

Global Biodiversity Sub-Committee (GBSC)

Annual Report

**Report of the Global Biodiversity Sub-Committee (GBSC)
to the Annual Meeting of the UK Global Environmental Change
Committee (UK GECC)**

2009

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24 March 2010

Chairman's Report

Prepared by the GBSC Secretariat on behalf of the GBSC members
For the period January 2009 – February 2010

Elizabeth Moore and Helen Baker
(JNCC)

Summary and Recommendations to GECC

During the review year (2009/10), the GBSC considered the following subjects:

- Ground level ozone
- GECC Review
- Nanotechnology
- Earth Observations
- Sutherland paper¹ on conservation of global biodiversity
- Geo-engineering
- Notification of new and emerging issues to CBD Secretariat
- IPBES (Intergovernmental Platform on Biodiversity and Ecosystem Services)

GBSC would like to raise the following key points for consideration by GECC:

Ground-level ozone (GLO): GBSC recommends that GECC takes a lead in facilitating cross-departmental discussions on GLO, taking into consideration the implications of the 2009 Royal Society review. GLO background levels remain high despite mitigation, but impacts on ecosystems remain poorly understood. GLO is included as an emerging issue in papers to upcoming CBD SBSTTA14 (May 2010).

Earth Observations (EO): GBSC recommends that GECC considers undertaking a cross-departmental review of the mechanisms for developing and using earth observations technologies (e.g. Global Monitoring for Environment and Security), with special reference to end-user needs including practical knowledge transfer and local capacity building.

CBD emerging issues: GECC is invited to note that the issues highlighted in the GBSC submission to the CBD Secretariat on new and emerging issues - ground level ozone, ocean acidification and Arctic biodiversity - are included for consideration by CBD SBSTTA14 in May 2010.

GBSC future Terms of Reference: GECC is invited to note that the GBSC ToR will be reviewed during 2010/11, especially to reflect the outcomes of the recent GECC review.

GBSC reporting and website: GECC is invited to note that the Joint Nature Conservation Committee (JNCC) is temporarily hosting web-pages dedicated to the GBSC, which provide up-to-date papers and thematic reports.

¹ William Sutherland *et al.* "One Hundred Questions of Importance to the Conservation of Global Biological Diversity", *Conservation Biology*, Vol 23, Issue 3, Pages 557-567, 22 April 2009

Remit of the GBSC

The remit of the GBSC is to inform UK science strategy relating to global biodiversity and sustainable use. The focus of the sub-committee is on the science underlying the key global issues. The focus of discussions held on agenda items are on the implications for UK research strategy.

Meetings and attendance

The GBSC has now met on sixteen occasions, with three full meetings since the last report (March 2009, July 2009 and January 2010).

GBSC meetings are Chaired by Miles Parker (Defra), facilitated by the Secretariat of Elizabeth Moore and Helen Baker (JNCC). Attendance at meetings has been at about 60% of the total membership of the group over the reporting period.

Thematic reports and substantive issues

In the last 12 months the GBSC has addressed a number of broad topics in detail:

March 2009

- Ground level ozone
- GECC Review

July 2009

- Nanotechnology
- Earth Observations
- Sutherland paper² on global biodiversity

January 2010

- Geoengineering
- Notification of new and emerging issues to CBD Secretariat
- IPBES (Intergovernmental Platform on Biodiversity and Ecosystem Services)
- Review ToR and work programme

Key decisions from the thematic reports and substantive issues

1. Ground level ozone

Ground level ozone (O₃) was identified as an emerging issue and Professor David Fowler (CEH) gave a presentation on the impacts of O₃ on biodiversity and ecosystem services and functioning. Reference was made to the Royal Society report³ on this issue. The threshold for negative effects on people and plants is background O₃ levels greater than 40 ppb (parts per billion). Background ozone levels have been rising over time, with peaks of over 100 ppb during sunny summer days in areas with cars and industry emitting volatile organic compounds and photochemistry being driven by sunshine. These peaks are being controlled by reducing the emissions from cars and industry. However, the focus needs to shift to the reduction of background O₃ levels.

O₃ impairs photosynthesis, reduces biomass, reduces resistance to pests and stress and reduces rates of respiration. This doubles the effects of global warming as less carbon is

² William Sutherland *et al.* "One Hundred Questions of Importance to the Conservation of Global Biological Diversity", *Conservation Biology*, Vol 23, Issue 3, Pages 557-567, 22 April 2009

³ [http://royalsociety.org/Ground-level-ozone-in-the-21st-century-future-trends-impacts-and-policy-implications-
/](http://royalsociety.org/Ground-level-ozone-in-the-21st-century-future-trends-impacts-and-policy-implications/)

being fixed. Globally key biodiversity areas such as South East Asia, South Africa and South America are already at risk from increased O₃. Levels of O₃ depend on anthropogenic emissions. Most emissions are now coming from ships and aircraft which are not currently regulated. O₃ levels in North America and Europe may be capped if current legislation is enforced, however climate change is likely to impact O₃ and offset the benefits. Furthermore, this is a global problem and needs to be recognised and addressed at a global level.

