EBONE June 2010 newsletter

EBONE EUROPEAN BIODIVERSITY OBSERVATION NETWORK

2010: a crucial year for EBONE

In the last newsletter I wrote that EBONE was getting into a crucial phase. We are now in 2010 and we have delivered several crucial products varying from the indicator report to the field handbook, the Annex I field key and the data specification protocol. This year we are collecting field data to be combined in the end of the year in the analysis together with extant data. The first report on the use of LiDAR has also been produced and in September we expect to have a good overview on our results in the use of RS data. All deliverables are downloadable from http://www.ebone.wur.nl

In building a European Biodiversity Observation Network it is important to involve stakeholders. In October the Convention of Parties of the CBD will be held in Nagoya, Japan, and EBONE has already contributed to the GEO BON resolution to prepare an evaluation of existing observation capabilities relevant to the targets contained in the Strategic Plan 2011-2020.

EBONE partners also contributed strongly to the GEO BON implementation plan, that brings together global activities in Biodiversity Monitoring and that has been launched on World Biodiversity Day (22 May). The Implementation Plan and its technical summary is downloadable from the GEO BON website. The press release and the links are: http://www.alterra.wur.nl/UK/newsagenda/ and http://www.earthobservations.org/geobon.shtml. The work of GEO BON, including EBONE will be presented at the Ministerial Summit of GEO in Beijing, on 4-5 November.

We did not only work at the global level, but are also involved in activities at the European level. Together with the network of European Nature Conservation Agencies (ENCA) a workshop has been organised on the use of Remote Sensing techniques in Biodiversity Observations. The conclusion was that much is ongoing, but that for the further development of its application close cooperation between the agencies and research is needed. A report of the meeting and the presentations are available through the ENCA website, http://www.enca.net. Further cooperation is foreseen.

As you can read in this newsletter as well as on the websites I have mentioned, EBONE is in full swing. It is playing its role in biodiversity monitoring research and tries to give it a good outreach through European and global channels. Enjoy further reading.

Contents

GEO

SEVENTH FRAMEWORK PROGRAMME

Updates from the Work Packages

WP4

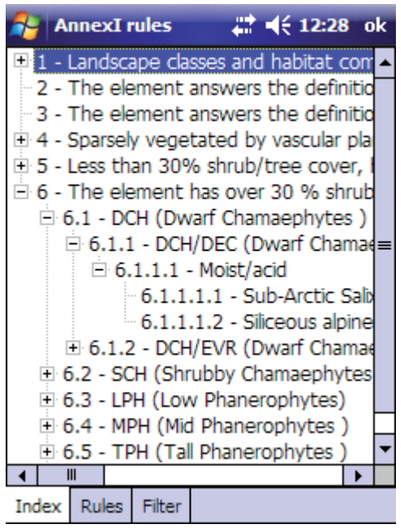
Field training courses for Habitat Mapping

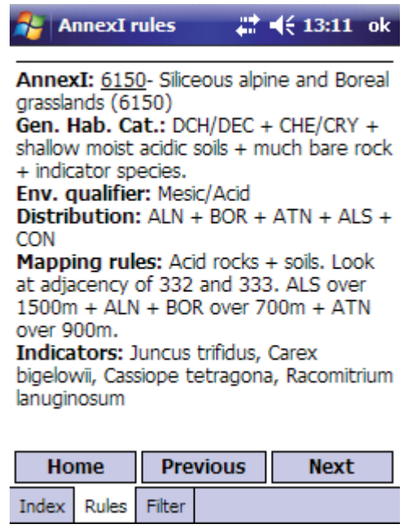
By Marion Bogers, Ilse Geijzendorffer and Bob Bunce

