

**A POSITION STATEMENT ON SOILS  
BY  
WILDLIFE AND COUNTRYSIDE LINK**

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Wildlife and Countryside Link (Link) brings together 35 voluntary organisations concerned with the conservation and protection of wildlife and the countryside. Our members practise and advocate environmentally sensitive land management, and encourage respect for and enjoyment of natural landscapes and features, the historic and marine environment and biodiversity. Taken together our members have the support of over 8 million people in the UK and manage over 690,000 hectares of land.

This statement is supported by the following 10 organisations:



## 1. Introduction

This position statement sets out Link's position on key soil issues.

Healthy soils are vital for maintaining both human life and the natural environment. In addition to the critical role of soil for food production they are also the basis for a wide range of economically valuable ecological functions that are essential for maintaining our wildlife and the character of our landscapes. Soil is itself a habitat, which harbours a rich diversity of species and many of which are good indicators of soil health. Soil is also the repository for many important historic environment features. It is crucial to the management of our water resources and the quality of the aquatic environment. Soil is also increasingly recognised as having a key role to play in tackling climate change through its ability to capture and store carbon.

## 2. Background

Soils are essential for maintaining complex above ground ecosystems, but are often extremely complex ecosystems themselves. They contain a vast number of animal, plant and fungi species and microbial biodiversity. Different soil types have unique species assemblages associated with them. However, despite this, soils are under researched and are therefore a poorly understood habitat. A change in physical conditions within the soil or the use of agricultural chemicals may destroy much of the activity of soil invertebrates, fungi, bacteria and other micro-organisms. If the soil ecosystem is damaged it can hinder above-ground habitat quality.

Soil biodiversity is a very significant part of Europe's biodiversity resource. The economic value of the ecosystem services provided by it is likely to be tens of billions of pounds each year. Yet soil biodiversity is currently facing a number of threats, mostly arising from the intensity of agricultural practices. Since the middle of the 20th century, intensive ploughing, compaction and drainage, the widespread use of inorganic fertilisers, and pesticide use have damaged the quality of our soils. Even though monitoring is inadequate it is apparent that many soil species have undergone declines, such as the Common earthworm that experts estimate has declined by at least 15% and perhaps as much as 35% in the past 40 years.

Healthy soils are crucial for productive agriculture and forestry, and their sustainable management is essential for keeping streams, rivers and our coastal waters in good ecological condition. Farming practices can lead to soil becoming compacted in some areas. In other areas soil can become more susceptible to erosion by water or wind. The ability of soils to absorb and store water is also vital to our water supplies, and to flood management.

Soil is not only the growing medium for crops, timber and for the herbage that feeds our livestock but soils can also act as a major sink for carbon. If soils are not managed correctly they can become a source of greenhouse gas emissions.

It is vital soils are given proper protection, and the impact of agriculture and built development on the ability of soil to continue to provide its essential natural functions should be given greater consideration by government departments and agencies.

## 3. Soil policies

### 3.1 Defra Soil strategy

In September 2009 the Government published its soil strategy, which puts into context the many threats to soils and sets out proposed actions. In particular Link welcomes the following aims set out in the strategy:

- A review of the need for future options under Environmental Stewardship to improve soil protection.
- A new goal to reduce significantly the rate of loss of stored soil carbon by 2020.
- A commitment to developing a new framework for action for peat protection, including on horticultural peat use post-2010.
- Publishing a new code of practice for soil use on construction sites and a new toolkit for planners in 2010 on how to take account of soil functions through the planning system.
- Reviewing the effectiveness of existing planning policies to protect important soils and whether there is a need for these to be updated.

*However, we were disappointed that the link between soil biodiversity and function has been overlooked in some sections of the Strategy.*

### 3.2 A European Union Directive on Soil

In 2006 the European Commission brought forward proposals for a Soil Framework Directive. Link was disappointed that the proposals for a European Soils Directive were rejected by the Council of Ministers.

