

ALTER-Netconference

Ghent, 15-18 April 2013, Augustinian Monastery

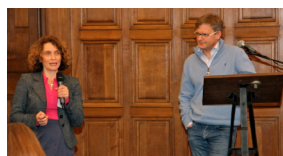
Science underpinning The EU 2020 Biodiversity Strategy

RECOMMENDATIONS



Europe's Biodiversity Research Network

Organizing ALTER-Net partner:
INBO (Research Institute for Nature and Forest)
Maurice Hoffmann (Ed.)



ALTER-Netconference

RECOMMENDATIONS





ALTER-Net conference “Science underpinning the EU 2020 Biodiversity Strategy” Ghent (Belgium) 15-18 April 2013

The conference primarily focused on the objectives and targets of the EU's 2020 Biodiversity Strategy, which should be realized by the end of this decade.

Being a science-policy interface network, **ALTER-Net** (*) wanted to help the EU in realizing these targets by providing scientific knowledge, e.g. by pointing out possible weaknesses, opportunities and necessities, and by helping to find solutions and evidence-based actions.

The programme of the conference featured half-day sessions on each EU target and included a mix of oral presentations and workshops. The workshops aimed to result in workable recommendations that are application-aimed, science-underpinned, and as much as possible evidence-based. Target groups are EU-policy makers and anyone else involved in the implementation and realization of the EU-targets.

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(*) **ALTER-Net** brings together 26 leading scientific institutes from 18 European countries. They share the goal of *integrating their research capability* to assess changes in biodiversity, analyse the effect of those changes on ecosystem services and inform the public and policy makers on the issues at a European scale. Originally funded by the European Union's Framework VI program to stimulate a collaborative approach, **ALTER-Net** is now operating independently.



Recommendation headlines

Per EU-target, one recommendation headliner was chosen as most important and urgent one. This does not imply that the 100 recommendations would not be almost equally relevant or important.

EU-target 1: Natura 2000 success depends primarily on ecosystem health, together with genetic health of its species and populations, rather than on present-day distribution patterns of specific species and habitats; in the end, ecosystem health and genetic population health are important for human well-being in general.

EU-target 2: Mapping ecosystems and valuing their services is seen as important for improving the knowledge base about nature and social-ecological systems, but to avoid true merchandising of biodiversity, the use of monetary valuation and economic instruments should be limited to areas and situations where the monetary information is necessary for triggering conservation behaviour.

EU-target 3: Knowing which problems need standard approaches and which need targeted policy instruments is vital for the development and application of effective biodiversity conservation on managed lands. To advance sustainable agriculture and forestry, engaging the sector actors should be supplemented with standard best practices to solve well-understood general problems as well as innovative and diversified solutions to solve specific and geographically limited problems. Research should support also the monitoring and evaluation of these different types of problems and solutions.

EU-target 4: Science is the engine to generate adaptive management tools to optimise sustainable fisheries; rather than management based on a single species (among which the present-day minimum size approach for harvesting), ecosystem based fisheries management should be generally implemented.

EU-target 5: Policy should aim at the broad impact of Invasive Alien Species and their interaction with native biodiversity, - health and food production rather than on the sole fact of being alien as criterion for combating details: the first short-term challenge is to develop legal and economic instruments, which are currently being worked on by the policy makers. The second challenge is to fill in the legal instruments with help of combining scientific efforts when it comes to integrating and linking different databases, web portals and other data collections.

EU-target 6: The price of food, fibre and water should encompass both the production and maintenance cost of the ecosystem.



EU Target 1 - Conserving and restoring nature

Registered participants: Tom Andries, Kristina Arcticus-Lepage, Simona Bacchereti, Natalie Beernaert, Alessandro Campanaro, Karen Cox, Geert De Blust, Geert De Knijf, Ben Delbaere, Luc Denys, Douglas Evans, Fabio Fiorentino, Diego Fontaneto, Eeva Furman, Caroline Geeraerts, Stephen Grady, Lubos Halada, Richard Hardwick, Rik Hendrix, Maurice Hoffmann, Onno Knol, Peter Kullberg, Mart Külvik, Willem Laermans, Paul Leadley, An Leyssen, Gerald Louette, Michel Louette, Lars Lundin, Weronika Maślanko, Isabelle Mauz, Laura Meller, Joachim Mergeay, Micheal O'Briain, Fionnuala O'Neill, Desiré Paelinckx, Lachezar Pehlivanov, Jan Pergl, Corentin Rousseau, Barbara Ruysenaars, Christoph Schröder, Andrew Sier, Erika Van den Bergh, Beatrijs Van der Aa, Jeroen Vanden Borre, An Vanden Broeck, Sonia Vanderhoeven, Toon Westra, Kerry Waylen, Marcus Zisenis

