

Developing the National Ecosystem Assessment (NEA)

Report of a joint workshop between the British Ecological Society (BES) and the UK Biodiversity Research Advisory Group (UK BRAG):

University of Hertfordshire, Hatfield, 9 September 2009

Chair: Professor Ken Norris, Director, Centre for Agri-Environmental Research, University of Reading

Introduction

The National Ecosystem Assessment is the first analysis to look at the UK's natural environment in terms of the benefit it provides to both society and the economy. The NEA aims to provide a high-level picture of the current status of the natural environment, along with developing trends. It covers the UK's terrestrial, freshwater and marine ecosystems. Ecosystem Services is one of the British Ecological Society's four priority policy areas; the BES is a founder partner, together with the Centre for Ecology and Hydrology and the Society of Biology, in an innovative collaboration, the Natural Capital Initiative, which aims to ensure an effective ecosystem approach to policy-making. Together with UKBRAG, the BES ran a workshop in September 2008, focusing on an interdisciplinary approach to ecosystem services research. The report of this workshop is available on both the BES and UKBRAG websites.

On Wednesday 9th September 2009, the BES and UK BRAG ran a workshop at the BES Annual Meeting, focusing on the National Ecosystem Assessment. The session aimed to inform the ecological community about the NEA: what it was, how it would be run, and the opportunities for involvement. The NEA Secretariat, based at UNEP-WCMC, was integrally involved in planning the session and the outcome was a very successful event, attended by over 80 people. Presentations were delivered by a panel of invited speakers, followed by a discussion session and a networking lunch. Participants then split into three groups looking at; Future Directions for the NEA; Status and Trends; and Valuation. They were asked to consider a number of questions in 90 minutes.

All groups were asked to consider;

- How do participants wish to use the results of the National Ecosystem Assessment?
- How can data from the National Ecosystem Assessment be made most accessible for participants' use?

In addition the group looking at Future Direction were asked to consider;

- What gaps in policy/ research do you expect the National Ecosystem Assessment to reveal?
- How can the Natural Capital Initiative/ UKBRAG assist in closing these gaps?

Those looking at Status and Trends were asked;

- How does the National Ecosystem Assessment add value to existing long-term datasets and current work?
- Can participants suggest any case studies which the National Ecosystem Assessment can use?

- Are there issues which should be addressed by the ERFF¹ Environmental Observation Framework or UKBRAG?

The group discussing Valuation also considered;

- How can we promote ecologists, economists and sociologists working together?
- How can decision-makers be persuaded to give ecosystem services more than a monetary value?

A brief session reporting back from the groups closed the workshop. The full programme for the session is available as Appendix 1 to this report.

Presentations

The Chair of UK BRAG, Peter Costigan, welcomed everyone on behalf of UK BRAG and the BES. He summarised the purpose of the session – to both provide information on the National Ecosystem Assessment and to give participants the opportunity to feed into the NEA. UK BRAG and the BES strongly promote interdisciplinary work, and this will be key in the NEA.

1. Overview, Status and Trends

Professor Steve Albon, Co-Chair (with Prof. Robert Watson), National Ecosystem Assessment (NEA)

Prof. Albon started by providing the background to the NEA, which began with a House of Commons Environmental Audit Committee recommendation that, “**the Government should conduct a full MA-type assessment² for the UK to enable the identification and development of effective policy responses to ecosystem service degradation**”. Stakeholder engagement is through an Expert Panel of natural, social and economic scientists, with consultation of a “User Group” of members of Agencies and NGOs etc. all overseen by representatives from a “Client Group” (the funding bodies).

The NEA aims to provide a high-level picture of the current status of the natural environment and developing trends, covering the UK’s terrestrial, freshwater and marine ecosystems. The assessment will look back 60 years and forward 50 years, to 2060. The aim is for phase 1, *Current Status and Trends*, to report in the summer of 2010, with phase 2, *Future Scenarios and Policy Options*, to report in Spring 2011

The Assessment will provide a basis to tackle challenges to sustainable development; climate change, food, water and energy security and biodiversity loss. Maintaining ecosystem function and health is integral to meeting these challenges; we need to better understand our ecosystems if we are to respond successfully.

The NEA will examine seven broad habitats (following the habitat classification used by the Countryside Survey) and four ecosystem services, studying the interactions between them:

¹ Environment Research Funders Forum

² Millennium Ecosystem Assessment

Ecosystems:

1. Mountain/ Moorland/ Heaths
2. Semi-natural grassland
3. Enclosed farmland (arable and improved grassland)
4. Woodland
5. Rivers/ Lakes/ Wetlands/ Floodplains
6. Urban (includes avenues and green spaces)
7. Marine and coastal margins

Ecosystem Services:

Regulating: including climate; hazard; disease and pest control; water purification; pollination; detoxification; noise regulation; soil quality; air quality; water quality.