*Link believes a well-conceived Soils Directive is essential to integrate European Union objectives for water management and climate change, for example by maintaining the carbon storage role of soil and addressing the effects of soil erosion on river catchments. Link believes the UK Government should be supportive of the introduction of the Directive given that it is likely that many of its aims would have already been addressed in the UK. We would also like to see specific biodiversity measures and targets included in a Soil Directive.*

## 4. Soils and landscape and the historic environment

Soil is crucial to the natural environment and soil properties have a direct influence on the character of our landscapes by influencing the types of habitats that are able to exist and the types of crops that can be grown.

Soil conditions are also crucial for the preservation of our archaeology, and hence our understanding of our historical heritage. Archaeological artefacts that are contained in the soil can be seriously damaged by agricultural activity and construction, in particular ploughing, drainage, or the development of scrub and tree root penetration.

*Link believes that Government policies should ensure that the important functions of soil for our wildlife, landscapes and historic environment are enhanced and maintained. It is also clear that in future agri-environment scheme options will need to better incorporate soil functions in relation to delivering objectives for landscape and the historic environment.*

## 5. Soil and biodiversity

The sound management of soils is vital for successful habitat restoration. The ability of soils to support biodiversity can be damaged by dewatering, destruction of their internal structure, pesticide use, eutrophication, de-vegetation, shading, compaction and sealing.

### 5.1 Soil and Invasive species

The transport of topsoil can result in the transportation of invasive species that can damage biodiversity such as Japanese knotweed and New Zealand flatworm.

*Measures should be taken to minimise the need to transport soil and to ensure that if top soil is transported then it is subject to rigorous biosecurity measures.*

*Link also believes that Government must fund research to understand better the links between soil quality and biodiversity, specifically so that the value of ecosystem goods and services provided by soil can be quantified. We would like to see further research undertaken by Defra and Fera into both the environmental and economic value of soil biodiversity. We also believe that monitoring and evaluation of soil sustainability should include specific indicators to measure levels of soil biodiversity. A baseline needs to be established against which future progress can be measured.*

## 5.2 Bare soil and biodiversity

Low nutrient soils including significant areas of bare ground can be particularly important for wildlife. These types of soils can support important plant habitats including heathland, acid grassland, calcareous grassland and open mosaic habitats on some areas of previously developed land. Bare soils are essential as a nesting and basking habitat for several reptiles and a great number of insect species. The loss of bare soil is occurring due to human actions that pollute these soils. For example, adding nutrients to soil encourages prolific vegetation growth, early season shading and the eventual elimination of any bare soil habitat. Nutrient pollution occurs as a result of the direct application of fertilizers, the transport of nutrients by ground or running water and the deposition of nitrates from the burning of fossil fuels.

Perversely, bare soil is regarded as an indicator of poor management (eg poaching) in agri-environment schemes and these need to be amended to recognise the importance of bare patches of nutrient-poor soil. Bare soil and ground is a rare habitat and needs to be carefully conserved where it supports important wildlife species. This priority habitat can also occur on exposed and nutrient poor substrates, such as crushed brick and rubble. It can also be found on contaminated substrates (such as pulverised fly ash) and measures to remediate contamination need to take account of the existing biodiversity value of the land, and seek to retain the interest where possible (in line with the requirements of PPS9).

*Link believes there should be policies in place to maintain and restore processes that create bare soil to bring benefits (as outlined above) within natural floodplain, coastal,, heathland and grassland habitats, retain open mosaic habitats on previously developed land, and that plans should be put in place to reduce nitrate deposition levels in key areas still sustaining bare soil within natural habitats.*

*We would recommend that minerals planning authorities encourage the after-care of mineral extraction and inert spoil sites through planning conditions requiring natural soil development succession rather than capping with nutrient rich topsoil.*

## 5.3 Peatland biodiversity

Peatlands are important wildlife habitats, and blanket bogs and lowland raised bogs have been identified as UK Biodiversity Action Plan (BAP) priority habitats. Many insect species, including BAP listed priority species, are supported by these habitats. The continuing horticultural use of peat is destroying these unique peatland habitats. This is unnecessary, as viable alternatives exist including recycled household and garden waste, wood chippings and mulch.