Chair: Maurice Hoffmann

Statement 1 - Present-day Natura2000 is not a coherent network but a patchwork of individual sites

Recommendations on statement 1 and its questions

1. What connectivity criteria for habitats and species can science deliver?
 1. Small populations need more connectivity relative to large populations.
 2. How large a population should be in order to be in a favourable state depends on the species and on local characteristics.
 3. There exist no general rules for connectivity. It depends on the landscape, species, abiotic conditions, ...
 4. There is no need to connect every patch and every population.
 5. Stepping stones, buffer zones are important and needed, also outside the Natura-2000 network. It is necessary to conserve habitats outside Natura-2000 sites as well.
2. How should Europe deal with inter-state and inter biogeographical region connectivity needed for habitats and species?
 6. There is a need for a **landscape approach** and to define clear goals for sustainable conservation.
 7. Political boundaries are irrelevant for populations.
 8. Much more trans-boundary collaboration is needed within biogeographical regions when identifying and connecting habitats, monitoring species, conserving habitats...
3. What should be done to make a climate-proof Natura 2000 network?
 9. Populations and habitats should rather be large than connected, being large gives populations better potential for adaptation.
 10. Adaptation and rapid evolution is frequently under-estimated.
 11. However, adaptation may be the rule for many species but likely not for all species, in particular species with small populations, low genetic diversity and located in highly fragmented landscapes.



4. How should genetic characteristics of populations be included in the evaluation of species status?
 12. There exist general criteria to retain genetic diversity, effective population sizes can be calculated in order to retain genetic diversity over time within (meta-)populations.
 13. Genetic diversity is a good predictor of adaptation.
 14. Genetic characteristics should be a part of general monitoring programmes to evaluate the trends in population status.
 15. The costs for generating genetic data are rapidly decreasing which makes it realistic to include genetic data in monitoring programmes.
 16. The Natura-2000 network provides an excellent opportunity to study genetic diversity of species on a large geographical scale.
 17. The methodology for using genetic criteria in the assessment of the conservation status of a species should be harmonised at the European level. These new approaches should be incorporated in the same way by all member states.
 18. New approaches should be incorporated in the same way and by all member states.
 19. The technique of (meta-)barcoding looks very promising, but urges for as complete as possible genetic reference data bases on species relevant to the Natura2000 monitoring (and beyond).

Statement 2 - Good implementation of N2000 is impossible without good and coherent scientific knowledge in all member states

Questions on statement 2

1. How can we achieve compatibility and comparability of favourable and unfavourable status of habitats and species all over Europe, to allow a sound evaluation at the European level?
2. Are there easy-to-measure proxies for the evaluation of habitat and species status that are applicable throughout Europe?
3. Can science deliver unequivocal concepts and definitions that are applicable all over Europe?
4. What instruments can be applied to control what's happening in the Natura 2000 sites as far as land-use change and their habitat and species impact is concerned?
5. Can science develop regionally and locally applicable monitoring and evaluation methods that can be applied by all member states, that take into consideration the diverse levels of scientific knowledge, and that will lead to a sound evaluation at the European level?
6. Could management measures and status of habitats be evaluated through monitoring of environmental conditions, instead of the end-of-the-line biotic response variables, since the latter are often difficult to measure, and can often hardly be managed at all, because of their typically hard-to-control biological characteristics

Recommendations on statement 2

For a better implementation of Natura 2000 there should be strived for:

20. A more uniform definition of habitats among and within member states is preferred. The range of variation a habitat can have, needs to be taken into account for a better comparison over Europe. Visits of scientists and field managers to foreign habitat sites can help this alignment.
21. More uniform assessment methods, e.g. with regard to 'structures & functions' over member states is needed; this will ease the comparisons.
22. Monitoring methods that member states currently apply should be compared amongst each other, and best practices exchanged through a kind of inter-calibration exercise, as is done in the case for the Water Framework Directive.
23. Topical seminars should be organised to exchange information and best practice knowledge. Themes on favourable conservation status should be held among scientists as well as themes on habitat management among field managers.
24. Member states that produce documents in their native language should add a box of summarizing information in English, so that expertise can be more easily exchanged among member state representatives.
25. Remote sensing is a valuable tool to detect change for widespread and spatially heterogeneous, difficult to define habitats; however, field work will still be needed. RS can direct the fieldwork (extent of work and the precise locations) and make decisions on habitat alignment more objective and conclusive.

