



## Soils and Nature Conservation

Newsletter of the Soils Lead Co-ordination Network

Issue No.4 / July 2004

The Soils Lead Co-ordination Network was established by the Joint Nature Conservation Committee to bring together the views and expertise of the country nature conservation agencies and provide a common approach to UK issues.

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### Contents - July 2004

Welcome	1
European Soil Thematic Strategy	3
National soil Strategy	7
News in Brief	9
Forthcoming meetings	10
LCN Contacts	11

### Welcome - Editorial

Welcome to the fourth newsletter of the Soils Lead Co-ordination Network (LCN). This issue focuses on recent developments in the European Soil Strategy, the on-going development of national soil policies and action plans and the implications for the UK nature conservation agencies.

The Soils LCN has been actively involved in Phase II of the European Soil Thematic Strategy, working towards raising awareness of UK and nature conservation issues and requirements. In the process, we have gained valuable experience through our exchange with European and national experts, and we are now applying this experience in the development of country agency and national soil policies.

The complexity of the task set by the European Commission was overwhelming. The mandate of the technical working groups required the provision of an updated overview of the status, pressures and threats to the soil resource in all 25 member states of the EU. It also required proposals for an EU monitoring framework to describe soil status and assess the efficacy of soil protection legislation in all member states. Whereas the working group reports on individual threats were quite comprehensive, the monitoring group was unable to reach a consensus. No 'one-approach-fits-all' monitoring system and indicator set could be agreed upon. The group recommended a step-wise process for the development of an EU monitoring framework which should

clearly identify the areas at risk from specific threats for a targeted monitoring approach. Existing monitoring frameworks should form the backbone of new initiatives to ensure continuity in records and reduce costs.

With the EU parliamentary elections and appointments of new commissioners taking place over summer 2004, the outcomes of the EU Soil Thematic Strategy have been delayed until the start of 2005, when the EC will produce a communication on individual threats to soil and the draft of a soil monitoring directive.

The implementation of the Soil Action Plan for England (2004-2006) includes specific actions for soil conservation for English Nature. To support this work, the Soils LCN is developing the means to assess conservation values of soil, promote development of consistent soil policies, and develop guidance for implementation of possible future soil responsibilities. The development of common standards for soil protection, restoration and enhancement require an understanding of statutory responsibilities and country specific needs. The different pace of development in England, Wales, Scotland and Northern Ireland of national soil protection policies and in the implementation of environmental and agricultural directives complicates the definition of a common approach to soil protection in the country agencies.

Various wider developments in UK environmental legalisation (e.g. CAP reform, Water Framework Directive, Strategic Environmental Assessment) offer further opportunities for raising awareness of soil and enhancing sustainable soil management and protection. However, the implementation of this legislation alone cannot achieve natural heritage objectives, particularly in relation to controlling the problem of gradual environmental deterioration. Environmental objectives do not always coincide with agricultural or water quality needs.

In the reform of the Common Agricultural Policy, de-coupling should substantially reduce the tendency towards agricultural intensification which is inevitably harmful to soil and the environment. It also establishes the principle that anyone found damaging the natural environment through agricultural activities will not receive public funding in support of this. On the negative side, there are still many uncertainties on the efficiency of proposed management practices on environmental status, and there is a risk that the economic benefit will outweigh the financial incentive for good condition and that farmers may trade or transfer entitlement from land that can carry more intensive economical yield to less productive land.

The Water Framework Directive (WFD) is concerned with all activities that will impact on the quality (chemical, biological or physical) of surface and groundwater water bodies. Because of the role of soil in controlling the flow and quality of the water to watercourses and groundwater reservoirs, soil protection measures become essential to the successful implementation of the WFD. The control of the threats from erosion, diffuse pollution and contamination to both soil and water quality will require a combined approach to ecosystem management. This might lead to revision of existing legalisation as part of the implementation of the WFD. This will need to be supported by strong knowledge-based expertise for definition of targeted management objectives and solutions for the control of pollution from land to water. Water quality reflects the integrated impacts of catchment management. Diffuse pollution is not tackled by point action but by combined approaches. Measures to control water quality are not always compatible with measures to control soil quality. Further research will be needed to improve our understanding of the impact of catchment management measures on the dynamics and quality of the various compartments of the natural environment.