*Link would like to see greater government support for wildlife gardening initiatives (including the Forum for Gardening with Wildlife in Mind) that help to persuade the public and horticulturalists to use peat alternatives and we would like government to*

*take all relevant action to reduce garden peat use to acceptable levels or ban it completely.*

## **6. Soils and planning**

Development construction is a major cause of usually irreversible net soil loss. The affected soil may be completely removed or sealed. Soil sealing prevents the soil from performing both its role in food production and its ecological functions. For example, it means it can no longer absorb water and this can add to flooding pressures in urban areas. The indirect impacts of soil sealing can affect large areas due to the fragmentation of habitats and disruption of ecological corridors. The importance of soil function and soil management is often lacking in spatial planning documents.

*Link believes that the planning system needs to take greater account of soil function and that planning policies should be 'soil proofed'.*

Despite some challenges on particular sites, the overall focus of national planning policy to direct new housing development towards previously developed land in urban areas and away from greenfield agricultural land and open space has helped to minimise the sealing of soil. Link does not believe that current planning policy with respect to Best and Most Versatile (BMV) land gives adequate recognition to the importance of soils. The planning mechanism for soil protection is weaker since the publication of Planning Policy Statement (PPS) 7 in 2004. Under PPS7 protection of soils was downgraded making the sealing and loss of agricultural land more likely.

Link believes that in the future it will be important for land to have multifunctional roles. For example, where appropriate Grade 1, 2 and 3a land will need to provide areas of wildlife habitat that enable the carbon and organic content of the soil to be recharged to help to maintain soil quality and biodiversity and to contribute to efforts to mitigate the effects of climate change.

The Agricultural Land Classification System (ALC) was established in 1966 and took no account of climate change and its effect on soil capacity. There is a need to assess the potential of land and its soil resources to produce food, fuel and other commodities.

The paving of gardens is a significant factor in soil sealing, thereby increasing run-off speed in urban areas and reducing carbon dioxide absorption.

*Link would like the ALC to be reviewed to recognise importance of the soil for biodiversity and its ecological functions. This will also help to make these soils more resilient to future climate change.*

*Public bodies have a legal duty to 'have regard to the conservation of biodiversity' under the Natural Environment and Rural Communities Act 2006. This duty extends to soil biodiversity. However, Link questions how many public bodies are having due regard to this duty in their decision-making processes. There should be clear guidance through Planning Policy Statements regarding the need to consider the impacts of policies and decisions on soil functions.*

## **7. Soil and agriculture**

Over 70% of England's land area is farmed. Therefore, agriculture activity has a key role in ensuring good soil management. Soil issues related to farming are mostly covered by cross compliance conditions. The requirements for soil management form part of the Good Agricultural and Environmental Conditions (GAEC) that farmers who

receive the Single Farm payment must follow. Following the Health Check of the CAP in 2008, the soil protection requirements in GAEC were changed. The different requirements that farmers had to adhere to were consolidated into a Soil Protection Review which will be launched in January 2010. While Link supported the intention to make the cross compliance requirements more understandable to farmers we remain concerned that the emphasis on the compulsory nature of these requirements has been weakened.

Pesticide use (e.g. Neonicotinoid seed treatments) can sterilise soil biodiversity. However, there is little information on the short term impacts on ecosystem function and services, the long term impacts on soil sustainability, or the ability of soils to recover.

No-till systems can offer an alternative approach to intensive ploughing regimes and may help to restore soil structure and biodiversity and can also offer an alternative approach to conventional arable cultivations.

Compaction of soil is also a significant threat to soil biodiversity. Compaction of soils can have a dramatic effect on earthworm abundance. Trends are currently for increased tractor passes and when the soil is wet this will almost certainly result in more widespread compaction.