Statement 3 - Protecting nature for its intrinsic value is not delivering. A successful strategy is to better adapt to market economy and develop Natural Capital as a tradable good

Questions on statement 3

1. What clear-cut criteria can science deliver to allow the use of systems, such as habitat-banking, to compensate for probable losses of fragmented and isolated habitats and populations, given the unfavourable cost-benefit ratio of measures that need to be taken to maintain these sustainably?
2. What are the best and the easiest applicable instruments to evaluate whether biodiversity patterns match with ecosystem services patterns at different resolution levels (continental, regional, local)?

Recommendations on statement 3

26. Protecting nature for intrinsic value is not **sufficiently** delivering, hence statement 3 should be amended this way.
27. Key component is ecosystem health: delivers biodiversity (habitats, species), resilience (e.g. for climate change), and it underpins the ESS --> at least this is what we assume. Science should strengthen our understanding of the value (monetary/non-monetary) of healthy ecosystems and promote ways of communicating this to society.
28. By working on ecosystem health, we expect to be more successful on species and habitat conservation on the long run as well.

29. Natural Capital as a validation instrument is a more comfortable concept than market economy instruments, since the market is considered to be a rather irrational short-term approach. There is not enough recognition of the value of Natural Capital; hence, science should work on quantifying the values of natural capital (not necessarily monetary).
30. Habitat banking is experienced as a rather uncomfortable concept as long as there is no strong basis of 'no net loss' and better recognition of 'irreplaceability' of biodiversity and ecosystems; science can contribute to a better understanding of the (ir)replaceability of ecosystem and its functioning and functions.

Statement 4 - Societal engagement is critical for long-term success of biodiversity conservation in Europe

Recommendations on statement 4

30. First, we must challenge and examine our assumptions about the goals of any communication or engagement effort. We should ask ourselves:
 - Why are we seeking to communicate?
 - How far do we wish to engage (i.e. to inform, involve or empower?).
 - What are we seeking to communicate?
 - To whom?
 - How?
31. It is important to recognise that **communication is a 2-way process**, and one where sustained interaction (rather than one-shot efforts) is more likely to produce mutually satisfying shifts in understanding. Therefore, asking questions should be asked very early in any initiative or process, and efforts to communicate and engage with other audiences should be sustained over time and integrated with research or policy processes. This also has implications for resources required, particularly in terms of time and money, but also skills.
32. These are fundamentally social science topics. Social scientists and communication professionals should lead work on these topics, and be recognised for having their own contributions and research agendas.
33. There are existing methods and experiences of communication that can be synthesised and learnt from. It may be possible to suggest a spectrum of approaches suitable for different degrees of engagement (from informing, via involvement to empowerment).
34. However, it is critical to recognise that there will never be 'magic recipes' or one-size-fits-all solutions. Each attempt to engage must be goal- and context-specific, so any previous experiences must always be adapted to new work.
35. Further, we should reflexively and reflectively explore our on-going efforts, to promote further learning and understand.
36. Topics of particular interest for further research include **citizen science**, and the role of different forms of learning and knowledge (i.e. rational knowledge versus experience-based knowledge) for encouraging behavioural responses.

EU Target 2 - Maintaining and enhancing ecosystems and their services

Registered participants: Dania Abdul Malak, Petri Ahlroth, Ibone Amezaga Arregi, Jens Åström, Estelle Balian, Boris Barov, Györgyi Bela, Markus Bernhardt-Römermann, Ali Birket, Fanny Boeraeve, Alexander Boffin, Gudrun Bornette, Leon Braat, Svetla Bratanova-Doncheva, Mar Cabeza, Claudia Carvalho-Santos, Heidi Demolder, Nicolas Dendoncker, Frauke Ecke, Hilde Eggermont, Catherine Farrell, Bernd Hansjürgens, Jennifer Hauck, Maarten Hens, Alison Hester, Zita Izakovičová, Henrik Kalivoda, Robert Kanka, Lea Kauppi, Kinga Krauze, Xavier Le Roux, Madelon Lohbeck, Joachim Maes, Jessica Magnus, Cecile Marechal, Carole Martinez, Marion Mehring, Helen Michels, Laura Miguel Ayala, Michael Mirtl, Norunn Myklebust, Carsten Nesshöver, Harti Ningsih Suyoto, Signe Nybø, Tom Oliver, Miren Onaindia, Julius Oszlanyi, Terry Parr, Eeva Primmer, Vânia Proença, Alessandra Pugnetti, Sanna-Riikka Saarela, Giuseppe Scarcella, Johanna Schild, Paul Scholefield, Assaf Schwartz, Hector Serna-Chavez, Tarja Söderman, Jutta Stadler, Göran Ståhl, Maarten Stevens, Julia Stürck, Anne Teller, Marijke Thoonen, Amor Torre-Marín Rando, Anne Turbé, Francis Turkelboom, Toon Van Daele, Jiska van Dijk, Ann Van Herzele, Andy Van Kerckvoorde, Janine van Vessem, Kristine Vandermijsbrugge, Marie Vandewalle, Darline Velghe, Jan Verboven, Wim Verheyden, Aret Vooremäe, Allan Watt, Keimpe Wieringa, Maria Witmer, Karin Zaunberger.