Provisioning services: bio-materials.

Supporting services: to include primary production; nutrient cycling; soil quality; water cycling.

Cultural services: to include spiritual; religious; aesthetic; inspirational; sense of peace; recreation; tourism; cultural heritage; education; community and development.

A biodiversity synthesis and UK, national and regional syntheses will be produced as an outcome of the NEA.

After discussing some of the primary questions that the NEA will seek to clarify, including identifying uncertainties, and knowledge/data gaps, Professor Albon raised several issues which needed to be addressed by the NEA, including:

- Case studies are scarce;
- The quantitative link between service provision and ecosystem structure and function is poorly understood;
- There is great difficulty in valuing things with no market value e.g. the 'existence value' of a species with no immediately obvious functional benefits.

He concluded by presenting the challenges in integrating science, policy, and the choices made every day by households and land managers.

2. Valuation

Dr Melanie Austen, Plymouth Marine Laboratory

Dr Austen began with the concept that biodiversity, ecosystem services & ecosystem functioning are all related. The question is how, and how to value these. Much has been done on the valuation question in a marine context, since Defra commissioned a major piece of research to value UK seas and coastlines, as part of the work leading to a UK Marine and Coastal Access Bill, scheduled to be given Royal Assent in winter 2009. This Bill is also likely to inform implementation of the EU Marine Strategy Framework Directive, and part of the Directive's requirement is a socio-economic analysis of the UK seas and the cost of degrading the marine environment; Dr Austen has been involved in this aspect of the work.

The socio-economic analysis of the UK seas attempted to value many aspects of the UK marine environment:

Service	Value
Fishing	c. £600 million
Gas and Climate Regulation	£420 million - £8.47 billion
Cognitive Values (cognitive development, inc. education and research)	£317 million
Disturbance Prevention (e.g. flooding)	£17 - £32 billion
Leisure and Recreation	£11.7 billion
'Feelgood'/ Warm glow/ Existence Value	£1 billion (marine mammals only)

'Cultural Values' were not dealt with and it is hoped that the NEA will fill this gap.

There are different types of valuation which can be applied - both monetary & non-monetary. Valuation methodology is still being developed, and although it is rarely possible to capture all values accurately it is possible to analyse trends.

It is important to remember that monetary values vary across the population, with coast-dwelling people for instance assigning different values to 'Disturbance Prevention', valuing the security of sea walls much more than the wider population.

Monetary values are very useful in order to get policy-makers' attention. However non-monetary values are very important politically; illustrating that the public actually cares about the environment is crucial.

3. Policy Options

Paul Morling, RSPB

Paul Morling introduced his presentation by discussing the drivers for the theory of ecosystem services, and how economists and scientists approach the concept from different viewpoints. Economic assessments are better developed for ecosystem services such as carbon and water than for biodiversity.

The NEA will help to illuminate the way in which policy-makers reach decisions that involve trade-offs. For example, if the restoration of a lowland heath means removal of pine trees, then biodiversity values will be positively affected, but the carbon values negatively so. The question is how to decide between these values in an informed manner, particularly with the current focus on cost-cutting and efficiency savings which preoccupy Government. Using the NEA may help 'nature' in this debate.

Paul Morling noted that decisions about ecosystem services should always be context specific, but that sometimes it is difficult for policy-makers to understand the concept when the benefits of a system would be felt miles away from the "provision" of the service. Planning is usually at a local level but ecosystem services cross boundaries, and the total system value will always be greater than the total economic value. He emphasised that wide collaboration is essential.

A number of major questions were raised by Paul in conclusion:

- What is our land for?
- The NEA is to strengthen the Government's Sustainable Development Principles, but where are the limits to this?
- How do we save the biodiversity that ecosystem services arguments cannot reach?

Break-Out Groups

Participants assigned themselves to one of three groups during the afternoon session. Each group was asked to consider a number of questions in the course of 90 minutes, including two questions generic across each group (see introduction). Rapporteurs then briefly presented the key points from each session, to the main group. These are summarised below.

Future Directions: Chair Prof. Rosie Hails.

The group considered that the issue of scale was extremely important, with ecological research often done at a scale that does not answer NEA type questions. Implementation of planning issues is mainly local, and again it is difficult to scale for this from national information. Site specific information is still needed, along with more inter-disciplinary research, so that data can be used constructively. It would be useful if scientists had more political input, and involving social scientists with an interest in public policy could help in delivering the necessary perspective and experience.

More case studies would be useful, and can be used to make general cases. However there can be a cultural problem if case studies are relied upon too heavily. While social scientists are generally comfortable with basing evidence on case studies, ecological scientists would usually prefer studies strong enough to provide sound statistical conclusions.

