
- **Interface**: The necessity for an interface between scientists and administration is not recognised by political authority
- **Coordination of actors**: Fragmentation of competences and organisations in developing countries.
- **Trans-border collaboration**: Monitoring campaign should have clear objectives, investment of resources and people and good collaboration between nations
- **Research management**: Agriculture and conservation are typically multidisciplinary issues that do not fit easily in current research structures. This demands an intensive research management

7.6. Professional background of the survey respondents

Background	Respondents
Research	**67**
Volunteers	50
NGO	49
Public sector	48
Practitioner	27
Management	18
Other	16
Science Policy	7
Politics	6
Private sector	5
Funding body	1
Total	**153**

7.7. Domains of expertise

Domain of expertise	Respondents
Conservation in Belgium	**71**
Forests	59
Agriculture	55
Public awareness	55
Governance	53
Ecosystem services	44
Restoration	42
Urban environment	39
Analogue & new ecosystems	39
Tropics	30
Industry	19
Marine environment	12
Polar environment	6
Other	40



7.8. Received input in the different domains

Domain	# Respondents	# Research Topics	# Challenges
Agriculture	**54**	**110**	26
Urban environment	45	96	**30**
Conservation in Belgium	44	88	23
Forests	40	88	21
Governance	36	62	14
Public awareness	33	60	18
Ecosystem services	31	50	13
Restoration	28	50	8
Industry	22	39	9
New concepts	18	25	3
Tropics	16	34	7
Marine conservation	15	39	4
Analogue & new ecosystems	11	20	4
Polar environment	8	11	1
Other	8	6	2

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