Chair: Leon Braat

EU-2: Maintaining and enhancing ecosystems and their services: Votes & Comments on statements

EU-target 2	PRO- %	CONTRA-%
Action 5 is a utilitarian approach, and will be counter-productive for ecosystems of high ecological value...	40 (0-90)	60 (10-100)
Action 5 will lead to the promotion of ecosystem services that have monetary values....	37 (20-50)	63 (50-80)
Valuation of benefits from ecosystems is highly arbitrary and will lead to merchandising biodiversity	32 (20-45)	68 55-80)

Recommendations on research ideas

EU-2: Maintaining and enhancing ecosystems and their services: Research Ideas from statements

37. Improve the methods, don't kill the concept.
38. Map the stages in the cascade model! → structure, function, services, benefits, values.
39. Concern about economic values and risk of merchandising biodiversity.
40. Develop transparent valuation procedure.
41. Money may be useful, but go beyond monetary valuation.

Recommendations on actions 5,6 and 7***EU-2: Maintaining and enhancing ecosystems and their services: Actions 5,6 and 7***

- 42. Communicate and educate the concept to stakeholders!
- 43. Break down “value” of Ecosystem services in traceable components.
- 44. Identify ecosystem services of green-blue infrastructure.
- 45. Develop a compensation scheme for dynamic ecosystems.
- 46. Focus on bundles and multiple users.

EU Target 3 - Ensuring the sustainability of agriculture and forestry

Registered participants: Jens Åström, Simona Bacchereti, Estelle Balian, Markus Bernhardt-Römermann, Fanny Boeraeve, Alexander Boffin, Svetla Bratanova-Doncheva, Alessandro Campanaro, Jim Casaer, Sophie Condé, Geert De Knijf, Ben Delbaere, Nicolas Dendoncker, Myriam Dumortier, Ilse Geijzendorffer, Stephen Grady, Lubos Halada, Richard Hardwick, Jennifer Hauck, Rob Hendriks, Alison Hester, Mikael Hildén, Maurice Hoffmann, Katrien Janssen, Henrik Kalivoda, Onno Knol, Peter Kullberg, Mart Külvik, Madelon Lohbeck, Gerald Louette, Michel Louette, Joachim Maes, Laura Meller, Laura Miguel Ayala, Michael Mirtl, Claudia Olazabal, Tom Oliver, Fionnuala O'Neill, Koen Overmars, Desiré Paelinckx, Elizabeth Pelisson, Eeva Primmer, Vânia Proença, Philip Roche, Paul Scholefield, Jutta Stadler, Göran Ståhl, Daphne Suijker, Ben ten Brink, Amor Torre-Marín Rando, Anne Turbé, Toon Van Daele, Beatrijs Van der Aa, Ann Van Herzele, Janine van Vessem, Kris Vandekerckhove, Kristine Vanderwijnsbrugge, Darline Velghe, Jan Verboven, Aret Vooremäe, Henk Westhoek, Kerry Waylen, Keimpe Wieringa, Maria Witmer, Steven Wolf, Marcus Zisenis

Chair: Eeva Primmer

European biodiversity depends on the green infrastructure that includes managed ecosystems, as 90 % of Europe's land-surface is managed for agriculture and forestry. These areas host a great share of Europe's biodiversity. European biodiversity policy needs to address the management of these areas in a fashion that raises the ambition of biodiversity conservation and makes use of the sectors' capabilities to protect biodiversity.

Discussion item 1 "Biodiversity protection incentives for managed farmland"

Statement 1: The aim to increase the sustainability of agriculture by biodiversity protection measures on farmland might be undermined by the pressure to produce more food and intensify agriculture.

→ What are the mechanisms by which biodiversity protection incentives for managed farmland produce conservation outcomes?

Recommendations

47. Landscape design should be considered and the conservation interventions need to be targeted at appropriate scales.
48. It is important to distinguish between standardized and targeted approaches.
49. Policy design should be more sensitive and ambitious regarding incentives and make full use of new politics, new conversations and new alliances with a range of actors.
50. The benefits and risks of intensification and land-use change should be identified and managed.
51. Europe should manage and respond to implications of imports with e.g., certification and engagement of retailers and consumers.

