Deliverable 6.2 (D6.2)

Policy paper on strategies to overcome barriers for data mobilization and use in conservation policy

M46

Project acronym:	EU BON
Project name:	EU BON: Building the European Biodiversity Observation Network
Call:	ENV.2012.6.2-2
Grant agreement:	308454
Project duration:	01/12/2012 – 31/05/2017 (54 months)
Co-ordinator:	MfN, Museum für Naturkunde - Leibniz Institute for Research on Evolution and Biodiversity, Germany

Delivery date from Annex I:	M46 (September 2016)
Actual delivery date:	M46 (September 2016)
Lead beneficiary:	University of Cambridge
Authors:	David Rose, William J. Sutherland, Nibedita Mukherjee (University of Cambridge)
	Alice Vadrot, Robert Doubleday (Centre for Science and Policy, Cambridge)

Table of contents

1. Executive Summary

The aim of this EU BON task was to highlight barriers to the use of evidence in conservation policy and to find solutions to overcome them. *Three strands* of research were undertaken: firstly, to ask actors involved in conservation science-policy interfaces about their perception of barriers and solutions to evidence use; secondly, to investigate whether conservation scientists can seize upon political windows of opportunity for evidence uptake; and, thirdly, to use Member State Habitats Directive reporting as a case study to illustrate the barriers and solutions to evidence use. Two of these strands are ongoing and will be completed by March 2017.

Preliminary results in the *first research strand* relate to the most frequently mentioned barriers to the use of evidence in policy. From a survey filled in by global academics, students, NGO staff members, and policy-makers, the top-mentioned barriers in Round 1 were split into the following categories:

1) different worlds of science and policy;

2) poor communication between science and policy;

3) differing priorities of academics and policy-makers;

4) private interests; and

5) complexity of problem.

Further coding of the Round 1 survey will be conducted, and a second survey will ask participants to rank quantitatively the importance of barriers and proposed solutions.

For the *second research strand*, a literature review and close analysis of Kingdon's (2003) 'policy window' framework was conducted. We proposed a logical four-point strategy for approaching policy windows (windows of opportunity for evidence uptake that periodically open):

1) *Prepare for window* – predicting upcoming opportunities allow evidence to be deployed quickly and effectively when a policy window arises.

2) *React quickly to window* – various techniques can help scientists to respond quickly to an opportunity.

3) *Tell a salient narrative* – if scientists are able to frame evidence inline with the priorities of the policy window, then it is more likely that policy-makers will react favourably to it.

4) *Persist in closed windows* – if an opportunity is not available for evidence uptake, conservation scientists could persevere with the communication of evidence.

Through the four-point framework, we hope that conservation scientists will devote more attention to understanding policy windows, and be better able to prepare for, and seize upon windows of opportunity for policy change.

For the final *case study* on Habitats Directive reporting, several themes are emerging, including:

1) Data are not accessible to data co-ordinators;

2) Lack of monitoring data to answer key questions;

3) Lack of resources to undertake proper monitoring;

4) A reliance on expert advice to make up for lack of monitoring;

5) Lack of communication between layers of governance; and

6) Lack of data standardisation.

These barriers, amongst others, will be further investigated through additional interviews with Member State data co-ordinators, and a series of recommendations for action will be proposed based on the qualitative data.

2. Introduction

This project was designed to achieve a deeper understanding of the relationship between the collection and mobilization of biodiversity data and their use in conservation policy-making. Using approaches in Science and Technology Studies (STS) and policy analysis, we were asked to: map conservation policy and stakeholder demands for relevant data (see **Section 5**); identify barriers to more effective use of biodiversity data (see **Section 3**); and make suggestions to overcome barriers to the use of biodiversity data in conservation policy and management (see **Sections 3, 4 and 5**).

There has been much recent research on the relationship between science and policy in nature conservation (Adams and Sandbrook, 2014; Jørgensen et al. 2014; Rose, 2014; Rose, 2015; Rose et al., 2016; Sarkki et al. 2014, 2015; Young et al. 2014) including several EU-funded projects (e.g. SPIRAL, BIOMOT, BESAFE). Many of these inter-disciplinary studies draw on research conducted in policy analysis, which illustrates the multi-dimensional relationship between science and policy. Owens (2015), for example, suggests that there are four ways in which they interact.