This newsletter also includes up-dates on soil-related projects and activities from the UK nature conservation agencies to help raise awareness of soils issues and promote interdisciplinary dialogue. We would very much welcome any comments or contributions to future newsletters.

[Patricia Bruneau](#)  
Soils LCN Officer / SNH

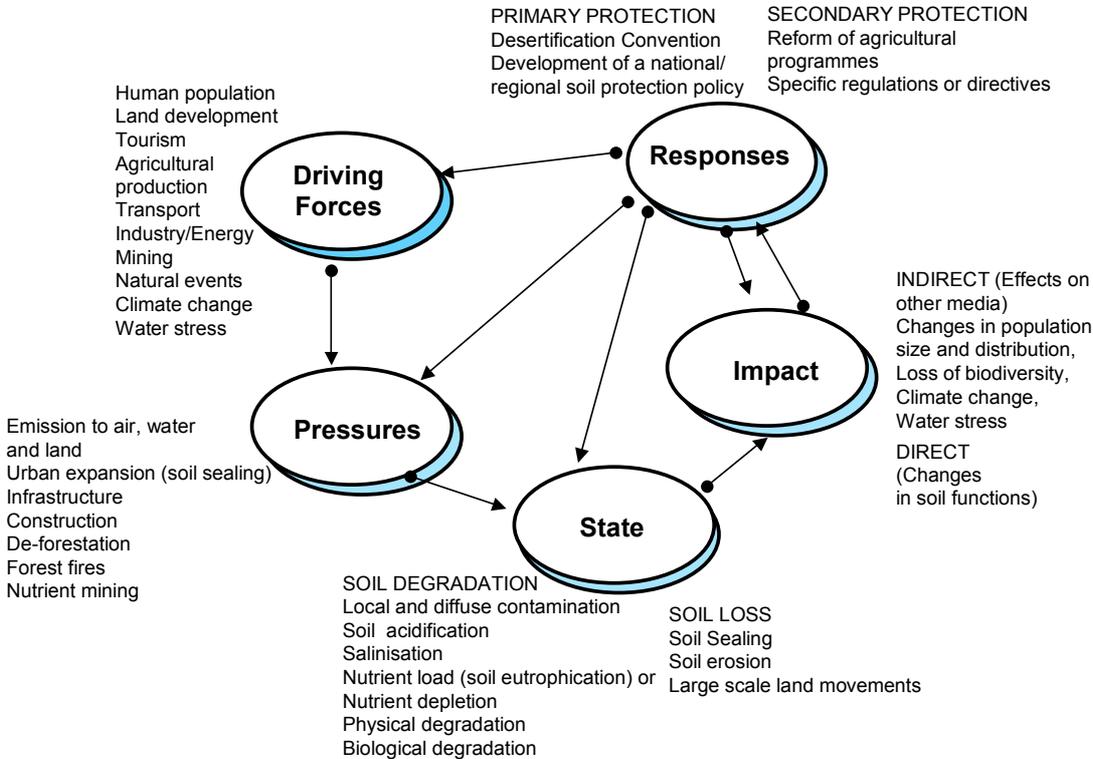
# European Soil Thematic Strategy

The involvement of the Soils LCN in the second phase of the Soil Thematic Strategy, launched in February 2003, has culminated with the presentation to the European Commission of the final technical working group (TWG) reports in May 2004.

The Soils LCN represented the UK on the Monitoring TWG. This has been an interesting but sometimes frustratingly slow experience.

The technical working groups based their approaches on the “Drivers – Pressures - Status – Impacts – Responses” concept (DPSIR), looking at monitoring and research requirements for three priority threats to soil (erosion, contamination, decline of organic matter) and five secondary threats (salinisation, compaction, floods and landslides, sealing and biodiversity).