Discussion item 2: "Engaging actors to new sustainable management practices"



Statement 2: The aim to increase forest biodiversity conservation through planning and other sustainability enhancing instruments depends on the formal implementation as well as motivation and engagement of forest managing actors.

→ How can EU level policy trigger new sustainable forest management practices and engage land-owners ?

Recommendations

- 52. The EU should develop and make use of a strong knowledge base to allow learning about multiple functions and policy outcome evaluations.
- 53. The motivations and behavioural drivers of the range of actors, particularly private actors, should be analysed, to learn about their opportunities to advance sustainable solutions in a diverse and innovative fashion
- 54. The different policy orientations of collaborative and regulative approaches should be analysed, to understand and make use of their motivational bases as well as the range of their ecological, social and economic costs and benefits.

Discussion item 3 “Sustainability criteria for protected and managed landscapes within and outside Europe”

Statement 3: The European biodiversity conservation targets and sustainability requirements can increase the pressure to import food and other produce from outside Europe from areas that are out of the reach of European sustainability monitoring.

→ How to evaluate, develop and enforce sustainability criteria that apply across protected and managed landscapes within and outside Europe, even in biodiversity hotspot areas?

Recommendations

- 55. The certification systems and their opportunities should be critically analysed and evaluated, to stimulate and monitor sustainable production. Where possible, the systems should align with food and safety regulation tracking & tracing, rather than be developed as stand-alone systems.
- 56. The labelling system and its impacts on consumers’ choices should be analysed and utilised.
- 57. Consumption patterns should be influenced more broadly with public policy and together with the strongly influential private sector.

Discussion item 4: “Natura 2000 sites and deflecting local land and natural resource use goals”

Statement 4: Degradation continues around implemented Natura 2000 and inside those that still remain to be properly protected. The intensification of agriculture and forestry for the production of biofuels and biomass is likely to aggravate the situation further.

→ How can Natura 2000 sites be protected effectively and live up to their role in European biodiversity conservation in the face of conflicting goals for local land use and exploitation of natural resources?

Recommendations

58. The nature of the Natura 2000 problems and tensions should be analysed, including their economic reasons and implications, their knowledge challenges and their effects outside the Natura 2000 sites.
59. The entire range of solutions should be considered, including technical, economic, governance ones.
60. Monitoring of Natura 2000 should be done by a wider research community that should have access to the data about the sites. Meta-analysis, and analysis of outside N2000 areas as well as site-level and cumulative effects should be conducted.
61. Development of sustainable scenarios should build on learning from local success cases and generate awareness and opportunities.
62. It is important to understanding the nature of Natura 2000 and its function as network and/or a collection of sites.



EU Target 4 - Ensuring the sustainability of fisheries

Registered participants: Jochen Depestele, Bruno Ernande, Fabio Fiorentino, Caroline Geeraerts, Jessica Magnus, Joachim Mergeay, Lachezar Pehlivanov, Adrian Peres, Alessandra Pugnetti, Giuseppe Scarcella, Erika Van den Bergh, Gert Van Hoey, P.A.M. van Zwieten, Filip Volckaert, Karin Zaunberger.

Chair: Filip Volckaert

General recommendations:

- 63. A functional communication strategy on scientific progress in fisheries research results and pressing issues such as resource overexploitation is needed
- 64. Shared management responsibilities of the fishing community will enhance concern and involvement.
- 65. Science could be the engine to generate adaptive management tools to optimise sustainable, and ecosystem based fisheries, e.g. development of individual habitat quota and marine spatial planning.

Statement 1 - The aim to reach healthy fish stocks, healthy marine ecosystems and sustainable fisheries by reducing waste in fishing through promoting selective gears and reducing discarding practices might not be the better strategy in the light of recent insights related to balanced harvesting.

Recommendations

- 66. Fully implement an ecosystem approach instead of a species based, let alone a population approach, hence also not in combination with the single-species approach
 - o the current policy on selectivity and discard bans does not lead to an ecosystem approach and hence not a sustainable ecosystem maintenance.
- 67. The long term monitoring in fisheries has led to a better understanding of the exploited marine ecosystem
 - o Monitoring results should be more strongly embedded in decision making (cf. quota system decisions).

Statement 2 - Rights-based catch shares (e.g. ITQ's: individual transferable quota) can provide incentives for sustainable harvest that is less prone to collapse. It can, however, also lead to accumulation of fishery property rights in non-fishery related companies.