Nitrous Oxide (N<sub>2</sub>O) is a major greenhouse gas produced through mainly through agriculture soil management. Heavy utilization of synthetic nitrogen fertilisers in crop production typically results in significantly more N<sub>2</sub>O emissions from agricultural soils than that occurring from less intensive, low-tillage techniques. In the UK, agriculture is the main source, accounting for almost three quarters of N<sub>2</sub>O emissions. Around 92% of agricultural N<sub>2</sub>O emissions come directly from soils, particularly as a result of fertiliser application and leaching.

Mycorrhiza play a crucial role in the nutrient uptake of plants, mobilising phosphorous efficiently and increasing the absorptive area of root, thus improving plant growth, water relations and productivity in around 80% of all species. However, high levels of fertilizer application and deep ploughing have been shown to reduce the colonisation rate of roots in various systems including in crops where arbuscular mycorrhizal associations form, and forestry where ectomycorrhiza play a greater part. In addition, the specificity of these associations means that when land is converted from one system to another e.g. from crop production to forestry, these mycorrhizal associations are lost from the system.

*Link believes the Soil Protection Review (SPR) should clearly state what farmers may or may not do to help deliver a baseline of good practice for soil management. Defra should also commission research into the impacts of pesticides, nitrogen fertilisers and ploughing on soil biodiversity and sustainability, to identify where there are opportunities for policies to help reduce pesticide and fertilizer use and ploughing frequency, (for example, whether cross compliance measures and agri-environment schemes are helping to reduce soil compaction rates).*

## **8. Soils and climate change**

There is great potential for some agricultural soils such as lowland grassland to be restored to optimise their ability to store carbon. Restoring upland peat soils can help manage flows of water to the lowlands and improve important habitats for wildlife. Peat soils (upland and lowland) are also an important carbon sink. Given the threats to their resilience from climate change, rapid action to reverse degradation and stem carbon loss is a priority. There is also a need to recognise and build the capacity of upland

soils to store water more effectively so that it can be released over time, helping to reduce the likelihood of extreme flood events and to ensure a steady supply of water to the lowlands during times of drought. There are additional benefits in terms of biodiversity and landscape by ensuring upland areas retain peatland and by restoring lowland agricultural grassland soils.

The sale of peat will need to be statutorily controlled as it is wholly unsustainable and contributes to climate change. However, as a first measure the Government must take action to enable consumers to influence the market effectively through choice by ensuring that every bag of peat on sale in the UK is very clearly labelled as containing peat, with an accompanying warning that the use of peat is unsustainable because of the need to destroy wildlife habitat to produce it and that the harvesting of peat contributes to climate change.

*Link believes that there is a huge opportunity to restore lowland agricultural grassland soils' ability to store carbon, which will also create significant landscape and biodiversity benefits. This could be achieved through recognition of the financial value of soil-stored carbon, and providing incentives to support low intensity farming to achieve increases in stored carbon.*

*Link believes that the destruction of peat bogs should be prevented through the use of clear labelling of peat products and promotion of consumer awareness. If there is not a rapid reduction in the sale by more than 90% by volume of peat products then Link would like the Government to come forward with proposals for the introduction of fiscal instruments such as a tax on peat or else a total ban on the sale of peat.*

*Link would like more resources devoted to the restoration of peatland soils to benefit biodiversity and landscape character, to contribute to reducing the impact of climate change and for their role in protecting water resources. Link believes that policy makers must rethink the land use of peat soil areas in order to maximise the opportunity to store and sequester carbon, and maximise ecosystem services.*

## **Wildlife and Countryside Link January 2010**

This response is supported by;

- Badger Trust
- Buglife – The Invertebrate Conservation Trust
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- Campaign to Protect Rural England
- The Grasslands Trust
- Plantlife International
- Royal Society for the Protection of Birds
- Wildfowl & Wetlands Trust
- The Wildlife Trusts
- Woodland Trust