The Royal Society and the GBSC both submitted notifications on O₃ as a new and emerging issue to the Convention for Biological Diversity Secretariat (CBD). This issue is on the list going to the CBD Subsidiary Body on Scientific, Technical and Technological Advice in May 2010 for consideration at the CBD CoP in October 2010.

2. GECC Review

Jo Thorpe, (DECC) presented the main findings from the review of the GECC undertaken by Assimila in 2008. A report of the GBSC discussion and their recommendations was submitted to DECC for consideration in their paper on recommendations to GECC in May 2009 (Annex 1).

3. Nanotechnology

Nanotechnology was identified as an emerging science issue and the GBSC Secretariat produced an information paper looking at whether research on the implications of nanotechnology is adequate for meeting the aspirations for global biodiversity conservation. Very little work is being undertaken at the global level. UK research tends to focus on human health issues and technological advancement with only a small proportion on biodiversity issues. The key question for GBSC is whether it has a role helping UK government understand the global impacts of nanotechnology.

GBSC agreed that this issue is still in its infancy and it is too early to tell whether there is a gap for GBSC to consider. However the group will keep this issue in mind and review whether to reconsider as a substantive item in the next 12-24 months, possibly inviting an expert from The Food and Environment Research Agency to consider the key global environmental issues.

4. Earth Observations

GBSC previously discussed the role of earth observations in biodiversity assessment and monitoring in April 2008. There was an action to take forward discussion on this issue with a number of key representatives including Lawrence Way (JNCC). Lawrence gave a presentation at the July 2009 GBSC meeting demonstrating the applied benefits of using earth observation land cover to show changes over time in land use at different scales. During discussion it was noted that there is a gap between the drivers of earth observation initiatives and the users of the data derived from the initiatives. The gap was defined as a skills gap for local community users, with further barriers to uptake including cost and support issues and a lack of awareness of the benefits within the biodiversity community.

There is little global coordination of all the earth observation initiatives from the biodiversity perspective. There are few organisations placed to get practical knowledge transfer or capacity building initiatives. There are many global issues to be considered regarding the benefits of earth observations technologies (and their implications) and GBSC agreed that the debate on this issue should be raised with main GECC.

5. Sutherland papers

GBSC discussed the paper by William Sutherland *et al.* “One Hundred Questions of Importance to the Conservation of Global Biological Diversity”, published in April 2009. This was work undertaken by an independent group of experts including representatives from some of the GBSC member’s organisations. Some of the issues highlighted as being of importance had already been considered as substantive items within GBSC, for example ocean acidification and invasive species.

GBSC agreed it would be useful to use the paper as a prompt to ensure we have not missed out any important issues when planning our work programme. The Secretariat agreed to collate views on the scope of the work programme from member organisations and also undertake a check of the GBSC work programme to take into account the Sutherland paper.

6. Geoengineering

Geoengineering was identified as an emerging science issue and Georgina Mace, Imperial College London, gave a presentation on geoengineering and implications for global biodiversity. Reference was made to the Royal report⁴. Motivation for the report came from concerns that projections for climate change scenarios are being exceeded and top level emissions scenarios are being tracked. This elevated geoengineering up the political agenda as a way tackle critical climate change scenarios.

Geoengineering was taken to mean deliberate large scale interventions. Two main options were considered:

- Carbon dioxide removal from the atmosphere (CDR)
- Solar radiation techniques (SRT)

Four criteria were considered in each of the options: effectiveness, timeliness, safety and affordability.

CDR techniques include ocean fertilisation, ambient air capture and biochar. Generally these were considered preferable to SRTs as they address the root cause of the problem but they only take effect slowly. SRTs all modify earth’s radiation balance but don’t remove CO₂. As the engineering is artificial and quite approximate the climate achieved will be approximate.

Governance and policy issues need to be considered for both options by a wider group since many techniques have impacts across a wide area. There is also a possible risk that by considering geoengineering the focus is removed from reducing CO₂. GBSC agreed that there is a need to get biodiversity considered as an integral part of climate models. Most climate models consider average figures for precipitation, sunlight etc. but biodiversity is usually affected by extreme events such as drought, flooding etc. A better understanding of the vulnerable attributes of species and ecosystems is required to link into climate models, taking into account the long term effects of elevated CO₂.

Better evidence on implications for biodiversity is needed to inform decisions at national and international levels, e.g. parliamentary enquiries, CBD CoPs etc. It was suggested that there may be option to hold a side event on geoengineering at SBSTTA⁵ in May 2010. A working group is being set up to consider recommendations for actions by GBSC.

⁴ <http://royalsociety.org/geoengineeringclimate/>

⁵ The Convention on Biological Diversity’s Subsidiary Body on Scientific, Technical and Technological Advice: <http://www.cbd.int/sbstta/>

7. Notification of new and emerging issues to CBD Secretariat

GBSC submitted a paper to the CBD Secretariat on new and emerging issues in 2008 which included ground level ozone, ocean acidification and Arctic biodiversity. These issues are included on the list of issues to be considered at the CBD SBSTTA14 in May 2010. GBSC will provide further advice as necessary on all the proposals on the list to help form the UK position to take to SBSTTA.