## The DPSIR Framework Applied to Soil



The reports compiled by the TWGs represent the collective expert and professional views of the TWG members but do not reflect the official position of the European Commission. Using the work of the TWGs, the Commission is expected to draft a directive on monitoring and a communication on the priority threats (erosion, organic matter and contamination). This has been delayed until early 2005, because of the European elections in June 2004 and the appointment of new European Commissioners.

The initial decision in early 2004 to merge the initiatives on sludge and biowaste into the Soil Thematic Strategy received wide support but has not been followed up, primarily because of the un-reconcilable timescale and agenda differences between different actions. We will kept you abreast of further developments.

## **Brief outline of the technical working group reports**

### **Working Group on Monitoring**

The TWG on Soil Monitoring looked at five areas related to monitoring: 1) review of existing monitoring systems; 2) parameters and indicators to be monitored; 3) harmonization; 4) variability of soils; and 5) private ownership. The following recommendations were proposed, based on the group's own discussions and the outputs of the other TWGs.

Extract from the Final Report of the TWG on Soil Monitoring (2004)

#### **“ RECOMMENDATIONS FOR SOIL MONITORING**

- 1) *The European Community needs a soil monitoring initiative at the Community level because there is an over-riding need for information to support well-informed soil protection strategies and management practices across all Member States, and the evaluation of relevant policies at the European level. The information will support Community policy and legislation in relation to soil, its functions, and its related environmental compartments.*
- 2) *Such an initiative will also be a stimulus to national soil protection strategies and their evaluation, and will also give coherence to trans-national information collection and reporting.*
- 3) *Therefore, the European Commission should institute a step-wise approach to the soil monitoring process, based – wherever possible – on existing systems, in order to provide a mechanism by which to better manage and protect soil and its functions in a sustainable, fair, cost-effective, and transparent manner across all Member States.*
- 4) *The raison d'être of the soil monitoring process should be the systematic examination of soil, the drivers and pressures on it, and the resulting impacts and responses that affect soil, both in time and space.*
- 5) *The first action for the soil monitoring process should be the establishment of a Co-ordination Group that will be responsible for the production of technical guidance and protocols for the collection, quality assurance and quality control, storage and distribution of information. This action should be based on the evaluation of existing soil monitoring processes and their component parts, and take into account the suggestions from the various Working Groups.*
- 6) *The second action should be for the Co-ordination Group to produce advice for the identification of risk areas based on the various threats to soil, and for the targeted monitoring of these areas although soil monitoring in general should not be restricted to these risk areas.*
- 7) *Another action should be the establishment of a baseline (time zero) inventory of soil properties thus allowing for a comprehensive assessment of soils across Europe. This inventory would be the datum for future rounds of soil assessment.*
- 8) *In respect of the target of harmonization of standards and optimization of monitoring systems, it would be helpful (and it seems to be necessary), to integrate existing directives such as FOREST FOCUS and the Nitrates directive as an important part of the future soil monitoring strategy. “*

Further information can be accessed through the Soil Policy electronic forum (CIRCA) of the European Commission DG Environment at:

[http://forum.europa.eu.int/Public/irc/env/soil/library?l=/monitoring/workingsgroup/reports\\_monitoring&vm=detail&sb=Title](http://forum.europa.eu.int/Public/irc/env/soil/library?l=/monitoring/workingsgroup/reports_monitoring&vm=detail&sb=Title)

### **Working Group on Contamination**

The TWG on Soil Contamination classified contamination under three headings.

- 1) **Local sources** deal with the prevention of contamination at the single site scale. These sources only need the soil for support. Introduction of contaminants in the soil system can be avoided, so the phrase “no added pollution” can be used to describe the strategic policy objective.