Recommendations

68. Science should develop methods to evaluate the effects of different scenarios for ITQ distribution entities (e.g. vessels, companies, fleet,), including social, economic and ecological indicators.
69. ITQ's do not take broader ecological impacts into account, aspects of spatial management should also be included.
70. There should be room for regional differentiation in right based management regulations. ITQ are not the only solution; due to regional differences and for specific types of fisheries.
71. ITQ management is based on good knowledge of catch (legal and illegal). Hence control is an important aspect to its success. Science should Invest in efficient and cost-effective, easy-to-use methods to observe actual catches.
72. Effects of ITQ on non-target stocks should be investigated with special focus on ecosystem targets in MSFD and Natura 2000 species.

Statement 3 - Bottom trawling and the seafloor disturbance resulting from it enhances fish stock productivity and is essential for productive fish stocks and economically viable fisheries. As such, marine protected areas may reduce the economic viability of the fishing industry.

Recommendations

73. The evidence to accept or reject this hypothesis is lacking; the effect of different levels of trawling effort on productivity and biodiversity should be investigated by
 - o Filling knowledge gaps with BACI experiments (gear, trawling intensity, ref cond habitat type)
 - o Extrapolation of local effects to habitat and regional scale through modelling
 - o Validation of results (whenever possible) in areas with different fishery intensities.
74. To reach good ecological status spatially based management should be applied.

Statement 4 - Fisheries, like hunting, is an out-dated way of food production and should be replaced by aquaculture in order to reduce damage to marine ecosystems.

Recommendations

75. The real impact of aquaculture on ecosystems should be fully monitored and reported (e.g. Naylor et al (2005) dealing with the use of fished fish as aquaculture input).
76. Aim for closed system aquaculture or use the ecosystem smartly without negative effects (e.g. Multi-trophic system).
77. Aquaculture may support ex situ conservation (e.g. breed small sturgeon to restock Danube).

Statement 5 - The health of exploited fish stocks would benefit from a differentiated catch strategy taking into account age structure (old fish are better spawners), space (brood stock merit special protection) and genetic diversity (diverse stocks will better cope with changing conditions).

Recommendations

78. In addition to ecosystem and population monitoring, include genetic monitoring of exploited stocks. This will allow to estimate the impact of fishing on genetic diversity, to assess connectivity between populations, and to delineate stocks.
79. We advise that capture-recapture monitoring is also conducted on a more regular basis. This will allow to assess connectivity between populations, to validate age evaluation, and to estimate natural mortality.
80. We recommend to extend VMS to small fishing boats and to combine logbook data and VMS to better estimate the spatial fishing effort.
81. We advise to develop operational models including (i) spatial structure of stocks and spatial distribution of fishing, (ii) age AND size structure of populations; and (iii) genetic tools in order to have an integrated stock assessment.
82. We recommend to consider age AND size structure of populations. Also research is conducted on demography and evolution to assess the effect of age and size-selectivity of fishing to protect both young and small fish until spawning and old and large fish as better reproducers (save the old mothers).



EU Target 5 - Address the problem of invasive alien species

Registered participants: Boris Barov, Pam Berry, Gudrun Bornette, Sandra Broerse, Claudia Carvalho-Santos, Sjerp de Vries, Rolinde Demeyer, Nicolas Dendoncker, Marthe Laura Derkzen, Marina Garcia Llorente, Ilse Geijzenborffern Stephen Grady, Alison Hester, Sander Jacobs, Henrik Kalivoda, Kinga Krauze, Mart Kùlvik, Penelope Lamarque, Xavier Le Roux, Joachim Maes, Berta Martín-López, Marion Mehring, Signe Nybø, Miren Onaindia, Paul Opdam, Roel Plant, Philip Roche, Fernando Santos Martín, Johanna Schild, Hector Serna-Chavez, Martin Sharman, Eveliene Steingröver, Julia Stürck, Amor Torre-Marín Rando, Francis Turkelboom, Toon Van Daele, Aret Vooremäe, Kerry Waylen, Marcus Zisenis

Chair: Jiska van Dijk

Discussion item 1: “Making the best prioritisation”

Statement 1 : Tackling IAS involves upfront costs and long-term benefits (avoided damage)

Statement 2 : The considerable time lag between the introduction of an alien species and the onset of (damaging) invasive behaviour is hampering rapid response towards new alien species originally thought to be harmless

Recommendation

83. Scientists need to work on baselines to be able to compare the different (damaging) impacts. Systematic data collection for empirical evidence of the risk assessments and how and when species changes or have changed from being a low risk species to a high risk species; work on a burden of proof. Policy should depart from the precautionary principle.