In March and May 2010 two Field trainings for Habitat Mapping were organised, one in El Tiemblo, Spain with participants from Slovakia, Belgium, Estonia and Portugal and another in Sinaia, Romania, with partners from Greece, Norway, Israel, Austria and of course Romania. The aim of the training was to prepare participants for the upcoming fieldwork, to get a grip on the General Habitat Category (GHC) methodology and ensuring an equal interpretation of the rules. This was achieved by limiting the theoretic part of the training to a minimum and leaving ample time to practicing and asking questions in the field by visiting different locations. The participants were encouraged to map the area in teams of two, comparable to the situation in the upcoming field survey, with a backup team of experts to help verify their findings. At the end of the training sessions, some methodologies and categories were discussed and if necessary adapted to be better suit participant's case study common or specific elements.
Habitat mapping of areal and linear features using the GHC methodology is based on classification of the habitats and assigning relevant qualifiers for site and management conditions. Additionally, it is recorded whether the element can be considered an Annex I habitat. The survey is conducted using a good quality aerial photograph on which the identified areal and linear features are drawn. An areal feature is at least 400 m2, whereas a linear feature is at least 30 m long and not wider than 5 m. Smaller features are only mapped if they are ecologically significant, like for example ponds. The recording method requires good quality aerial photograph on which the identified areal and linear features are drawn. A field computer of PDA is used to do the recording (see contribution in this newsletter). Additionally, a code sheet has been developed with all codes listed in a logical order to aid the surveyor. The different habitats are identified so that sample sites for the indicator species can be selected to represent the present habitats. For linear features a simplified method was developed using a predefined list of ten different kinds of linear features.
The GHC methodology is described in detail in the Field Handbook containing all the rules, but also many practical examples. The Field Handbook can be downloaded from the website www.ebone.wur.nl

AnnexIRules – a decision support application for Windows Mobile

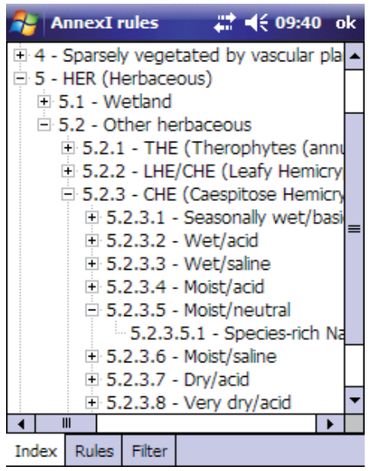
By Stephan Hennekens

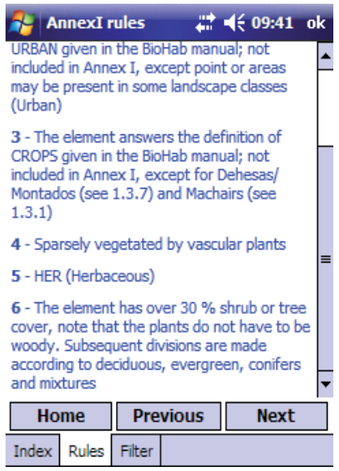


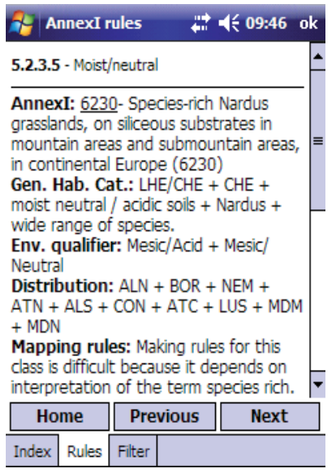


AnnexIrules is a Pocket PC tool based on the document 'D 4.2: Rule based system for Annex I habitats' written by Bob Bunce, Marion Bogers and Doug Evans. The application can help the user (field worker) in three different ways to find out if, and which Annex I habitat type is applicable for a certain landscape unit (General Habitat Class).