- 2) **Diffuse inputs** are concerned with prevention of contamination due to diffuse inputs at the large and farmland scale and include: 1) contamination that may arise from current agricultural practices and related soil uses such as forestry, managed nature reserves, reclamation areas, landscaping, gardens and parks, where the user of the land modifies ecological processes in soil with additions of nutrients, exogenous organic matter and pesticides to increase productivity or to protect the current state of the land; and 2) contamination that enters the soil system by natural pathways like atmospheric deposition and sedimentation from surface waters (in the case of sediments). These two classes have in common that the input from contaminants cannot be avoided as for local sources that only use the soil for support. In order to formulate adequate soil protection policies for diffuse contamination, one has to address the interaction of the contaminants with the complex living soil system and its heterogeneity in space and time. Moreover, contaminants enter the soil system by multiple pathways. Agricultural land may become contaminated through atmospheric deposition, through certain trace elements in fertilisers, through the application of pesticides, manure, slurries, sludges and compost or applied soil material. Another complication is the fact that many substances may contaminate the soil simultaneously and can interact, which may lead to additional adverse effects on some receptors.
- 3) **Contaminated land management** is dealing with remedial actions and focuses on risk-based and sustainable management of land that has already been contaminated (= 'historical pollution'). This accounts for diffuse contamination as well as for contamination coming from point sources. It also covers what has been termed recently as 'proximity pollution', wide-spread diffuse pollution originating from a single industrial source outside the property boundaries of the industry.

The working group also focused on policy, strategy and integration of issues, providing the common ground for three contamination pathways and covering general policy requirements and cross-cutting issues. In addition, it made recommendations for the monitoring of soil contamination and the research requirements to support these recommendations.

With regard to monitoring, the TWG compiled a list of high priority substances for monitoring in the context of diffuse soil contamination.

Further information can be found in the Group's report which can be accessed through the Soil Policy electronic forum (CIRCA) of the European Commission DG Environment at:  
[http://forum.europa.eu.int/Public/irc/env/soil/library?l=/contamination/workingsgroup/reports\\_contamination&vm=detailed&sb=Title](http://forum.europa.eu.int/Public/irc/env/soil/library?l=/contamination/workingsgroup/reports_contamination&vm=detailed&sb=Title)

### ***Working Group on Erosion***

The TWG on Soil Erosion has been working on the following issues: 1) identification of pressures and drivers causing soil erosion; 2) nature and extent of soil erosion in Europe; 3) impacts of soil erosion; 4) measures to combat soil erosion and policy options for prevention and remediation; 5) links with the organic matter and contamination working groups and secondary soil threats; 6) desertification; 7) monitoring.

On monitoring issues, the Soil Erosion TWG recommended an indicator-based approach. The identification of areas at risk from erosion will be used as indicators of the state of soil erosion. Risk areas will be derived from an EU-based erosion model which should be calibrated from actual erosion rate measurement on a limited number of sites.

Further information can be accessed through the Soil Policy electronic forum (CIRCA) of the European Commission DG Environment at:  
[http://forum.europa.eu.int/Public/irc/env/soil/library?l=/erosion/workingsgroup/final\\_reports/task\\_group\\_reports\\_1&vm=detailed&sb=Title](http://forum.europa.eu.int/Public/irc/env/soil/library?l=/erosion/workingsgroup/final_reports/task_group_reports_1&vm=detailed&sb=Title)

### ***Working Group on Organic Matter and Biodiversity***

The TWG re-iterates " the importance of soil organic matter and soil biodiversity in maintaining many of the functions of soil. The soil functions are essential to the operation of natural, semi-natural and man-managed

systems and if development is to be sustainable these functions must be maintained. Moves towards a Directive for Soil Protection and Sustainable Soil Use are essential if these functions are to be protected. Such a Directive should encompass directives on the management of Exogenous Materials (Sewage Sludge and Biowaste) as soil amendments, although given the importance of these potential organic matter additions to soil interim measures should be considered to avoid further delays in their beneficial use.”

The TWG on Organic Matter has been investigating: 1) the importance of organic matter and biodiversity, both in the context of soil properties and functions; 2) the status of organic matter; 3) policy available to improve status of organic matter; 4) considerations and recommendations on best practices for agriculture and forestry for organic matter management; 5) the place of exogenous organic matter in soil organic management; 6) the impacts of the decline in soil organic matter and the benefits of the recommendations; 7) recommendations for monitoring and research.