Discussion item 2: “ How to balance with other stakes (e.g. climate change, economy)”

Statement 3: Some IAS have useful as well as harmful characteristics (e.g. Robinia) and a decision will be needed on whether to tolerate or to combat such IAS across the EU. (note: given the common internal market a uniform approach at EU level is required)

Statement 4: Adaptation to climate change might require introducing alien species that are expected to be able to cope better with changing environmental conditions than the native species, despite the risk of those alien species becoming invasive.

Recommendations

- 84. Focus on observatories and collecting evidence (evidence-based science).
- 85. Because future risk assessments are difficult, we need to focus on proved risks (Evidence-based science) and work on the precautionary principle. Evidence-based science can furthermore help in scenario development for future risk assessments.
- 86. Work on strengthening existing ecosystems and make/keep them resilience and robust so they can 'defend' themselves against IAS.

Discussion item 3: "Future challenges"

Statement 5: A population of a species introduced into the territory of another genetically different population of the same species might become invasive and outcompete that genetically different but original population

Recommendation:

- 87. Insight needed into what is 'genetic pollution' and when it occurs. Is losing genetic variability harmful? We need to indicate what is happening in nature anyway anyhow and keep in mind the adaptation capacity of native population.
- 88. Important to distinguish between natural movement of species and deliberated/artificial introduction of a same species in a certain area.

Discussion item 4: "Surveillance and information sharing; building upon existing systems such as citizen science initiatives"

Statement 6: Citizen sciences is important to support IAS policy, for data collection on the distribution of IAS, as well as for data collection on public opinions on the measures to be taken.

Recommendations:

- 89. Don't (mis)use citizen science as a general and easy data collection tool but work out specific targeted potentials within the big black box of 'citizen science' and concentrate on those.
- 90. The effect of public involvement is poorly investigate and largely unknown; long-term studies necessary. Also studies on how the public opinion is influenced are needed.

EU Target 6 - Address the Global Biodiversity crisis

Registered participants: Petri Ahlroth, Ibone Amezaga Arregi, Tom Andries, Jens Åström, Simona Bacchereti, Stefaan Baeteman, Estelle Balian, Natalie Beernaert, Fanny Boeraeve, Leon Braat, Svetla Bratanova-Doncheva, Geert De Knijf, Bram D'Hondt, Hilde Eggermont, Catherine Farrell, Eeva Furman, RichardHardwick, Maarten Hens, Maurice Hoffmann, Onno Knol, Peter Kullberg, Paul Leadley, Gerald Louette, Lars Lundin, Jessica Magnus, Carole Martinez, Isabelle Mauz, Laura Meller, Helen Michels, Laura Miguel Ayala, Carsten Nesshöver, Tom Oliver, Fionnuala O'Neill, Koen Overmars, Terry Parr, Lachezar Pehlivanov, Elizabeth Pelisson, Eeva Primmer, Vânia Proença, Alessandra Pugnetti, Hanno Sandvik, Giuseppe Scarcella, Daphne Suijker, Ben ten Brink, Lennert Tyberghein, Erika Van den Bergh, Beatrijs Van der Aa, Hans Van Gossum, Ann Van Herzele, Sonia Vanderhoeven, Kristine Vandermijnsbrugge, Marie Vandewalle, Darline Velghe, Steven Verdrengh, Wim Verheyden, Allan Watt, Henk Westhoek, Keimpe Wieringa, Maria Witmer, Steven Wolf, Karin Zaubner

Chair: Ben ten Brink

Statement 1 : EU production and consumption patterns have a significant impact on global biodiversity. The EU could aim at a zero net footprint outside the EU, as the most effective implementation of Target 6. This means development of a circular economy and constructive collaboration with economic sectors: agriculture, forestry (bio)energy production, fisheries, trade chains, and consumption. Traditional conservation alone will not be sufficient. '80% of the implementation needs to happen outside the conservation sector'.

Statement 2 : Conserving biodiversity and ecosystem services is directly linked and can contribute positively to global issues such as economic development, climate and energy policies, poverty alleviation, combatting desertification, improving water and food availability, and security and geo-politics issues. Climate change is developing faster, interacting with and exacerbating other threats to biodiversity, increasing the urgency for implementation of efficient, effective and integrated measures.

Statement 3 : EU Outermost Regions and Overseas Countries and Territories are situated in 5 global biodiversity hotspots. This means that EU can make a serious contribution to the global biodiversity targets through activities to support conservation and sustainable use of biodiversity and ecosystem services in EU outermost regions and overseas territories.

Questions that concern all three statements are:

1. How can we achieve the necessary mobilization making best use of the biodiversity knowledge already available and trigger real action on the ground ?
2. What instruments do we have on national, EU and global level?