There are varying levels of knowledge of the ecosystems of the NEA habitat classes; some, such as semi-natural grassland are well understood, but for others, such as urban habitats, little is known about the ecosystem services they provide. There is also the issue of geographical and political boundaries, when any catchment -based analysis is likely to cross boundaries.

Accessibility was also discussed by the group, with a feeling that although maps based on poor data are unhelpful, maps can be very useful for public communication. Information that can be interrogated is needed to assess ecosystem services and trade-offs in different areas. However it must be made clear that the NEA is a broad brush approach, drawing in information from a variety of sectors.

There is a lack of knowledge at the moment on the inter-relationships between ecosystem services, and we do need to be able to say what the consequences of a policy will be. We will also need to understand the trade-offs at a large-scale.

The quality and availability of data which is underpinning the various conclusions of the NEA should be outlined. A 'traffic-light system' could be employed to communicate the strength of the evidence: this might guide future policy and help prioritise investment. It is crucial to communicate

what we do and do not know to policy-makers. Scientists must communicate uncertainty to policy-makers effectively.

Following on from this, with specific regard to the valuation of ecosystem services, the group suggested that it would be useful to present a minimum figure which is certain, explaining that many other factors have been overlooked and that the total value is likely to be much higher. It may be better to present a minimum certainty than a potential overestimation.

The group felt that communication is crucial, and the NEA will help with raising awareness, thereby raising values. The concept of ecosystem services has been communicated poorly to the public; the NEA could help to close gaps in public knowledge.

A point was also made that the group considered it would be helpful if the NEA Secretariat was kept in place for longer than is currently planned.

Status and Trends: Chair Prof. Steve Ormerod.

In terms of the NEA “adding value” the Chair pointed out that the timescale for the work allows little possibility for any new research. However the group felt that the NEA is an opportunity to put existing work into context: for example, with regard to carbon sequestration in peatlands it should be possible to look at how this fits into national carbon stores. Other benefits are those of bringing different communities together, for example ecologists and social scientists, and allowing the future consequences of change to be examined more easily.

There was discussion around existing long term data sets, which are very variable. The NEA is an opportunity to take a new look at these, putting them into context and examining how representative the data are. For example the extent to which information can be extrapolated from protected areas data is limited, but the data can still be used as a baseline reference. A gap in information is how measurements on status of a site can be related to ecosystem services, but value can be added in the future by moving from static measurements to looking at trends in ecosystem services. The NEA can usefully influence how data are collected in future, and how indicators are chosen.

The NEA will provide a framework promoting the sharing of data. It will provide an opportunity for researchers to showcase data which hasn't yet been published or, when published, researchers will be able to demonstrate where this work might have fitted in to the NEA. The NEA will also give a focus for interdisciplinary research, and represents an opportunity for ecology to contribute to other areas, such as economics.

The group could think of many examples of case studies that could be useful to the NEA, including that of Gisburn Forest in Yorkshire, looking at the long term effect of tree species mixtures on soil properties, the Environmental Change Network (ECN), the Rural Economy and Land Use (RELU) programme, the Pennines “Moors for the Future” programme, Professor Steve Redpath's research on system restoration with moorland game bird management conflict, etc. The latter in particular demonstrates the extent to which people have different and conflicting ideas of benefit and value in the same system. One of the problems though is finding case studies that are relevant to more than one ecological system. The limitations of scale and representativeness had already been

noted, and there were suggestions that EU studies should be reviewed to give generic principles for similar broad habitats to those in the UK. The best case studies are those that can be examined quantitatively, but there are few of these.

The results of the NEA could be used in education, and it was felt that it would be a good teaching tool, demonstrating the importance of ecology. Concept translation is also a major use of the NEA – at the moment few people have any idea of the meaning of “Ecosystem Services”. Other uses are influencing research agendas, information evaluation and horizon scanning. The NEA should aim to meet the full range of user needs, from education to policy. There are potentially a wide range of users, so it is important that the data is fully accessible.

Valuation: Chair Prof. Bridget Emmett.

This group was enthusiastic about the potential for the NEA to encourage joint working across disciplines, but noted that publishing multi-disciplinary papers can be difficult as most journals are very specific as to the type of paper they accept. They hoped that the NEA would promote more joint funding of research, and felt that it would be useful to look at other communities that work in multi-disciplinary activities to see how they operate.

The NEA is an opportunity to break down barriers in the way that different groups analyse their work: economists and ecologists use different statistical methods for example, but do at least both use quantitative data. Social and political scientists use different methods, and there is a need to find common ground in the way ecological evidence is collected, analysed and published. So the NEA could be useful in helping economists to formulate ecological questions, and in examining how data can be presented in different formats, and at different spatial scales. Questions need to be those that will answer policy-makers’ needs for evidence: we need to know what keeps policy-makers awake at night!

