

Global Biodiversity Sub-Committee (GBSC)

Meeting papers

GECC Sub-Committee Minutes

21 February 2006

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GECC SUB-COMMITTEE ON GLOBAL BIODIVERSITY ISSUES MINUTES: 21 FEBRUARY 2006

Attendees:

Simon Anderson, DfID
Pamela Kempton, NERC
Mary Gibby, RBGE
Marcus Yeo, JNCC
Richard Berridge, Defra
Zanete Anderson-Liley, Defra (on behalf of Andy Stott)
Quentin Wheeler, NHM
Rachel Garthwaite, Royal Society (on behalf of Geoff Boxshall)
Andrea Leedale, Defra (on behalf of Paul Leonard)
Richard Ferris, JNCC (Secretariat)
Elizabeth Moore, JNCC (Secretariat)
Miles Parker, Defra (Chair)
Glenys Parry, Defra
Nick Dulvy, CEFAS
Karen Dickinson, Defra
Madeleine Garlick, Defra
Eimear Nic Lughadha, RBGK

Guests:

Richard Betts, Hadley Centre
Carol Turley, Plymouth Marine Laboratory
Heather Blake, Defra

Agenda Item 1: Introductions and Apologies

Apologies were received from Shaun Earl, FCO (replacement FCO representative for Rob Bowman), Andy Stott, Defra, Paul Leonard, Defra, Geoff Boxshall, Royal Society, Ben Sykes, BBSRC (covering for Clare Rushowski), Gary Grubb, ESRC, Ian Bainbridge (SE).

Agenda Item 2: Outcomes from the Millennium Ecosystem Assessment (MA) workshop (GECC GBSC (06) 02) and (GECC GBSC (05)16)

The chair thanked members of JNCC staff for organising a very successful workshop earlier this month. Members discussed how their organisations will be taking forward the MA.

JNCC will be looking at the drivers of change and are keen to move into biodiversity evaluation and how biodiversity underpins ecosystem goods and services including links to poverty alleviation. DfID's Research Department are looking for opportunities to collaborate with the Research Councils, with a possible role for the GBSC and ERFF Research Coordination Working Group.

NERC mentioned that their current strategy ends in 2007 and they are beginning the process of identifying the next spending strategy. Georgina Mace is chairing the Biodiversity Strategy Panel and BRAG will have an input. NERC are not in direct contact with ESRC on this matter but they are both members of the ERFF Research Coordination Working Group.

ACTION 2/1: MP to write to Ian Diamond of ESRC to ensure better engagement with the GBSC and to seek involvement in the ESRC review.

Defra's Environment and Sustainable Development International Division have a small research budget and they are looking to develop priorities over the coming months and are keen to collaborate with others, for example DfID to engage other international players on ecosystem services, eg to build on work funded last year.

The NHM are consolidating biodiversity and CBD activities into one area to provide better focus. Their digital microscopes will be launched next month to allow real-time access and they hope to webcast this service. This technology provides a new way of thinking to fill taxonomic gaps.

RBGK have started collaborative projects, for example work with Imperial College on developing web-based taxonomic MONOgraphs. They can insert this spatial plant data into the Sampled Red List Index and Living Planet Project and are considering re-analysing the data which underpins the MA scenarios. RBGE are working with Kew and hope for more resources for digitising and georeferencing records. They launched their strategy earlier this month with Plantlife and this will raise the profile of this work and encourage a wider community of people to do the work.

CEFAS has a European policy focus and have developed indicators for the Common Fisheries Policy and has developed a threat indices to examine ecosystem structure and functioning. They are working with DfID on effects of climate change and increased human population on global fisheries. They are also working with NERC through the QUEST project looking at the effects of climate change on aquaculture.

ACTION 2/2: Secretariat to undertake a mapping exercise of the current activities related to ecosystem services and the MA within GBSC organisations to identify gaps and opportunities for future collaborative work.

ACTION 2/3: Secretariat to synthesise the two existing MA papers and produce final report plus result of mapping for the main GECC.

ACTION 2/4: GP to coordinate small meeting, to include DfID, NERC and JNCC to discuss respective research priorities. This will report back to the GBSC at the next meeting in May.

DfID referred to the Stern Review on the Economics of Climate Change. They are involved in the Africa study which looks at the costs of biodiversity loss in the context of global circulation models.

ACTION 2/5: MP and **SA** to discuss the Stern Review.

Richard Betts (Hadley Centre) was a lead author on one of the chapters in the MA. There is a research gap in the area of species responses to climate

change since the models in the MA tend to group species together and do not fully appreciate the role of species richness and diversity in climate change.

GP confirmed that since a number of the outputs from the MA workshop were not science-related her team and colleagues would be taking these forward outside of the GBSC.

Agenda Item 3: Climate Change

Dr Richard Betts, Manager of Ecosystems and Climate Impacts at the Hadley Centre for Climate Prediction and Research gave a presentation on climate change impacts on terrestrial ecosystems. Uncertainties in climate change were considered along with uncertainties in forest response and potential implications for biodiversity. Plant functional types were used since it is not possible to model biodiversity directly.

Amazon climate models showed a large scale reduction in forest cover and drying out between now and the end of the century. Different versions of the models show differing extents of drying. However, the general trend is for a loss of biomass. There is uncertainty in both climate change and the forests response. Additional factors which are not considered in models include forest fragmentation which may lead to a reduction in water cycling and exacerbate drying out of the area due to increased edge effect.