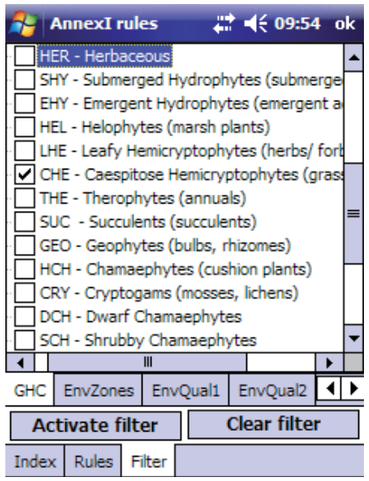
The rule based system for Annex I habitat types is organized in a hierarchical system. The structure is presented on the first tab ('Index') of the mean application window. By clicking the '+' and '-' icons the tree can be opened or closed. At the deepest level you will find the Annex I habitat types.
The second tab ('Rules') allows a stepwise selection. The choices are hyperlinked. By using the buttons 'Home', 'Previous', and 'Next' you can navigate to respectively the first, the previous and next (web) page.

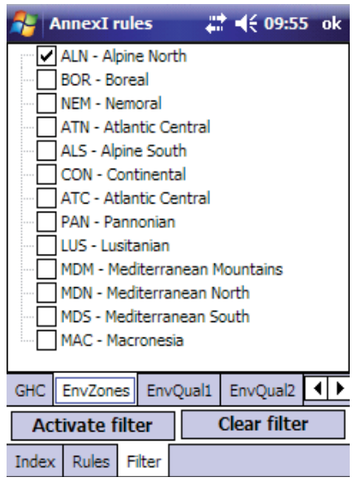


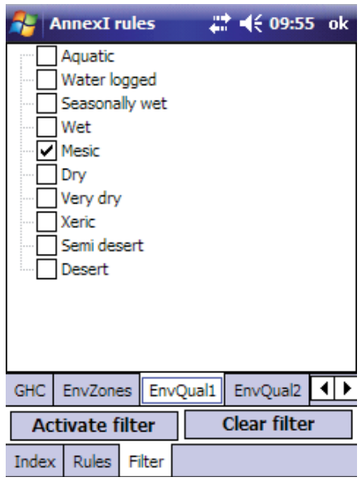




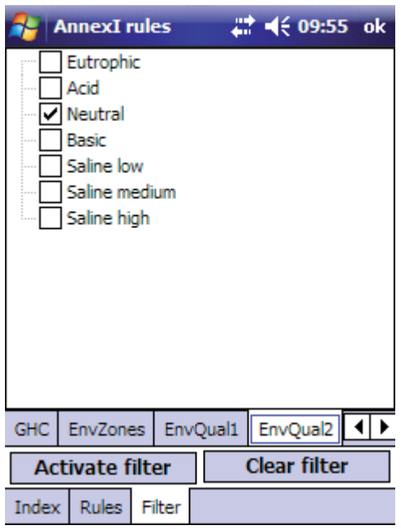
The third tab ('Filter') enables to find the right Annex I habitat type by defining a number of criteria. Within a group (e.g. GHC) items are connected with the or operant, between groups the and operant will be applied.

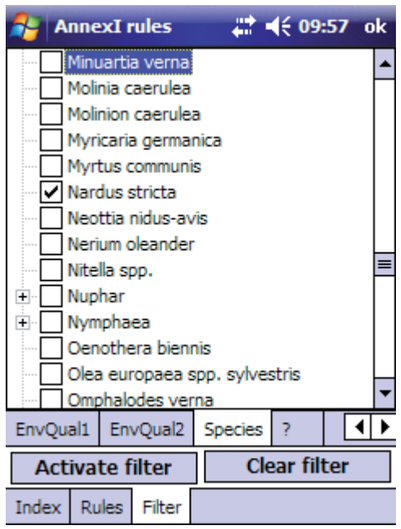


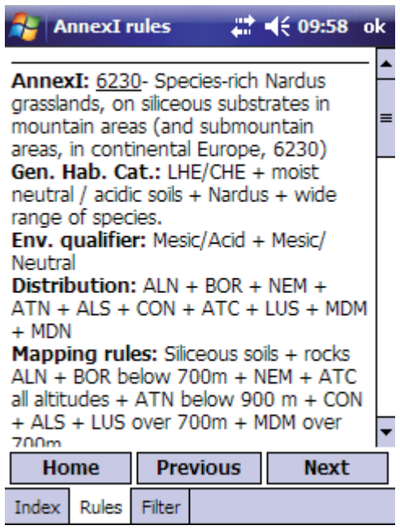




A criterion could then look like this: (GHC1 or GHC2) and (EnvZone1 or EnvZone2) and (Species1 or Species2). By clicking the 'Activate filter' button details of a number of Annex I types will be presented that meet the criteria.