With respect to monitoring, the TWG additionally recognised that if clear relationships between soil organic matter, soil biodiversity and soil functions are to be established, it is necessary to go further than the classic determinations of C/N which are normally made. It recommends characterization of the quality of soil organic matter with the determination of C-pools and the monitoring of soil biodiversity (and biological functioning) which is more complex to realize, but a choice of methods is already available (see full report for details).

Further information can be accessed through the Soil Policy electronic forum (CIRCA) of the European Commission DG Environment at:

[http://forum.europa.eu.int/Public/irc/env/soil/library?l=/organic\\_matter/workingsgroup/final\\_reports&vm=detailed&sb=Title](http://forum.europa.eu.int/Public/irc/env/soil/library?l=/organic_matter/workingsgroup/final_reports&vm=detailed&sb=Title)

### **Working Group on Research**

Extract from the Final report of the TWG on Research (2004).

*“Priority research areas for soil protection and the management of Europe’s natural resources based on DPSIR*

*Cluster 1: Processes influencing soil functions and quality*

*Analysis of processes related to the 8 threats to soil and their interdependency: erosion, loss of organic matter, contamination, sealing, compaction, decline in biodiversity, salinisation, floods and landslides*

*Cluster 2: Spatial and temporal changes of soil processes and parameters (state S)*

*Development, harmonisation and standardisation of methods for the analysis of the State (S) of the 8 threats to soil and their changes with time = soil monitoring in Europe*

*Cluster 3: Ecological, technical, economic and social drivers of soil threats (Driving forces and pressures, D + P)*

*Relating the 8 threats to Driving forces (D) and Pressures (P) = cross linking with social and economic drivers, such as EU and other policies (agriculture, transport, energy, environment etc.) as well as with ecological drivers, e.g. global and climate change*

*Cluster 4: Factors (threats) influencing soil eco-services (Impacts, I)*

*Analysis of the Impacts (I) of the 8 threats, relating them to soil eco-services for other environmental compartments: air, water (open and ground water), biomass production, human health, biodiversity*

*Cluster 5: Strategies and operational procedures for soil protection (Responses, R)*

*Development of operational procedures for the mitigation of the threats = Responses (R)”*

Further information can be accessed through the Soil Policy electronic forum (CIRCA) of the European Commission DG Environment at:

[http://forum.europa.eu.int/Public/irc/env/soil/library?l=/research/workingsgroup/final\\_reports&vm=detailed&sb=Title](http://forum.europa.eu.int/Public/irc/env/soil/library?l=/research/workingsgroup/final_reports&vm=detailed&sb=Title)

[back to [Contents](#)]

## National Soil Strategies

### **CAP reform and cross-compliance**

The CAP Reform Agreement (implemented in European law by Council Regulation 1782/2003) will give farmers greater freedom to decide what crops and livestock to produce. It will require farmers, in return for receipt of the Single Farm Payment subsidy, to fulfil responsibilities towards the protection of the environment, animal health and welfare and public health, to comply with a number of European laws (known as the Statutory Management Requirements), as well as maintaining the land in Good Agricultural and Environmental Condition (GAEC). This is known as "cross-compliance".

### EC Good Agricultural and Environmental Condition Framework

Issues	Standards
Soil erosion - Protect soil through appropriate measures	- minimum soil cover - minimum land management reflecting site-specific conditions - retain terraces
Soil organic matter - Maintain soil organic matter levels through appropriate practices	- standards for crop rotations where applicable - arable stubble management
Soil structure - Maintain soil structure through appropriate measures	- appropriate machinery use
Minimum level of maintenance - Ensure a minimum level of maintenance and avoid deterioration of habitats	- minimum livestock stocking rates or/and appropriate regimes - protection of permanent pasture - retention of landscape features - avoiding the encroachment of unwanted vegetation on agricultural land

These arrangements will be introduced on 1 January 2005 (with some of the Statutory Management Requirements following later). Scotland, Wales and England have developed specific frameworks for cross-compliance which were put out for consultation. These are presented below with each national soil strategy.

### **The First Soil Action Plan for England 2004-06**

Over the last two years Defra has been working with key NGOs, other Government Departments, Government Agencies and several professional soil scientists to develop the [First Soil Action Plan](#) (465 KB) for England.