8. IPBES

GBSC has had regular updates on the development of an International Platform for Biodiversity and Ecosystem Services (IPBES) which is a mechanism for strengthening the science-policy interface on biodiversity and ecosystem services. It was noted that the functions of the platform could have strong links to the remit of the GBSC and the discussion about the GBSC ToR and work programme should take account of this.

GBSC agreed that the way IPBES will succeed is through one voice for biodiversity and ecosystem services in the same way that the Intergovernmental Panel on Climate Change has been successful by including everyone and not being divisive. It was agreed that there needs to be some process in place to decide which biodiversity issues to address and this needs to be UN-driven to give it credibility. However, priority needs should be identified now so that they can be progressed as soon as the platform is in place.

9. Review of the GBSC ToR and work programme

The GBSC last undertook a review of its terms of reference and work programme in 2007. A sub-group is being established to revisit the ToR and work programme, taking into consideration the Sutherland paper on global conservation priorities, development of IPBES and the decision from GECC on their future role and modus operandi. The sub-group will report to the July 2010 GBSC meeting.

Communication

In August 2009 the GBSC Secretariat set up a website for the group which includes past minutes and key papers from GBSC meetings, thematic and annual reports, Terms of Reference and a Membership list. Details can be found at <http://www.jncc.gov.uk/page-4962>

Future discussion items

The working group reviewing the GBSC ToR and work programme will consider issues that have been previously identified as potential future discussion items. These include:

- Carbon markets and biodiversity
- Nanotechnology (to be reconsidered sometime between July 2010-July 2011)
- Synthetic biology

Annex 1

Global Environmental Change Committee (GECC) Review (2009): consultation response from the Global Biodiversity Sub-committee to the DECC report⁶

The Global Biodiversity Sub-committee (GBSC) considered three questions at its meeting on 3 March 2009:

1 Was the review comprehensive? What was missing?

GBSC views:

Overall, the review was considered to meet needs well, presenting clear options for the future of GECC and its sub-committees. However, a few weaknesses were highlighted:

- The review could have more comprehensively explored communication flow between subgroups, highlighting whether this has limited the success of GECC and how it could be improved under the various options.
- It would have been useful to have explored more fully the remits and success/influence of the proposed destination bodies in the distributed groups option and their match to the existing subgroups.
- GBSC recognises the added value of considering the policy relevance of its work and is working hard to improve this; this is not true of other related bodies. Potentially we could be losing the policy relevance and connections under some of the proposed options; this could have been explored further in the report.

2 What is the favoured option for the future of GECC and GBSC?

GBSC views:

- Hard to judge how efficient main GECC is and whether there is a need for it. There is little evidence of any direct influence and reporting routes may not have been sufficiently well developed in past to meet the needs of main GECC and its subgroups.
- Creation of DECC important in solving effective reporting routes; GBSC is more aligned to Defra remit, but main GECC and other subgroups more aligned to DECC.
- Members agreed that there was still a need for an overarching group looking at global climate change issues, which should address both mitigation and adaptation issues and the role of biodiversity.
- The policy-science role for GECC and its subgroups needs recognition and work programmes rebalanced to reflect the importance of this role.
- The value of GBSC work on foresights and horizon scanning was recognised as one of the more important work areas.
- There was concern about the breadth of the remit if the GBSC was to be grouped with UK BRAG. UK BRAG has a clearer niche, governance and remit. Its focus is more on research whereas GBSC's remit is not as clearly defined but it does focus more on policy and horizon scanning issues.

⁶ DECC (February 2009. V0.99) *Review of GECC*

- The group discussed whether ERFF could be the group to deliver GBSC functions. It has an international function, although this is not well developed, and a mixture of subgroups, some quite narrow in their focus e.g. ERFF Observation and others quite broad, e.g. research co-ordination. GECC has a wider membership which goes beyond Government and its agencies in a more consultative manner; this is an important and valued difference. It was agreed that GBSC should improve its communication with ERFF subgroups and LWEC.
- GBSC members find the GBSC a useful group which does add value and has good outputs back to its own member's organisations. GBSC has thrown up wider issues and played on wider stages, e.g. Royal Society climate change and biodiversity workshop.
- There are 4-5 Whitehall departments that the GBSC should be looking to influence. The question is how to reach them all? GBSC could provide an annual summary report targeted towards each of the departments, however this needs ownership from CSA.

3 How should GBSC respond?

GBSC recommendations to DECC on the 2009 GECC review:

- GECC should be retained and enhanced, with an improved science-policy remit, clear reporting routes in both directions and better coordination between its subgroups. Reporting routes to SoS level is not the preferred option, but should be retained at the CSA level.
- GBSC should be retained as a subgroup to an enhanced GECC, with revised remit that is fully complementary to that of an enhanced GECC and with the same level of Secretariat support as currently provided. The Secretariat should be provided by an organisation that understands the aims of the group.
- If main GECC is dissolved and its functions distributed, then GBSC wishes to continue its activities as an independent body and will enhance its remit and membership to facilitate coordination across all relevant government departments.

GBSC Secretariat
11 March 2009