1) **technical-rational model of policy-making** - assumes that knowledge is collected, evaluated, and then translated straightforwardly into policy (Hertin *et al.*, 2009). Owens presents some examples of where 'direct hits' (Owens, 2015) have occurred between science and policy, and Lawton (2007) used the example of ozone pollution and the Montreal Protocol to support a linear relationship between them. He argued that evidence about pollution was vital in influencing global decision-making to combat the problem, and considered the subsequent policy agreement to be a victory for science. Yet, overall Owens (2015) finds that the relationship between knowledge and policy is rarely linear, partially because of uncertain, badly

communicated, or conflicting evidence, but mainly as a result of competing interests in the policy process.

2) **Political rationality -** Knowledge can also serve processes that are inherently political (Owens, 2015), meaning that evidence must interact with additional factors in the formation of policy. Bielak *et al.* (2008) eloquently summarise this conception by writing that 'science provides one narrow window on the world, whereas policy must view the world through multiple lenses'; therefore, science offers only one stream of evidence that policy-makers must consider in evaluating future courses of action. Thus, theorists of the policy process have shown that decisions are seldom made on the basis of evidence alone, highlighting the complexity of decision-making (Radaelli, 1995; Kingdon, 2003; Owens, 2015). It is important to make a distinction between overt political manipulation of evidence and the legitimate processes of governing in a democracy, in which it is to be expected that scientific evidence will be among the many considerations that typically need to be taken into account.

3a) Cognitive role of knowledge – knowledge usually influences policy over relatively long timescales (Baumgartner and Jones, 1991), and often in an atmospheric, diffuse way (Owens, 2015). These 'dormant seeds' (Owens, 2015) of knowledge can cause policy change through an enlightenment effect as policy-makers undergo a learning process (Weiss, 1977). In other words, knowledge may alter how decision-makers think over time. The cognitive role of evidence is best illustrated from an analysis of the reviews conducted by the Royal Commission on Environmental Pollution (RCEP) over its forty-year history (Owens, 2015). An independent body was set up in 1970 to advise policy-makers and the public on environmental issues, the primary role of the Commission was to inform long-term policy-making by providing an authoritative basis for decisions. The Commission's advice was given mainly in the form of reports, which also considered wider implications for society. In a temporal investigation of the advice offered by the RCEP, Owens (2015) discovered that 'direct hits' between knowledge and policy change did sometimes occur, but evidence also influenced policy several years after publication.

3b) Discursive role of knowledge – the way in which knowledge is framed can be a significant factor in determining the likelihood of evidence-based policy (Hajer 1995; Owens 2015; Rein and Schön 1991; Rose 2015). If knowledge can be framed alongside existing political priorities, then its relevance and saliency can be increased. Several studies in conservation have illustrated the value of framing evidence as astutely, including a clear example of evidence uptake in the UK from Rose et al. (2016) (see also Carmen et al. in prep.; Cook et al. 2013; Howard et al. in prep.; Jokinen et al. in prep.; Leslie et al. 2013; Lawton and Rudd 2014; Rose 2015; Tinch et al. in prep.). Conversely, if evidence seems to be antithetical to political priorities, it is more likely that it will be ignored.

4) Boundary work - Owens' (2015) fourth point draws closely on Science and Technology Studies (STS) and the notion of 'boundary work'. Although an over-simplistic definition, this idea refers to the boundary between two separate spheres (Gieryn, 1983), in this case science and policy. This boundary does not have to be fixed, but its presence suggests that there is something unique and special about both science and policy, which makes them different from one another. Indeed, conservation scientists have suggested that science and policy are completely separate worlds (Briggs, 2006). Scholars such as Jasanoff (2004) and Bijker et al. (2009) have argued that boundary work can be performed by scientists and policy-makers; either in a defensive sense where the strengths of their own side are protected from interference by others (e.g. 'this is a scientific question and our rigorous scientific method is the way to solve it'), or in a constructive sense where an attempt is made to cross boundaries (e.g. a scientist may consider what policy-makers are interested in and frame their science accordingly). Although this concept is notoriously complicated, and unable to be explained in a single paragraph, it is a useful idea to highlight the differences between science and policy, and the potential difficulties in achieving evidence-based policy.