The aim of the Action Plan is to draw together all the ongoing work on soil management, protection and research and identify and set in train new work as needed. The Action Plan was launched on 20 May 2004 and implementation of the 52 actions it contains is underway.

The Action Plan addresses issues that cut across a wide range of Defra's and other Departments' business. Actions are listed under eight headings:

- Protecting Soils in the Planning System
- Minimising Contamination of Soils
- Predicting and Adapting to the Impacts of Climate Change on Soils
- Soils for Agriculture and Forestry
- Interactions between Soils, Air and Water
- Soils and Biodiversity
- Soils, the Landscape and Cultural Heritage
- Soils in Minerals Extraction, Construction and the Built Environment.

Actions relating to farming and land use planning form the core part of the plan, many of which also have direct or indirect relevance to nature conservation. Particularly important for the conservation agencies are actions relating to the management of soils in designated conservation sites, and the use of soils information to target habitat restoration.

**Action 40:**

*Defra and partners will review and synthesise the published material on links between biodiversity, pollution, contamination and land management, to identify an initial list of biological and biochemical indicators of functional diversity.*

**Action 41:**

*Defra will consider with English Nature and other partners the benefit which might arise from the establishment of a national series of benchmark site for soil biodiversity, which could also include a cross reference with the Regionally Important Geological and Geomorphological Sites (RIGS) register. We will review progress in 2006.*

**Action 42:**

*English Nature will prepare and publish, in 2005, a position statement on the role of soil management and protection within statutory nature conservation sites.*

**Action 43:**

*English Nature will publish guidance in 2005 on the use of soil information in the restoration of wildlife and wildlife habitats.*

The Action Plan is complemented by an Environment Agency report on the [State of Soils in England and Wales](#) and the recent consultation on [Strategy for Soil Protection, Management and Restoration](#). See EA web page at <http://www.environment-agency.gov.uk/> for further details.

Further detail can be found at <http://www.defra.gov.uk/environment/landliability/soil/actionplan.htm> or contact John Hopkins (EN) at [john.hopkins@english-nature.org.uk](mailto:john.hopkins@english-nature.org.uk)

**Soil Strategy for Wales**

To implement the reform of the Common Agricultural Policy following an extensive consultation process, the Welsh Assembly Government has decided to adopt the following:

- to introduce the SFP from January 2005 ( the earliest date possible);
- to fully de-couple all the existing direct payments within the SFP from production;
- to calculate the SFP on a 'historic payments' basis.

Information on the consultation on the cross-compliance, which closed on June 2, can be found on <http://www.countryside.wales.gov.uk/fe/master.asp?n1=123&n2=473>

The Environment Strategy Team will develop an Environmental Strategy over the next 18 months which should include soils. A draft strategy document should then be prepared for public consultation in summer 2005.

**Soil Strategy for Scotland**

There has been no development of a soil strategy for Scotland on the same lines as in England. However, the reform of the Common Agricultural Policy and cross-compliance is being implemented. The four key decisions of the Common Agricultural Policy (CAP) Reform implementation in Scotland are:

1. Full Decoupling.
2. Historic Based Payments.
3. National Envelope (Beef sector only).
4. Modulation - (moved to a combined rate of at least 10% by the end of 2007).

The details of the consultation on cross-compliance which ended on 21 May 2004 and the submitted responses can be found at <http://www.scotland.gov.uk/consultations/agriculture/capr-00.asp>

Other legislation likely to influence soil protection in Scotland is the Custodians of Change report (<http://www.scotland.gov.uk/library5/agri/aewg-00.asp>) produced by the Agriculture and Environment Working Group (AEWG). The Scottish Executive Environmental and Rural Affairs Department (SEERAD) is committed to driving the Custodians agenda forward, in line with the strong commitment to environmental sustainability which runs through the Executive's new Partnership Agreement and its specific impact on the more rapid development of environmentally sustainable farming.