For installing the application on to a field computer two setup files are required:

1. Microsoft Compact Framework 2 (or higher): http://www.synbiosys.alterra.nl/ebone/netcfv2_setup.exe
2. AnnexIRules: http://www.synbiosys.alterra.nl/ebone/annexIrules_setup.exe

WP5

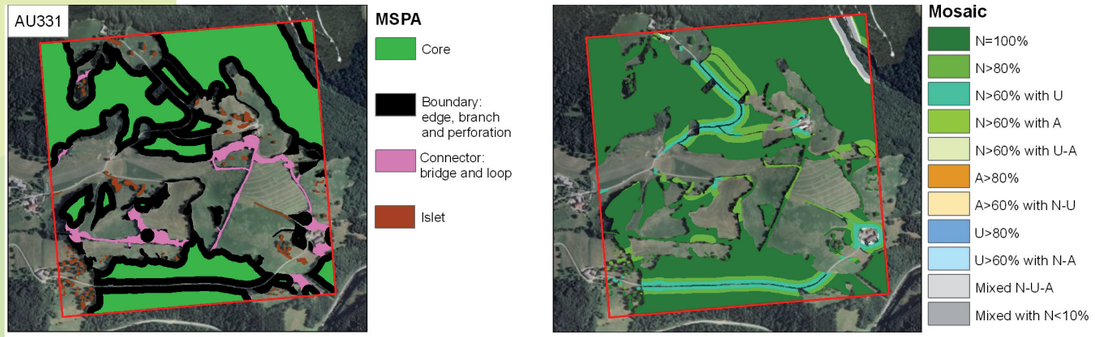
Habitat fragmentation: an insight into pattern and connectivity

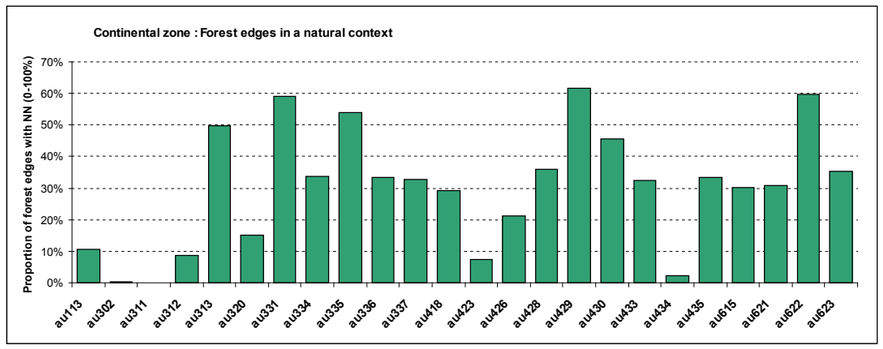
By Christine Estreguil

European-wide habitat level maps are a requisite to properly characterize habitat spatial pattern, fragmentation and connectivity. The EBONE 1 km2 in-situ samples distributed in different European countries, offer although on small extent, harmonized General Habitat Categories (GHC) maps at fine scale (MMU 400 m2). Standardized methodologies easily repeatable across scales for mapping and assessing pattern and connectivity, have been demonstrated for the focal habitat forest phanerophytes (GHC /FPH code for trees above 5m height). Derived products like maps and tabular data per environmental zone are now available and ready to integrate in the EBONE database (WP7):

- The focal habitat is detailed into 4 pattern classes using the mathematical morphology spatial pattern analysis (MSPA) GUIDOS freeware with a 25 m edge width (MSPA pattern map shown in figure –left map- for the Austrian Au331 sample).
- The context of the focal habitat is mapped locally using a landscape mosaic index that calculates the natural (N), cultivated (A) or urban (U) habitat dominant contexts in a 25 m radius disk around each focal habitat pixel (Context pattern map in figure –right map- for the Austrian Au331 sample)
- The connectivity is assessed with two indices (one from freeware http://www.conefor.org) for forest species with specific dispersal abilities.