With this four-point framework in mind, the relationship between science and policy is clearly complex and multi-faceted. The objective of the *EU BON - Building the European Biodiversity Observation Network* project, to improve the uptake of conservation science by policy-makers, is therefore difficult to achieve. Indeed, insights from research on the application of decision-support tools to policy-making further illustrate that a number of factors influence uptake, many of which require knowledge of user demands and workflows (Rose et al., in press). This deliverable presents preliminary results from three strands of work designed to investigate the interactions between science and policy in conservation. We build on previous work on conservation science-policy interfaces and pay particular attention to highlighting practical, tangible messages for conservation scientists about how to present their research.

The deliverable is structured as follows: **Section 3** summarises ongoing work to investigate barriers and solutions to the use of conservation science in policy through a global survey of scientists, students, NGOs, and policy-makers; **Section 4** outlines a piece of work highlighting how the temporal nature of policy-making could be better understood to allow conservation scientists to prepare for and seize upon windows of opportunities for evidence uptake; **Section 5** introduces preliminary research into the use of evidence in Habitats Directive reporting, specifically the problems facing data co-ordinators and possible solutions to overcome them; **Sections 6 and 7** offer key recommendations for action and dissemination plans.

3. Barriers and solutions to the use of conservation science in policy

David C. Rose[1 3], William J. Sutherland[2], Alice B. M. Vadrot[3], Robert Doubleday[3], Nibedita Mukherjee[2]

(Other data contributors are also thanked and are acknowledged as named authors in the associated paper)

[1] Department of Geography, University of Cambridge, Downing Place, Cambridge, CB2 3EN, UK

[2] Department of Zoology, University of Cambridge, David Attenborough Building, Pembroke Street, Cambridge CB2 3QY, UK

[3] Centre for Science and Policy, 10 Trumpington Street, Cambridge, CB2 1QA, UK

The following outline presents preliminary results and conclusions from this theme. A more detailed piece of work will subsequently be available in the form of a paper once published in 2017

Aims: To understand further the barriers preventing uptake of conservation science into policy. This study is more sophisticated than previous attempts for four reasons: 1) it does not initially constrain participants through an option-based survey, 2) responses have been obtained from scientists, students, policy-makers, and NGO staff members, 3) barriers and solutions are linked in the survey, allowing us to find common solutions for multiple barriers, and 4) participants are global in nature, including countries in the Global South.

Progress towards objectives: 2 surveys. The first asked the following questions:

1. *Which of the following roles best describes your position? (circle)*

- *Academic (please state discipline...)*
- *Student (please state discipline...)*
- *Scientist (in statutory agency i.e. linked to government)*
- *NGO staff member (practice-focused)*
- *NGO staff member (policy-focused)*
- *Policy-maker (government or statutory organisation, i.e. linked to government)*
- *Policy-maker (not linked to government)*
- *Other (please state): ....*

2. *In your view, what role do you think that scientists should play in the policy-making process in conservation? (one sentence)*

3. *In your view what are the main barriers to the use of conservation science in policy? (list up to three)*

a)

b)

c)

4.   For the barriers listed, list your proposed solutions.

a)

b)

c)

5.   How many years have you been involved in doing science or informing/making policy decisions about nature conservation?

6.   Please state the country you have most experience of working in below.

This has been filled in by 110 responses from across the world. It was distributed at three conferences: the British Ecological Society/Cambridge Conservation Initiative Symposium (Cambridge, April 2016), the Ecosummit conference (France, August 2016), and the IUCN World Congress (Hawaii, September 2016). The survey was also distributed through the EU BON project network and known contacts in environmental government departments in the UK. The results will be coded in a number of ways, such as by top-mentioned barriers and solutions, barriers/solutions by role, and barriers/solutions by age and country.

To conduct the second survey, a team primarily comprised of members from the Cambridge Conservation Initiative has been assembled. These members include students, academics, and NGO staff members with links to policy-makers. A list of the top 12 barriers from Round 1 will be created and participants will be asked to rank these quantitatively in order of importance. Participants will also be asked to rank solutions quantitatively in order of importance. This will be completed in October 2016.

Current achievements and status: The top-mentioned barriers in Round 1 were split into the following categories: 1) different worlds of science and policy, 2) poor communication between science and policy, 3) differing priorities of academics and policy-makers, 4) private interests, and the 5) complexity of the problem. Further coding of the Round 1 survey is to follow.

