

Outcome and Policy Brief

The FP7 project EBONE (European Biodiversity Observation Network) has set major steps in harmonisation of biodiversity observation in Europe. It has had its focus on habitat information and linking field observations with Remote Sensing. Its results are being applied already in on-going projects and as national approaches in Switzerland and Israel. Four major products are:

- The European Habitat Classification developed as General Habitat Categories for cost effective in situ habitat monitoring (e.g. for Natura2000 reporting, Aichi targets) and linking existing approaches in Europe;
- The Global Environmental Stratification that provides a consistent stratification of the terrestrial parts of the globe in about 125 strata, allowing cost efficient global biodiversity observation;
- A habitat database that allows sharing of European habitat and species data from new field observation, from existing surveys (such as the Swedish NILS survey and the British Countryside survey) for better and cost-effective European reporting;
- Remote sensing approaches such as LiDAR can be used for local habitat mapping and phenology based indicators have been developed and tested.

The **General Habitat Categories (GHCs)** have been developed and tested in EBONE for **Europe, and for non-European Mediterranean and desert environments**, and have been successfully applied in field inventories and for linking Remote Sensing information with in situ data. For efficient field data collection an Access database has been developed for tablet PCs. The EBONE approach is now being tested for in situ monitoring at the national level in Switzerland and applied in Israel, in adaptation to the needs within these countries. Other FP7 projects are using the approach to collect basic field data (see the BioBio project, www.biobio-indicator.org, and BIO SOS, www.biosos.wur.nl).

The partners in Israel and South Africa have extended the project to Mediterranean and desert regions. Western Australia was also included by a related project that made use of the General Habitat Categories. A step towards global harmonisation has been made by the extension of the GHC classification to all biomes of the world. This makes it possible to link in situ habitat data and Land Cover data globally, because the FAO Land Cover Classification System (LCCS) follows a comparable approach.

Some conclusions are:

- EBONE mapping is three times faster than traditional vegetation mapping methods used before; this allows researchers and agencies to reduce costs considerably
- We are able to correlate GHCs well with species composition, but we are not able yet to get a satisfying link with species richness.
- By using GHCs we are able to get a good correlation

between several Remote Sensing (RS) categories and in situ habitat data.

In EBONE the **European Environmental Stratification** has been used to design a sample approach for Europe. This stratification that has been developed in 2005 in BioHab, the EBONE predecessor, is being applied in several European projects. EBONE explored how a sampling strategy can be developed for Europe in a rolling sampling system with a coverage comparable to NILS in Sweden and the British Countryside Survey and its potential implementation costs.

Within EBONE a Global Environmental Stratification has been developed as one of the GEO deliverables and it is already applied in Digital Observatory for Protected Areas (DOPA, JRC) and in the Himalayas for setting up an environmental monitoring system in the border region of India, Nepal and China. The scientific publication is expected in 2012.

The **Data model** has been produced using European standards according to the INSPIRE Directive and is based on a user requirement survey (164 replies). The result has also been included in the work of the INSPIRE TDWG Species Distribution, Habitats and Biogeographic Regions. The data portal also was set up according to INSPIRE rules and has been successfully implemented. An EBONE map viewer has been developed based on the JRC forest map viewer.

Results are being produced in the application of **Remote Sensing for biodiversity observations**. Most of these results are being reported in the first months of 2012. RS studies have been done by many partners and LiDAR has been tested in the Netherlands, Estonia, Slovakia and Israel. Reports on the use of LiDAR for biodiversity mapping and monitoring, the use of phenology indices and the use of pattern related indicators are already available through the EBONE website.

EBONE has been instrumental for the **Convention on Biological Diversity** by organising the GEO BON workshop on the Assessment of Observation Capabilities for the Aichi targets. This report has been submitted to the Ad Hoc Technical Expert Group (AHTEG) and has been positively received by the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) of the CBD. This workshop also initiated the process of discussing Essential Biodiversity Variables (EBVs) to be developed in a comparable process as the Essential Climate Variables (ECVs).

EBONE has invested a lot in **outreach**; we have presented EBONE in its lifecycle at over 100 meetings, both policy related and scientific meetings. We have published 32 papers until now, of which 15 are in peer-reviewed journals, with a special issue still to come. EBONE has produced a newsletter every six months. These are available on the website www.ebone.wur.nl. All deliverables and publications are available through the EBONE website. A number of these deliverables have also been published as Alterra Reports and these can also be found at www.ebone.wur.nl/UK/Publications.

EBONE is a partnership of 18 universities and research institutes in Europe, Israel and South Africa working on the challenge of methodological coordination and institutional cooperation. The project is a pilot for global biodiversity monitoring and in this way will deliver a European contribution to the development of a global biodiversity observation system that is spatially and topically prioritised as foreseen by the Group on Earth Observations (GEO) (www.earthobservations.org/geobon.shtml).

EBONE project information: EBONE is an FP7 funded project (2008) under number 21223

Coordinator: Dr R.H.G. Jongman,
(Alterra Wageningen UR), rob.jongman@wur.nl

Website: www.ebone.wur.nl

Partners in EBONE:

1. Alterra Wageningen UR, the Netherlands, www.alterra.wur.nl
2. NERC-CEH, UK, www.ceh.ac.uk
3. Helmholtz Centre for Environmental Research, UFZ, Germany, www.ufz.de
4. EC-JRC, Italy, <http://ec.europa.eu/dgs/jrc/index.cfm>
5. Umweltbundesamt, Austria, www.umweltbundesamt.at
6. University of Bucharest, Romania, www.unibuc.ro
7. CEMAGREF/IRSTEA, France, www.irstea.fr/institut/nos-centres/aix-en-provence
8. Instituut voor Natuur en Bosonderzoek, INBO, Belgium, www.inbo.be
9. University of Edinburgh, UK, www.ed.ac.uk/schools-departments/geosciences
10. Israel Nature and Parks Authority (INPA) Israel, www.parks.org.il
11. NINA Norway, www.nina.no
12. ILE-SAS, Slovakia, www.uke.sav.sk
13. Aristotle University of Thessaloniki, Greece, www.auth.gr
14. Estonian University of Life Sciences (EMU), Estonia, www.emu.ee
15. Universidad Politecnica Madrid, Spain, www.upm.es/institucional
16. Sveriges länbrukuniversitet, Umea (SLU) Sweden, www.slu.se
17. Universität Vienna, Austria, www.univie.ac.at
18. Council for Scientific and Industrial Research (CSIR), South Africa, www.csir.co.za