Differences among the in-situ samples per environmental zone can now be shown on among others, the proportion of edges in a natural context (chart below for the Continental zone). Forests fragmented by natural habitats (like herbaceous), therefore with a high proportion of forest edges in a natural context, are intuitively less vulnerable to further fragmentation than forests fragmented by anthropogenic sources (cultivated and urban habitats).





Joint Research Centre (JRC)

The lack of comprehensive information about the world's biological resources continues to undermine the efforts of policymakers and managers to set priorities, elaborate strategies and assess the effectiveness of their actions. Fortunately, new EO technologies are improving the collection and analysis of biodiversity information. This study is part of WP5 aiming at independent EO approaches for determining GHCs. For the Netherlands there is a good reason to focus on the use of LIDAR data since the Netherlands was covered for the first time in 2003 from wall to wall, with 1 height measurement per square meter, namely for the construction of a detailed and accurate national elevation model. LiDAR is an active remote sensing technique that measures the properties of emitted scattered light to determine the 3D coordinates (x, y, z) and other properties of a distant target. Thus, LiDAR, in contrast to optical remote sensing techniques, can be expected to bridge the gap in structural information at the landscape scale. However, for the construction of the Dutch elevation model the influence of the vegetation was removed. In that sense vegetation was considered as noise and the potentials for vegetation research in the Netherlands, still had to be discovered. LiDAR data needs to be explored for its possibilities to use these redundant vegetation reflections as a new source of geospatial data that can provide fine-grained information about the 3-D physical structure of terrestrial and aquatic ecosystems. However, due to the fact that LiDAR airborne campaigns are implemented in the Netherlands very early in spring, when most leaves are not yet present, it was not sure yet if this LiDAR data could be used to determine plant life forms and associated GHCs. Therefore a case study was implemented for the area of Chaam, in the Southern part of the Netherlands.
This study showed that LiDAR provides, even in early spring, accurate height measurements on shrubs and trees. Regression analysis between field measurements and LiDAR measurements of the height of various plant life forms showed an adjusted R square of 0.95. Unfortunately, not the whole range of plant life forms could be measured with LiDAR. Since the latest generation of LiDAR measurements have an accuracy of approximately 2 to 3 centimetres, it is assumed that cryptogams and dwarf chamaephytes (below 5 cm) are difficult to measure with LiDAR. Combination of LiDAR with false-colour aerial photographs, both available for the whole of the Netherlands, provides a power tool with e.g. Fusion software and decision tree classifiers for the identification of plant life forms. Major challenge is now to identify the proper mapping units for the identification of the general habitat categories. Comparison with a full field survey of the general habitat categories would be wishful. This would make the assessment of LiDAR data in combination with aerial photographs complete. The Centre of Geo-Information will also obtain a ground LiDAR sensor later this year which makes the assessment of airborne LiDAR even more complete.

