

A NATIONAL TRUST SOIL PROTECTION STRATEGY

Introduction

At its meeting on 25 November 1999, the National Trust Executive Committee ratified a National Trust Soil Protection Strategy (a version of this, updated to take into account the Committee's comments, follows this introduction). For the first time, soil has been formally defined as a natural resource requiring and meriting protection and conservation management. The National Trust's responsibilities (enshrined in Acts of Parliament) for the "permanent preservation of places of historic interest or natural beauty" now include soil resources.

The Trust has of course undertaken specific soil conservation tasks in the past, such as the extensive measures to prevent peat erosion on the Pennines, or to tackle the problems of overgrazing in the Lake District and the Long Mynd. The new direction which the Soil Policy will enable will be that **all** land use and land management decisions on Trust property will be subject to consideration of soil interests - be they for nature conservation, archaeology or farmland productivity. Further, the Trust will advocate the importance of soil resources and the practice of soil conservation to government, agencies and other organisations; and will initiate educational projects to promote the linkages between soil and other environmental, economic and public interests.

"Soil is probably the most precious non-renewable resource on Earth - its destruction poses more serious, immediate and irreversible problems for humanity (in terms of food production, water supplies and greenhouse gases) than depletion of fossil fuels" - Rob Jarman, National Trust Environmental Practices Adviser.

A NATIONAL TRUST SOIL PROTECTION STRATEGY

**A Paper by Rob Jarman, Environmental Practices Adviser,
on behalf of the Director of Estates, dated 31 October 1999**

1.0 OVERVIEW

1.1 There is a growing movement across the world for soil protection: soil is crucial to support human existence and yet it is being severely and irreversibly degraded by human activities (such as mining, deforestation, bad farming, and pollution).

1.2 In the United Kingdom, soil erosion and degradation are now officially recognised as problems: Government departments are trying to incorporate soil protection into agriculture, forestry, water resource management, waste disposal and land use planning. The conservation and heritage agencies now emphasise the importance of soil in sustaining biodiversity and cultural heritage.

1.3 The National Trust has not typically regarded soil as a natural or cultural resource requiring preservation, although it has included soil protection in some of its conservation programmes (e.g. Kinder Scout, Kinver Edge, Long Mynd).

1.4 Since 1996, when the Royal Commission on Environmental Pollution published its study on *Sustainable Use of Soil*, Trust staff have been re-assessing the Trust's responsibilities for soil. Soil protection has begun to permeate the Trust's work, as in the drafting of the Agricultural Policy and the preparation of Whole Farm Plans, the registration of Trust farms with the Soil Association Organic farming scheme, the registration of Trust woodlands with the Forestry Stewardship Council, the

preparation of the Trust's peatland protection policy, the review of lake siltation problems in historic landscapes, and the control of soil erosion.

1.5 During 1998/9, the Department of the Environment, Transport & Regions has been preparing a *Soil Strategy for England & Wales*, as the Government's response to the Royal Commission's Report. Publication of a consultation paper is imminent, and the Trust will be expected to formally respond.

1.6 This present paper proposes that soil protection should become a fundamental part of the Trust's work of promoting the permanent preservation of places of natural beauty and historic interest. The paper proposes a National Trust Soil Protection Policy, and a framework for its implementation.

2.0 WHAT HAS SOIL GOT TO DO WITH US?

2.1 Soil erosion and degradation is a real issue

2.1.1 Soil is derived from the breakdown of solid geology (by weathering, or glaciation) and the accumulation of organic matter. The UK has a great diversity of soil types, due to its geology, topography, climate, hydrology and historical land-use. Soil is the substrate on which plant and animal communities depend; and is the main repository of zoological and botanical remains and archaeological artefacts from previous natural and cultural environments. Soil is central to the hydrological cycle; and it determines land use options and practices in agriculture and forestry.

2.1.2 Soil is a living resource – a typical English lowland loamy soil will contain 25 tons of micro-organisms per hectare – including 4 tons of earthworms, 10 tons of fungi, 1 ton of springtails, spiders, beetles and snails. Yet soil flora and fauna have not been considered worthy of inclusion in nature conservation or biodiversity strategies.

2.1.3 In the UK, soils have no specific protection: description and conservation have largely been geared to the productive use of soil for forestry and agriculture. High-grade farmland has been protected from 'development' (i.e. building) by the Ministry of Agriculture, Fisheries & Food (MAFF), but the soil and its productive capability have not been protected from degradation by intensive land-uses and farming. Some aspects of soil erosion, such as obstruction of highways, are subject to legal powers.

2.1.4 Soil receives only incidental protection in SSSIs, SPAs and SACs, which are designated exclusively for habitats, species or physiographic processes. The Geological Conservation Review describes and protects only a few sites (for their fossil soils), as do Regionally Important Geological/Geomorphological Sites). Archaeological designations (SAMs or World Heritage Sites) and landscape designations (AONBs, NPs) are very weak in their protection of soil.