Future developments: 1) to complete the Round 2 survey, 2) to highlight the top barriers and solutions to the use of evidence in policy, and 3) to provide practical messages on how to proceed.

4. Temporal aspects of policy-making: strategies for improving evidence uptake

David C. Rose [1 3], Nibedita Mukherjee[2], Benno I. Simmons[2], Eleanor R. Tew[2], Rebecca J. Robertson[2], Alice B.M. Vadrot[3], Robert Doubleday[3] and William J. Sutherland.[2]

[1] Department of Geography, University of Cambridge, Downing Place, Cambridge, CB2 3EN, UK

[2] Department of Zoology, University of Cambridge, David Attenborough Building, Pembroke Street, Cambridge CB2 3QY, UK

[3] Centre for Science and Policy, 10 Trumpington Street, Cambridge, CB2 1QA, UK

Current achievements and status: *An academic paper relating to this theme has been submitted. A summary of this paper is presented here, but more detail will follow in the subsequent paper.*

A mixed team of natural and social scientists at the University of Cambridge conducted a piece of work to understand how policy windows could be used effectively for conservation. These are windows of opportunity in which the political ground is fertile for the uptake of knowledge (Kingdon, 2003). Conservationists have mentioned the notion of policy windows in the past, but they are often described as serendipitous or lucky events. However, we argue that conservation scientists can use various techniques to harness policy windows effectively for the uptake of evidence.

From a literature review and close analysis of Kingdon's framework, we propose a logical four-point strategy for approaching policy windows:

1. *Prepare for window* – horizon scans of upcoming issues of conservation importance or political events can help scientists to prepare research in advance. This will mean that evidence can be deployed quickly and effectively when a policy window arises.

2. *React to window* – good political networking, links with key decision-makers, and the compilation of useable evidence can help scientists respond quickly to an opportunity. One example is the Conservation Evidence project (www.conservationevidence.com) which seeks to synthesise evidence on a number of conservation interventions, so that they can be searched quickly and efficiently by decision-makers.

3. *Tell a salient narrative* – if scientists are able to frame evidence in line with priorities of the policy window, then it is more likely that policy-makers will react favourably to it.

4. *Persist in closed windows* – if an opportunity is not available for evidence uptake, conservation scientists could persevere with arguments, argue for small incremental changes in policy to shift the ground, or work with the conservation community to build pressure for change.

Through the four-point framework, we hope that conservation scientists will devote more attention to understanding policy windows, and be better able to prepare for, and seize upon, windows of opportunity for policy change.

5. Barriers to the use of evidence in Habitats Directive reporting

Alice B. M. Vadrot[3], William J. Sutherland[2], Robert Doubleday[3], David C. Rose[1,3]

[1] Department of Geography, University of Cambridge, Downing Place, Cambridge, CB2 3EN, UK

[2] Department of Zoology, University of Cambridge, David Attenborough Building, Pembroke Street, Cambridge CB2 3QY, UK

[3] Centre for Science and Policy, 10 Trumpington Street, Cambridge, CB2 1QA, UK

The following outline presents preliminary results and conclusions from this case study. A more detailed piece of work will subsequently be available in the form of a paper once published in 2017

Aims: To understand the use of evidence in Habitats Directive reporting, highlighting the barriers to evidence utilisation, and potential solutions to overcome them.

Progress towards objectives: Interviews have been conducted with data co-ordinators in several EU Member States, including representatives from the UK (1), Finland (1), Portugal (1), France (2), Austria (5), Germany (2) and Belgium (1).

Current achievement and status: Several themes are emerging, including: 1) data co-ordinators have limited access to data, 2) there is a lack of monitoring data required to answer key questions, 3) there are few resources to undertake proper monitoring, 4) there is a dependency on expert advice to compensate for the lack of monitoring, 5) there is limited communication between layers of governance and, finally, 6) there is a lack of data standardisation.

Future developments: Further interviews will be conducted to investigate data usage and the barriers to evidence mobilisation. These will be undertaken up until March 2017. Data will be analysed, case studies compared on the basis of identified models of data management, and use and recommendations for action proposed by March 2017.

6. Key recommendations for action

Clearer recommendations will be provided on completion of the papers by March 2017.