WP7

From field data to knowledge about trends of biodiversity in Europe

By Barbara Magagna

Management of biodiversity data within WP7 uses existing tools by combining them to a fully adapted data management system for EBONE needs with the purpose to serve as a model at European level, integrated into a European Biodiversity Data Centre (EBDAC).
Three types of data sources have to be serviced in this context: data mapped according to the EBONE mapping procedure (GHC/species) on new sites which are fully compliant to the EBONE data structure, data from existing monitoring schemas which are harmonized and transformed according to the EBONE transformation rules for GHC/species and earth observation data like land cover classifications. Furthermore the system has to address data on different levels which are: raw field data within defined landscape squares (including species information on plots within these squares) with their exact location and shape, aggregated data on the level of the landscape square without any detailed spatial information like sum of areas of habitat categories and aggregated data such as biodiversity indicators calculated on the level of the reporting unit (e.g. Environmental Strata and Zones).
For the entry of raw data from the field data work a handheld application and a field data base (FDB) were developed. A data warehouse serves as data storage for distributed data sources. Data is coming directly from the FDB or from other monitoring programs after being transformed according to rules defined by WP4. On the basis of this harmonization the calculation of biodiversity indicator values or other scientific analysis are enabled.
For the presentation of the biodiversity data the EFDAC portal with its web GIS viewing possibilities will be used. For this purpose EFS/WMS service are being established

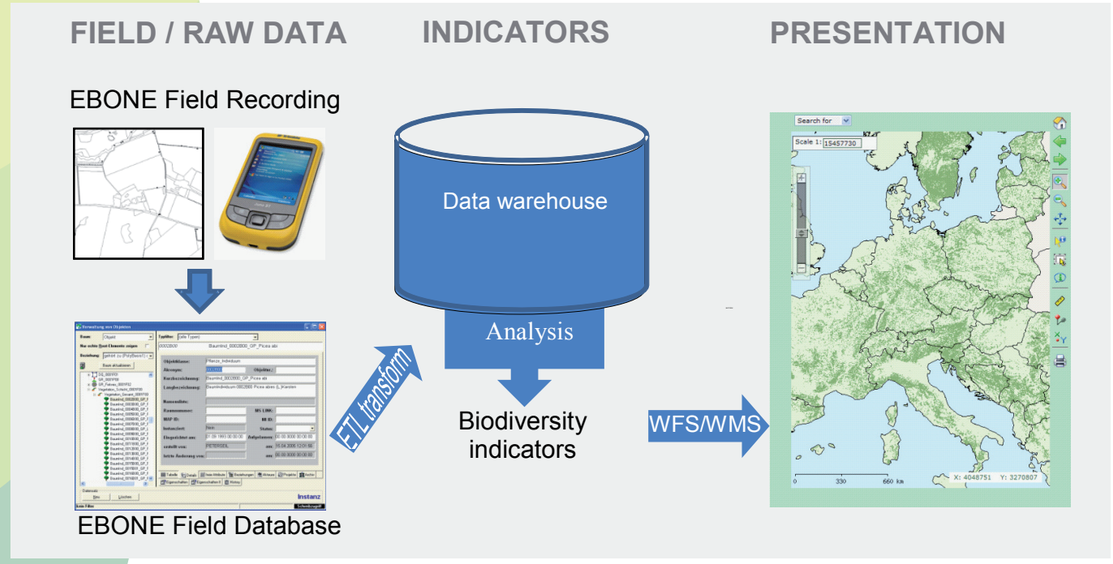


Fig.1 Data flows within the EBONE data management system

Presentation of the partners

Alterra

Alterra is one of the research institutes within Wageningen University and Research Centre that focuses on life sciences and environment. Alterra is the major Dutch centre of expertise on rural areas, soil research and biodiversity and it also has an important contribution to water and land use related climate research. Wageningen University is a rather small but focused international university with students of over 120 nationalities. Alterra is employing 600 staff members and it combines all expertise on rural areas and its sustainable use. Its five research centers (Ecosystem Studies, Geo-information, Landscape Research, Soil Science and Water and Climate) cover a wide range of expertise on environmental issues in which we can distinct a clear focus on four main topics: rural development, biodiversity and ecosystem services, climate change and adaptation, and risk management. There is strong cooperation with the 20 university chairs in Environmental Research of Wageningen University.
Alterra engages in strategic and applied research to support policymaking and management at the local, national and international level. This includes innovative and interdisciplinary research on complex problems related to rural areas, but also the production of readily applicable knowledge and expertise enabling rapid and adequate solutions for practical problems. To conduct our work in a optimal manner we have various research facilities at our disposal such as biological laboratories, databases such as on vegetation and national and international soils. Alterra focuses primarily on applied research, making use of scientific expertise, impressive scientific and geographic databases and an international knowledge network. These applied research activities both feed into and draw from practical experience in the field.
Applied research is not simply a question of delivering know-how. Drawing up plans and realizing and managing projects demands a constant exchange of knowledge and ideas with stakeholders in the field. National to local authorities, residents and land users are the ones with first-hand knowledge of their own region because they live and work there, and they are the ones who will live there in the future and ensure its sustainable management. This implies that considerable attention must be devoted to the social processes surrounding design and management.
EBONE is an important project for Alterra, but this is not the only project in the field. We have had a long tradition and many projects are related to the field of biodiversity conservation, monitoring and EO observation studies, such as SynBiosys, BIOHAB (EU FP5), PEENHAB (EEA), BioPress (EU-FP5), Alternet (NoE-FP6), BioBio (FP7) and The Belgium-Dutch Habistat project. In the future we will continue to expand this field of expertise.