2.1.5 Soil in the UK is being damaged or irreversibly lost, directly through construction, mining or erosion, and indirectly through pollution and mismanagement, leading to reduction of productive capacity, loss of biodiversity and the historic archive, and 'downstream' impacts of sedimentation (e.g. smothering of fish-spawning gravels).

2.1.6 Globally, in recent years some 24 billion tons of topsoil/year has been eroded from farmland, leading to the projection that 30% of the world's arable land could be depleted within 20 years. In the UK, 450,000m³/year of soil is eroded from farmland (at Arlington, the lake has accumulated 18,000m³ of silt since desilting 10 years ago).

2.1.7 The Royal Commission on Environmental Pollution (RCEP) reported on the *Sustainable Use of Soil* in 1996: it examined the uses of soil in the UK, and the environmental and economic problems arising from mis-management. It recommended that **soil should have equal status with air and water** in environmental legislation; and requested Government to prepare a Soil Protection Strategy.

2.1.8. The Forestry Authority has published *Forests & Soils: Conservation Guidelines* (FC 1998); MAFF has published *Soil Code* (MAFF1998) and *Soil Erosion Manual* (MAFF 1999). The Environment Agency is developing its *Soil Policy*. The nature conservation agencies are evaluating soil as a nature conservation resource in its own right. The Council for the Protection of Rural England has published a *Soil Charter*.

2.2 The National Trust Soil Resource

2.2.1 The Soil Survey & Land Research Centre (SSLRC) has been assisting Trust staff in their consideration of soil protection matters. It has advised that the Trust should cherish the soil on its properties, both for the specific functions that the soil can fulfil and for the specific interests that the soil contains. Soils meriting protection include:

- i. *soils that support a range of plant and animal communities in woodland, moorland, heathland, montane, wetland, grassland and coastal habitats. These soils are integral to the ecology of such habitats, and their management needs require better understanding, such as how to protect soil biodiversity and mycorrhiza (i.e. fungal associations with plant roots);*
- ii. *soils which have never been ploughed or disturbed, in sites such as ancient woodlands, historic parklands and old grasslands;*
- iii. *soils associated with archaeological sites, which contain evidence of past activities, climates and ecosystems, e.g. soils protected beneath and within earthworks, submerged forests, sand dunes, peatlands, or caves;*
- iv. *soils which influence physical and cultural pattern in the landscape and contribute to local distinctiveness;*
- v. *soils which have been degraded by past land-uses and now support specific habitats or industrial archaeology e.g. heathlands or woodlands developed on 'worn-out' farmland (dating as far back as the Neolithic); or mineral workings;*
- vi. *soils which support agriculture and forestry, where sustainable practices are essential for the continued production of food, fibre, energy and materials;*

- vii. *soils which mitigate environmental pollution e.g. soils which act as 'buffers', or as nutrient 'sinks', or as effluent treatment systems (e.g. 'soakaways')*.

2.3 Threats to National Trust Soil Resources

2.3.1 The RCEP report summarised the main causes of soil degradation as erosion, compaction, acidification, contamination, biological depletion, loss of organic matter, and extraction. These all arise on **Trust** land, in the following ways:

2.3.2 Agriculture:

- ?? **intensive arable farming** - continuous arable cropping, autumn-sown cereals, cultivation with heavy machinery, ploughing of old pasture, minimal rotations and use of agrochemicals, have caused loss of soil organic matter and soil biodiversity, degradation of soil structure, and destruction of archaeological interests. Damage may be insidious and hard to see, but many Trust properties have vulnerable soils. Water erosion on arable land in the UK has increased over the last 20 years, and severe erosion does occur on some Trust farms.
- ?? **livestock production** - over-grazing damages vegetation and soil and can lead to serious erosion. Upland mineral and peat soils are particularly vulnerable. Over-stocking is often linked with slurry and silage problems, and bad spreading practices can severely damage soil and water resources.
- ?? **land drainage** dramatically alters soil chemistry and biology and has serious consequences for wetland ecosystems. Drainage also damages buried archaeological remains, especially organic materials.
- ?? **eutrophication, acidification and contamination** of soils occurs from nitrate, phosphate and biocide uses. Soils can filter and buffer pollutants, and prevent their release into watercourses, but inappropriate soil management causes pollution.

2.3.3 Forestry

- ?? **conifer plantations** in heathlands, peatlands, natural woodlands and sand dunes can have a significant and irreversible impact on soil. Soil erosion and sedimentation arise from logging, harvesting, drainage and road making.
- ?? **footpaths and car parks** cause soil compaction and erosion, and require stabilisation which can further affect soil structure and natural processes

2.3.4 Recreation

- ?? footpaths and car parks cause soil compaction and erosion, and require stabilisation which can further affect soil structure and natural processes.

2.3.5 Atmospheric Pollution

- ?? **soil acidification** is of particular concern for vulnerable upland soils in England and Wales, arising from sulphur and nitrogen emissions, damaging upland and lowland heathlands, meadows, pastures, watercourses and wetlands.