Solutions to evidence uptake

- Preliminary results support previous research highlighting the lack of a linear relationship between science and policy. The answer to improved evidence uptake will very rarely involve the creation of more or better evidence. Instead, a number of barriers need to be overcome.
- These barriers include: 1) the different worlds of science and policy, 2) poor communication between these worlds, 3) different priorities of academics and policy-makers, 4) competing interests in policy-making, and 5) complex conservation problems.

- Solutions that seek to overcome these barriers may include: 1) better links between science and policy (e.g. through joint seminars and meetings, job sharing, and shadowing schemes), 2) better communication (e.g. scientists could summarise evidence more clearly and tell better narratives), 3) strengthening of policy relevance of conservation science by addressing real-world, practical problems, instead of focusing on novel academic publishing, (this does not mean that innovative, open and free research is worthless) 4) improve links outside of traditional conservation networks, particularly with businesses and other stakeholders to avoid conflicts, and 5) communicate uncertainty more clearly. Further recommendations will be made after completion of the surveys and paper in December 2016.

Approaching policy windows

- Windows of opportunity periodically open in which the ground is fertile for evidence uptake. Better knowledge of these windows would be useful for conservation scientists wishing to influence policy. Although these events are sometimes serendipitous, many can be prepared for, and seized upon quickly, by using a number of techniques (see Section 4).

Better use of evidence in Habitats Directive reporting

- Although results are preliminary, solutions to improve the use of evidence will likely include: 1) more open access publishing, multi-lingual publications, and free data sharing which is accessible for all, 2) more resources for wider monitoring, 3) clearer methods to use experts more effectively, 4) more effective governance structures for reporting, and 5) data standardisation across regions and countries to allow more efficient data sharing.

Design of decision support tools

- Decision-support tools should be user-centred and preferably designed through close engagement with end users. A clear appreciation of the policy needs and workflows of decision-makers is required by tool designers. This will ensure that tools are designed that are relevant, fit the workflow of users, and perform well.

7. Ongoing work and dissemination

Ongoing work

- Data collection for Section 3 – Round 2 survey to be conducted in October 2016, data analysis November 2016, paper writing December 2016.
- Data collection for Section 5 – further interviews January-February 2017, data analysis March-April 2017, paper writing May 2017.

- 2 academic papers to be written – one covering Section 3 and one about Section 5. Likely publication dates fall between Spring and Autumn 2017.
- Roundtable presentation preparation – November 2016
- EU BON final meeting presentation preparation – March 2017
- Ongoing dissemination from December 2016.

Dissemination

- Proposed talk on section 3 at the British Ecological Society (BES) Annual Conference in December, 2016.
- Proposed BES blog and further dissemination of the conclusions from Sections 3 and 4 (paper from Section 4 in review). We have good links with the policy team at BES.
- Proposed talk on the work from this WP (and past work on decision support tools) at Stakeholder Round Table in Berlin (November 2016).
- Proposed talk at final EU BON conference in March 2017 on the work from this WP.

8. References

Adams, W. M. and Sandbrook, C., 2013. 'Conservation, Evidence and Policy', *Oryx* **47** (3): 329-335

Baumgartner, F. R. and Jones, B. D., 1991. 'Agenda Dynamics and Policy Subsystems', *The Journal of Politics* **53** (4): 1044-1074

Bielak, A. T., Campbell, A., Pope, S., Schaefer, K. and Shaxson, L., 2008. 'From Science Communication to Knowledge Brokering: the Shift from 'Science Push' to 'Policy Pull', in D. Cheng *et al.* (eds) *Communicating Science in Social Contexts*, Springer, Dordrecht, The Netherlands

Bijker, W. E, Bal, R. and Hendriks, R., 2009. *The Paradox of Scientific Authority: The Role of Scientific Advice in Democracies*, The MIT press, Cambridge MA, USA and London, UK

Briggs, S. V. 2006. Integrating policy and science in natural resources: Why so difficult?, *Ecological Management and Restoration* **7** (1): 37-39

Carmen, E., Young, J., and Watt, A. Arguing for Biodiversity in Practice, Biodiversity and Conservation Special Issue (in prep.)