Establishing networks with non-biologists interested in environmental science and ecosystem services is an issue. How can such people be identified? The group suggested that contact be made with other professional bodies, such as the British Law Society, ERIC (Environmental Regulation and Information Centre), and with groups such as those in the RELU programme and that joint workshops and meetings be established.

This group also thought that the NEA had an important role in environmental education and communication and had suggestions that included making use of modern networking tools such as ‘Facebook’ and blogging. They also suggested that the Director of RELU, Philip Lowe, be invited to give a high profile public talk, such as the BES lecture, and that the BES be involved in creating a data base of contacts in multi-disciplinary areas.

The issue of how ecosystem services can be given more than a monetary value caused some lively debate, with issues such as energy, provision of livelihoods, and quality of life all being cited as already being used in valuing the environment. It was pointed out, for example, that a tranquillity map has already been created. The conclusion was that whatever systems are used, they have to be understandable by non-scientists, in particular officials in HM Treasury, need to have persuasive metrics, providing evidence of impact, and also have to have input from non-scientists. Some sort of expert system that can be interrogated and used by policy-makers to answer

questions and support decisions is needed, but it will also need to be adaptive and dynamic. Suggestions included a scorecard or a “traffic light” system.

A final emphasis was on the importance of public opinion, and again communication and ensuring networking and linking groups will be vital in this.

Summary

From the generic questions that all the groups considered, several conclusions emerged;

The NEA outputs need to be accessible and understandable by a variety of user groups. Information should be adaptable for a wide range of uses, such as education, and also providing data and knowledge for non scientific policy-makers, such as those in local government. Education will be a key outcome of the NEA, and the data should be publically accessible. Translating the concept of ecosystem services for a non scientific audience, and allowing anyone to generate ecological planning and management regimes in their own areas should also be one of the NEA aspirations. The information generated by the NEA should be useable at a variety of scales, and across borders. However the NEA should also be able to ensure that users are aware that ecosystem services interrelate and that consideration of all are needed in decision-making

As a UK-wide assessment, the NEA will provide opportunities to share best practice between the UK’s administrations and the results should be used by Governments to inform policy development. For example the NEA could complement Defra’s existing ‘Ecosystem Approach Action Plan’ and should encourage an ecosystem approach to policy-making throughout the UK Governments.

Maps were considered useful, particularly if linked with a postcode facility to check information for a local area. But participants noted that maps were only as useful as the information used to generate them, and could be regarded as prescriptive, when they were only the result of extrapolating data. Hence they are fraught with difficulties.

The results of the NEA should inform a research agenda, flagging up those areas where greater research is needed. The NEA could usefully generate case-studies and bring strands of information from different areas together to create generally applicable information. It should also be dynamic, allowing users to give feedback, and should be actively supported after it is published so that policy-makers can have help in interpreting and using its findings, and so that results can be fed actively into existing decision-taking processes. A first step should be simply identifying groups and mechanisms which the NEA ought to be informing. A prolonged secretariat could be very useful in all of this.

Acknowledgements

Our very grateful thanks go to all the speakers and break-out group chairs who made this session such a resounding success. Many thanks too to our rapporteurs and note-takers and our special thanks to Prof. Ken Norris, for his very able chairing of the session.

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Appendix 1

Programme: Developing the National Ecosystem Assessment

Time	Presentation	Speaker
11:00 – 11:05	Welcome	Dr. Peter Costigan (Chair UK BRAG) and Dr. Peter Carey (Chair BES PPC Committee)
11:05 – 11:25	Overview, Status and Trends	Prof .Steve Albon, Joint Chair NEA.
11:25 – 11:45	Valuation	Dr Melanie Austen, Plymouth Marine Laboratory
11:45 – 12:05	Policy Options	Paul Morling, RSPB.
12:05 – 12:35	Discussion	Chaired by Prof. Ken Norris

12:35 – 13:30

LUNCH

13:30 – 14:45	Workshops	
13:30 – 14:45	1. Future Directions	Chair: Prof. Rosie Hails Facilitator: Ceri Margerison
13:30 – 14:45	2. Status and Trends	Chair: Prof. Steve Ormerod Facilitator: Tina Yates
13:30 – 14:45	3. Valuing Ecosystem Services	Chair: Dr. Bridget Emmett Facilitator: Philip Bubb

14:45 – 15:00

Tea/Coffee

15:00-15:30	Report back on workshops	Chair: Prof. Ken Norris
15:00-15:30	1. Future Directions	Rapporteur: Dr Laura Bellingan,
15:00-15:30	2. Status and Trends	Rapporteur: Dr Helen Baker, JNCC
15:00-15:30	3. Valuing Ecosystem Services	Rapporteur: Dr Claire Brown,