Land ecosystems tend to act as buffers and reduce the impacts of climate change, for example the removal of atmospheric carbon dioxide by vegetation. However, the CO₂ concentration is currently increasing at half the rate of emissions as 50% is currently buffered by oceans and vegetation, and the question is whether this pattern will continue. A recent discovery concerning differential stomatal closure could affect water flow rates, and flooding could be influenced by changes in CO₂ levels. However, information is needed on channel characteristics in order to establish the effects on specific river systems. There are also large scale uncertainties in the responses of boreal forests to climate change.

A research gap was identified to consider the comparative abilities of pristine forest to climate change compared with various agroforestry and cropping regimes. Furthermore, additional data is needed to refine the broad plant functional types used in the models.

Discussion identified various knowledge gaps including the inclusion of different land use systems and the carbon cycle feedback in the models; the inclusion of more data to increase the plant functional types which could be provided by RBGK's Joint UK Land Environmental Simulator; quantifying the effects of the loss of biodiversity in the Amazon; consideration of non-linear responses of ecosystems to climate change; research on ecosystem resilience and how this will help mitigate climate change effects.

There are degrees of uncertainty, with increases in temperature being better understood than other climate change impacts such as precipitation and CO₂. The GBSC needs to consider what research is available to contribute to the

debate. There are lots of uncertainties and research gaps. However it is difficult to tell which are the most important problems needing attention. It was suggested that GBSC organise an interdisciplinary group to brainstorm one specific area, such as the rainforest model to assess the types of problems that need to be addressed.

ACTION 3/1: Secretariat to coordinate a small working group to discuss a possible brainstorming event with the aim of improving understanding of the biodiversity – climate change linkages. Working group to include Hadley Centre, NERC and the Royal Society.

BRAG is coordinating a climate change workshop on 9 March and it was noted that it would be opportune for Richard Betts and RBGE to attend.

ACTION 3/2: Secretariat to send an invitation to the Climate Change workshop to Richard Betts and Chris Ellis (RBGE).

Agenda Item 4: Ocean Acidification

Dr Carol Turley, Head of Science (Biogeochemistry) at Plymouth Marine Laboratory gave a presentation on the relatively new issue of ocean acidification with particular focus on the research gaps. In contrast to the uncertainties of climate change there is great certainty in what will happen in the oceans, i.e. a decrease in pH and changes to carbonic pH. 50% of CO₂ is taken up by the oceans which effectively buffer terrestrial climate change impacts. Even small changes in pH have quite substantial implications for organisms such as reduced calcification rates, significant shifts in key nutrients and a shift in phytoplankton diversity.

In the past 50 years the ocean pH has remained constant but in the future the rate of change may be significant. The saturation of aragonite, a source of calcium carbonate, is predicted to decrease, especially in southern oceans and in deep water. There is a particular concern for calcareous organisms, whether they will survive and how they will adapt within the relatively short timescales of these predications.

Since this area of concern has only recently arisen, there is a desperate need for more research especially the links between ecosystem services and climate change and a major gap with regard to ocean modelling.

ACTION 4/1 ALL GBSC MEMBERS to consider research needs and how these fit into their current work and plans. This will be discussed at the next GBSC meeting on 16 May.

ACTION 4/2 Royal Society to circulate Ocean Acidification document to GBSC

Agenda Item 5: Minutes of the last meeting (GECC GBSC M(05)17)

These were taken as a true and accurate record of the meeting.

Agenda Item 6: Actions and matters arising (GECC GBSC MA(05)18)

Action points 7/1 and 7/2 were carried forward as their status is unknown. Item 7 from the previous discussion on taxonomy and biodiversity informatics was briefly revisited. The UK has significant expertise in taxonomy which benefits global conservation effort. If this is diminished then there will be a consequential impact on global conservation. Alistair Taylor has been working on a UK response to the Global Taxonomy Initiative.(GTI)

ACTION 6/1: Secretariat to obtain an update on the GTI and **GBSC** to review this issue at the next meeting in May to assess whether we are adequately supporting this area with relation to CSR07.

Agenda Item 7: Work Programme (GECC GBSC (05)08)

The draft work programme was circulated in June 2005 and no comments were received. Some progress is being made in some areas but not in others. It was agreed that performance indicators are required to measure progress.

ACTION 7/1: Secretariat to prepare a work programme for discussion at next meeting in May. This will indicate the progress made against each item and consider what actions need to be taken. GBSC to review work programme at the next meeting.

Agenda Item 8: Update and review of emerging scientific questions concerning global biodiversity

RF provided an update on the DIVERSITAS Core Programme

Biosustainability: see website http://www.diversitas-international.org/core_biosust.html

Following some discussion it was suggested the GBSC consider the issue of infectious diseases and the changing pattern with regard to climate change. A further suggestion was to broaden the debate to include invasive species and ecosystem impacts.

ACTION 8/1: Secretariat to organise agenda for the next meeting to include two speakers, one on invasive species and the other on infectious diseases.

Agenda Item 9: Diary/Meeting dates

The date of the next meeting will be Tuesday 16 May and it will be in London, either at the NHM or Defra.

ACTION 9/1: Secretariat to organise next meeting and inform GBSC members of the location and timings.

Agenda Item 10: AOB

The European Commissions' website has recently launched a news alert service to provide updates on science for environmental policy. To sign up and receive updates follow this link:

http://europa.eu.int/comm/environment/integration/newsalert/themes_en.html

The Tyndall centre has recently produced a report for the Environment Agency on the long-term picture on climate change. For details follow this link:

http://www.tyndall.ac.uk/research/theme1/project_overviews/t3_18.shtml