[back to [Contents](#)]

## Other News in Brief

### **Newcomers in the Soils LCN**

Jonathan Burney, Environmental Impacts Team Manager, has taken over English Nature's role as lead contact on soil issues for the next year, pending a longer term review of resourcing in this area. This allows John Hopkins to spend more time on his core strategic science role. Jonathan is setting up within English Nature an informal network of specialists to provide support on science issues. He can be contacted at the EN Peterborough headquarters on 01733 455 000 or by e-mail : [Jonathan.Burney@english-nature.org.uk](mailto:Jonathan.Burney@english-nature.org.uk)

### **Assessing the conservation value of soil and its relation with designated features for development of soil monitoring: Phase II (Soils LCN, SNH)**

This project (due to report early 2005) will identify means of measuring the conservation value of soil and how this information can be used for monitoring soil functions and quality in association with site condition monitoring. The proposed protocol incorporates an analysis using GIS of the spatial distribution of soil/parent material at the scale of designated areas, in combination with the spatial distribution of geology, topography, vegetation and to a lesser extent species and habitat information, to derive a functional conservation value. The measurement of an overall conservation value for a given soil will combine information on its rarity in the given context with all individual functional conservation scores. High overall conservation value could either reflect a single function with a very high conservation score or a combination of several low to moderate functional conservation scores.

For further information, contact Patricia Bruneau, SNH: [patricia.bruneau@snh.gov.uk](mailto:patricia.bruneau@snh.gov.uk)

### **The Air Pollution Information System (APIS)**

Air pollution information at your fingertips at [www.apis.ac.uk](http://www.apis.ac.uk) The Air Pollution Information System (APIS) was launched at the Glasgow Science Centre on 15 June 2004.

This web-based database of air pollution information has been developed in partnership by the Scotland and Northern Ireland Forum for Environmental Research (SNIFFER), the Scottish Environment Protection Agency (SEPA), Scottish Natural Heritage (SNH), Environment and Heritage Service (EHS), the Joint Nature Conservation Committee (JNCC), English Nature, the Countryside Council for Wales (CCW), the Environment Agency for England and Wales and the Centre for Ecology and Hydrology (CEH).

APIS is simple-to-use and is now available on-line at [www.apis.ac.uk](http://www.apis.ac.uk). Further information on APIS and the launch is also available on SNIFFER's website at [http://www.sniffer.org.uk/whats\\_new.asp](http://www.sniffer.org.uk/whats_new.asp).

For further information contact: Fiona Mactaggart, SNIFFER: [fiona@sniffer.org.uk](mailto:fiona@sniffer.org.uk)

### **Recommended reading**

JNCC publication 'An Illustrated Guide to British Upland Vegetation': details at [http://www.jncc.gov.uk/communications/news/2004/upland\\_book.htm](http://www.jncc.gov.uk/communications/news/2004/upland_book.htm)

[back to [Contents](#)]

## Forthcoming Meetings

### **EUROSOIL 2004**

6-12 Sept 2004, Freiburg, Germany

For more information consult: <http://www.forst.uni-freiburg.de/eurosoil/>

### **SNH Annual Conference**

The 2004 SNH conference – ‘Energy and the Natural Heritage’ – will be held on 10 and 11 November in Pitlochry, Perthshire. The conference will take a wide look at the impacts of energy use on the natural heritage and options for the future.

The conference will cover:

Day 1 – overview of energy use in Scotland / legacy from the past –a review of past energy use / present and future energy options

Day 2 – renewable electricity, with sessions on the natural heritage effects on hydro / biomass / onshore wind and marine technologies

Soils and energy concerns will merge when considering issues such as the impact of reduction of CO<sub>2</sub> emissions from soil and land use practices, impact of the development of biofuels and non-food crops on soil resources, and the impacts of wind-farms and small scale hydro-schemes.

For further information on the conference contact: Helen Forster at [energyconference@snh.gov.uk](mailto:energyconference@snh.gov.uk)

Or consult <http://www.snh.org.uk/news/nw-frame.htm>

[back to [Contents](#)]

## Contact Points for Soils in the Country Agencies

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[back to [Contents](#)]