Cook, C.N, Mascia, M.B., Schwartz, M.W., Possingham, H.P., Fuller, R.A. 2013. Achieving conservation science that bridges the knowledge-action boundary. *Conservation Biology* **27** (4): 669–678

Gieryn, T., 1983. Boundary-work and the Demarcation of Science from Non-Science: Strains and Interests in Professional Ideologies of Scientists, *American Sociological Review* **48**: 781-795

Hajer, M.A., 1995. *The Politics of Environmental Discourse*, Oxford University Press, Oxford, UK

Hertin, J., Turnpenny, J., Jordan, A., Nilsson, M., Russel, D. and Nykvist, B., 2009. 'Rationalising the policy mess? Ex ante policy assessment and the utilisation of knowledge in the policy process', *Environment and Planning A* **41** (5): 1185-1200

Howard, B., Braat, L., Bugter, R., Carmen, E., Hails, R.S., Watt, A., Young, J. Taking stock of the spectrum of arguments for biodiversity (in prep.)

Jasanoff, S., 2004. *States of Knowledge: The Co-Production of Science and the Social Order*, Routledge, London, UK

Jokinen, P., Blicharska, M., Primmer, E., Van Herzele, A., Kopperoinen, L., Ratamäki, O. How do biodiversity arguments generate effects in policy cycles? (in prep.)

Jørgensen, D., Nilsson, C., Hof, A.R., Hasselquist, E.M., Baker, S., Chapin, F.S., *et al.*, 2014. Policy Language in Restoration Ecology. *Restoration Ecology* **22** (1): 1-4

Kingdon, J. 2003. Agendas, alternatives, and public policies, 2nd edn. Longman, New York

Lawton, J., 2007. 'Ecology, policy and politics', *Journal of Applied Ecology* **44**: 465-474

Lawton, R.N. and Rudd, M.A. 2014. A Narrative Policy Approach to Environmental Conservation, *Ambio*, 10.1007/s13280-014-0497

Leslie, H.M. *et al.* 2013. 'How Good Science and Stories Can Go Hand-In-Hand', *Conservation Biology* **27**: 1126-1129

Owens, S. 2015. Knowledge, policy, and expertise: the UK royal commission on environmental pollution 1970–2011. Oxford University Press, Oxford

Radaelli, C., 1995. 'The role of knowledge in the policy process'. *Journal of European Public Policy* **2**: 159-183

Rein, M. and Schön, D. 1991. Frame reflective policy discourse. In: Wagner P, Weiss C, Wittrock B, Wollman H (eds) Social sciences, modern states, national experiences and theoretical crossroads. Cambridge University Press, Cambridge, pp 262–289

Rose, D.C. 2014. Five ways to enhance the impact of climate science. Nature Climate Change **4**: 522–524

Rose, D.C. 2015. The case for policy relevant conservation science. *Conservation Biology* **29** (3): 748–754

Rose, D.C., Sutherland, W.J., Parker, C.G., Morris, C., Lobley, M., Winter, M., Ffoulkes, C., Twining, S., Amano, T., Dicks, L.V. 2016. Decision Support Tools in Agriculture: Towards Effective Design and Delivery, *Agricultural Systems,* DOI: 10.1016/j.agsy.2016.09.009

Sarkki, S., Niemelä. J., Tinch, R., van den Hove, S., Watt, A., Young, J. 2014. Balancing credibility, relevance and legitimacy: a critical assessment of trade-offs in science-policy interfaces.

Science in Public Policy **41** (2): 194–206

Sarkki, S., Tinch, R., Niemelä, J., Heink, U., Waylen, K., Timaeus, J., Young, J., Watt, A., Neßhöver, C., van den Hove, S. 2015. Adding 'iterativity' to the credibility, relevance, legitimacy: a novel scheme to highlight dynamic aspects of science-policy interfaces. *Environmental Science and Policy* **54**: 505–512

Tinch, R., Haslett, J., Bugter, R., Harrison, P. *et al.* A framework for effective biodiversity argumentation (in prep.)

Weiss, C., 1977. 'Research for policy's sake: The enlightenment function of social research', *Policy Analysis* **4**: 531-545

Young, J.C. *et al.* 2014. Improving the science-policy dialogue to meet the challenges of biodiversity conservation: having conversations rather than talking at one-another, *Biodiversity Conservation* **23**: 387-404