Recommendations

Physical measures

91. Create an EU wide restoration program of degraded ecosystems.

*The impacts of socio-ecological regime shifts (**tipping points**) can be prevented or mitigated through increasing systems resilience and controlling drivers of change. Active ecological restoration should aim at restoring ecosystem functions and biodiversity. In addition, on-going ecosystem degradation should be halted. Native forest restoration in particular, constitutes a win-win response to climate change and biodiversity loss, as it contributes to restore biodiversity and ecosystem services, but it is also an effective mitigation and adaptation measure to respond to climate change threats.*

Governance measures

92. Establish an on-going dialogue between the government, companies and civil society to address opportunities of improving their natural resource efficiency.

Saving biodiversity by protected areas becomes far more effective when combined with increasing material and energy efficiency in the agricultural, forestry and fisheries sector. Companies are the key to innovation and allies in this process and many are able and willing to significantly reduce their footprint in a time frame of 5-10 years. Social networks can promote debate and action around environmental issues and induce changes on the demand side. Organize a coalition of the willing and praise front runners. Stimulate and award for innovative approaches, open to civil society participation that can lead to a change in consumption behaviour (Horizon 2020).

93. Develop a simple, accessible and easy to establish biodiversity footprint calculator and label, for every product, to promote corporate social responsibility, and reporting.

There is a need for crystal clear information on the biodiversity footprint of products, so citizens can choose for biodiversity-saving products, and companies can compete on greener products and start a perpetuate process of self-improvement. A compulsory green accounting report is a tool to achieve greater transparency regarding companies' contribution to address biodiversity loss and climate change.

94. People are paid for maintaining and restoring food, fibre and water producing ecosystems in a similar way and at the same time as they are paid for the products derived from them. **The price of food, fibre and water should encompass both the production and maintenance cost of the ecosystem.**

The economic system based on payment for goods and services has been successful, given the persistent growth of human prosperity for an unprecedented number of people. However, in this traditional economic arrangement, the maintenance of the ecosystem's capacity to produce has not been valued, or not understood. As a consequence, ecosystem degradation cumulated in the Anthropocene up to about one quarter to one third of the entire terrestrial part of the planet, to date. Until recently this has relative little impact on the global water, carbon and material cycles, apart from local collapse of civilizations. On-going economic exploitation at present-day scale and intensity, to meet the needs of the peoples will erode the resilience and drive ecosystems beyond their safety zones at large scales - though unintentionally - the impact at a staggering speed. The social dilemma



and externalisation of cost are the key underlying drivers that need to be solved. The new economy addresses and values maintenance and restoration labour. It will contribute to people's income, create jobs and may eventually emerge into a new economic sector.

95. Shift tax from labour to material and energy. Adjust the VAT tariff of a product to the ecological footprint of it, as an incentive to promote sustainable supply of natural resources and create new jobs

The consumption of energy and materials such as meat, wood, cotton, fodder, fossil and biofuels have a major impact on biodiversity, water deficits and climate change; their price does not cover these external costs.

96. Communicate the internationally importance of the biodiversity in the EU Overseas.

Very few people are realizing that the EU territories have a link to EU and host 70% of the EU biodiversity. Transferring scientific knowledge on the functioning and maintenance of EU Overseas ecosystems will support policies at the main land.

Key research requirements

97. Support research on **tipping points**

Develop adequate modelling tools that include interactions between drivers and between tipping point mechanisms. Special attention should be given to regional scale interactions between tipping points, occurring in Europe's mainland and its Overseas areas, for example the Artic-Tundra-Boreal forest system, the island ecosystems, the tropical forests.

98. Pursue the efforts and developing further cases studies at regional and local levels for determining the safety zone for biodiversity and related functions:

Soil organic Carbon, soil depth, water holding capacity, productivity, flood regulation, Carbon cycling, and global and local climate regulation. Knowing the safe operating space for the global society enables targeted and cost-efficient policies.

99. Acknowledging and investing in EU Overseas

They constitute living laboratories and offer all over the world strategic locations for the EU to better understanding ecological processes and global changes. Supporting research in the EU Overseas in order to turn them into demonstrator of the Green-Blue Growth. Making of the EU Overseas a priority for EU research efforts and targeting the EU Overseas' biodiversity in the European research calls is enabling the EU to address the global biodiversity crisis. Adapting the EU Funds in order to help the local research team of the EU Overseas to more easily access to them. Imagining a special status in order to provide incentives for science to invest in the EU Overseas Territories (tax free-zone).

100. Improving information access on EU Overseas biodiversity.

Setting up a European portal on the EU Overseas biodiversity and their eco-regions. Systematically integrating EU Overseas in the reports and assessments in order to provide a more complete picture of the situation of the European biodiversity and contribute to the status of the global biodiversity.