2.3.6 Extraction

- ?? **peat cutting** has damaged many upland blanket bogs and most lowland raised bogs, of great value for their plant and animal communities and their archaeology and records of past environments.
- ?? **turf stripping** can seriously damage soil.

2.3.7 Remediation

- ?? ironically, work to stabilise or remedy damaged or contaminated soil can destroy nature conservation and industrial archaeological interests.

2.4 Limitations of the Trust's historic approach

2.4.1 Soil protection by the Trust is presently inadequate:

- The Trust has no inventory or evaluation of its soil resources (Biological and Archaeological Surveys only note the soil types present on a property).*
- Farm tenancy agreements prescribe "good husbandry", but the Trust's long term interest in soil and land quality has not been protected. (The National Trust Whole Farm Plan does now cover soil protection and restitution of damaged soils).*
- Responsibility for conservation of the Trust soil resource is uncoordinated between disciplines, i.e. nature conservation, forestry, agriculture, archaeology, gardens and environmental practices.*
- National Trust Committees and Council have no remit for soil conservation.*

3.0 PROPOSAL

3.1 A National Trust Soil Protection Policy

It is proposed that a National Trust Soil Protection Policy would be as follows:

The National Trust considers soil to be a critical natural and cultural resource that requires understanding, respect and stewardship. The Trust will strive:

- to safeguard the conservation interests and natural processes associated with soils on its properties;*
- to ensure that the soils on its properties can fulfil a diversity of functions (such as the production of food, fibre and materials, or the protection of the environment) without loss of productive potential;*

- iii. *to integrate soil protection into the Trust's policies and practices for the acquisition, and subsequent management, of land and buildings;*
- iv. *to promote soil protection in the Trust's advocacy work and in the Trust's environmental education programme.*

3.2 A Soil Policy Implementation Plan

It is proposed that implementation of the suggested Soil Protection Policy will require the Trust to develop a Soil Management Strategy:

- i. *obtain information on the nature and state of the soil resources on Trust properties; and identify specific conservation interests, natural processes and soil functions which merit protection;*
- ii. *review the management of Trust properties to see how soil degradation can be prevented and how any desired soil function can be sustained;*
- iii. *prepare guidance on soil protection for estate managers and farm tenants, and arrange training;*
- iv. *clarify Trust and tenant responsibilities for soil stewardship, and formalise these in the Trust's Agricultural Policy, in its whole farm plans and in its farm tenancy agreements;*
- v. *enable Trust farm tenants to implement sustainable land uses and to practice soil protection, by giving technical support and incentives;*
- vi. *promote the Trust's interests in soil conservation to members, the public and to schools – to prepare a "Soil Matters" education resource pack;*
- vii. *advocate soil protection measures in reforms of the Common Agricultural Policy, Common Land law, and pollution control laws; and advise the Government on its proposed Soil Protection Policy;*
- viii. *monitor the state of soils on Trust sites and set quality targets as appropriate.*
- ix. *extend the remit of Trust Committees to include soil conservation.*

3.3 Resource implications

Implementation of the proposed Soil Policy would be likely to have the following costs and benefits:

3.3.1 Costs:

- ?? Acquisition of survey information, maps and database
- ?? Specialist consultancy advice (Whole Farm Plans, projects)
- ?? Internal staff communication & training
- ?? Communication with farm tenants

- ?? Loss of farm rental income (medium-term only?)
- ?? Organic Conversion schemes
- ?? Specific soil protection measures
- ?? Preparation/publication of "Soil Matters" (net of sponsorship)

3.3.2 Benefits:

- ?? Reduced lake desiltation costs
- ?? Improved fisheries & aquatic biodiversity
- ?? Increased soil productivity, thereby reducing fertiliser inputs
- ?? Increased value of farm and forestry produce (organic/low intensity labels)
- ?? Public support for leadership by the National Trust on a sensitive local & global issue
- ?? Subsidies/grants for positive measures
- ?? Improved standard of protection for archaeology and biodiversity interests.

3.3.3 Balance:

- ?? Tangible costs outweigh intangible benefits, except for serious potential to reduce lake desiltation costs, where frequency of need for desilting should be significantly reduced.

4. RECOMMENDATIONS

The Executive Committee approved the following recommendations:

- 4.1** That National Trust should state its concern that soils are being damaged and should be protected;
- 4.2** That National Trust should have a Soil Protection Policy for implementation on its own estates, to be implemented as the Trust's financial and other resources permit;
- 4.3** That National Trust should advocate soil protection to Government, agencies and managers;
- 4.4** That National Trust should invest, as resources permit, in a Soil Management Strategy i.e. soil survey for its Farm Plans, Property Management Plans & Woodland Plans, integrated with its Archaeological, Biological, Parks & Gardens and Woodland Surveys.
- 4.5** That National Trust Committees should extend their remit to include soil conservation.

6 December 1999