CEMAGREF

Cemagref is a public research institute that aims is to produce new knowledge and technical innovations for use by managers, decision-makers and questions raised by society concerning resource management, land use and development. Work focuses on surface-water resources, land and aquatic ecosystems, predominantly rural areas, water technologies, agrosystems and food safety.
Cemagref employs some 1600 full-time workers, of which one half are researchers and engineers, divided into 12 research themes and 25 research units on nine main sites. Over 200 PhD students, 40 graduate students and foreign researchers are also present, the engineering sciences, the natural and life sciences, earth sciences, the humanities and social sciences.
EMAX (Ecosystèmes Méditerranéens et Risques) located in Aix-en-Provence is the research unit involved in the project EBONE. This research unit belongs to the research theme SEDYVIN on terrestrial ecosystems, ecological engineering and vulnerability (this research theme coordinates the research of 3 units located in the Mediterranean area, the Alps and the central plains of France).
The research unit EMAX is specialized on Mediterranean type ecosystems, particularly forests and their main disturbance, Fire. The current projects are dedicated to fire risk assessment in the context of global change, the effect of droughts on forest species, the vulnerability of Mediterranean vegetation to climate change and biodiversity assessment. 12 researchers and engineers, 5 technicians, 3 PhD students and 1 post-doc are currently member of the team.

Project meetings

Project meeting in Bucharest
By Elena Preda

At the beginning of May the Romanian partner, UNIBUC hosted not only the field testing in beautiful area of Bucegi mountains, one of the LTSER platform of Romanian National Network, but also the general project meeting took place in Bucharest. An overview of the status of deliverables and future working plan for each WP were discussed, in month 24 of the project. A list of actions for next months has been prepared. A splendid one day excursion in Danube Delta closed the great and wonderful "Romanian adventure".

Forthcoming conferences and events

International conference in landscape ecology „Landscape structures, functions and management: response to global ecological change"
Date: 3 - 6 September, 2010
Place: Brno – Prague, Czech Republic
Further information: http://icle2010.dnh.cz/en/welcome

Forum Carpaticum
Date: 15 – 17 September
Place: Kraków, Poland
Further information: http:/www.forumcarpaticum.org

EBONE project and Advisory Board meeting
Date: 28-30 September
Place: Vasteras, Sweden
Further information: http://www.ebone.wur.nl

10th meeting of the Conference of the Parties (COP 10)
Date: 18 to 29 October 2010
Place: Nagoya, Aichi Prefecture, Japan
Further information: http://www.cbd.int/cop10

LIVING LANDSCAPE The European Landscape Convention in research perspective - Second announcement
Date: 18-19 October 2010
Place: Florence, Italy
Further information: http://www.uniscape.eu

Sustainable Development Evaluations in Europe: From a Decade of Practices, Politics and Science to Emerging Demands
Date: 17-19 November 2010
Place: Brussels, Belgium
Further information: http://www.sustainability.eu/easy/?k=conferences&s=brussels