



Free Public Lecture Series, Spring 2010

‘SOIL – a basis for life on earth’

Birkbeck Institute of Environment, University of London

in conjunction with the

Ecology and Conservation Studies Society

The series will explore the immense diversity of soil types derived from varying geology, topography, climate and organic material and their importance to the continuance of life on earth. The vital role of micro and macro organisms of the soil will be included. The function of the soil as a medium for plant growth in natural habitats and modifications to soil fertility necessary for agriculture and horticulture will be covered, as well as reclamation of damaged soils.

Join the debate. All welcome. Free admission. Booking is not necessary.

The lectures will be held in Lecture Theatre B01, Clore Management Centre, Birkbeck College, University of London, Torrington Square, London, WC1E 7HX.
(entrance is opposite Birkbeck Main Building)

All lectures are from 6.30pm to 8.30 pm on the following Fridays. Doors open at 6.00pm.

Enquiries to e-mail: environmentevents@bbk.ac.uk (tel: 020 3073 8065)

- 12 February ‘Managing soil physical conditions in agriculture’
Professor Richard Godwin, Professor in Agricultural Engineering, Harper Adams University College and Cranfield University
- 19 February ‘Soil water management in agricultural and environmental situations’
Professor Gordon Spoor, Emeritus Professor of Applied Soil Physics, Cranfield University
- 26 February ‘Turning the tables: when fungi host plants’
Dr Martin Bidartondo, Senior Lecturer, Imperial College London and Royal Botanic Gardens, Kew
- 5 March ‘Maintaining soil fertility for gardening while protecting the environment’
Guy Barter, Chief Horticultural Advisor, Royal Horticultural Society, Wisley
- 12 March ‘Impacts of food production on soils overseas’
Professor Keith Goulding, Head of the Department of Soil Science Rothamsted Research
- 19 March ‘The unseen majority: soil biodiversity and ecosystem nutrient cycling’
Professor Richard Bardgett, Professor of Ecology, Lancaster University

The Ecology and Conservation Studies Society welcomes new members. Details of the Society and application forms will be available at the door, and are on our website at:

<http://www.bbk.ac.uk/environment/prospective/ecss>

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Notes on the Contributors and their Lectures

12 February ‘Managing soil physical conditions in agriculture’

Professor Richard Godwin FREng holds Emeritus and Visiting Professorships in agricultural engineering at Cranfield University and Harper Adams University College respectively. A former Dean and Director of Research at Silsoe College of Cranfield University he has had a long career as a researcher and educator in the field of soil management specialising in the improvement of mechanisation systems and precision agriculture. His contributions have resulted in the development of improved soil engaging tools and soil management practices. He frequently addresses UK and international audiences of farmers, advisors and manufacturers.

His lecture will cover the following themes

His lecture starts with a brief introduction to soils and their most critical physical properties and explains the requirements placed upon them by commercial agriculture to facilitate crop growth, soil and water conservation and mechanisation. This is then followed by the selection of low ground pressure and controlled traffic systems that will minimise soil compaction and run-off from the application of surface loads during crop establishment, protection and harvesting systems. Where soil damage cannot be avoided methods are described to target the repair using both traditional and precision farming techniques.

19 February ‘Soil water management in agricultural and environmental situations’

Professor Gordon Spoor is Emeritus Professor of Applied Soil Physics, Cranfield University. After taking a degree in Agriculture, and an MSc in Agricultural Engineering, he has had some 40 years experience working in education (at Silsoe College, Cranfield University), and in research and consultancy in UK and overseas, in the field of soil and water management. His particular specialisations included soil cultivations and drainage, and for the last 25 years he has been working with environmental groups such as RSPB, advising on water management within their wetland habitats.

His lecture will cover the following themes

A common situation found in practice, is one where the water regime which would develop naturally in the soil, would not be particularly well suited to the type of agricultural production or natural habitat development desired. Some form of water manipulation and control is, therefore, frequently required. This lecture explores, in the context of different soil types and conditions, the approaches to water management that can be taken, to provide the desired conditions of wetness or dryness in different field situations.

The soil properties which have a direct influence on soil moisture status will be identified, together with the types of water control and application measures available to suit the different soil, crop and habitat situations. Reference will be made throughout to specific field situations in both the agricultural and habitat management contexts.

26 February ‘Turning the tables: when fungi host plants’

Dr Martin Bidartondo is a Senior Lecturer at Imperial College London and the Royal Botanic Gardens, Kew. He studied biology at the University of Alaska at Fairbanks and he then earned his doctorate at the University of California at Berkeley working on the molecular ecology and evolution of plant-fungal mutualisms called mycorrhizas.

His lecture will cover the following themes

Untangling the patterns of specificity in species interactions is fundamental to understanding how local and global biodiversity are organized and maintained over ecological and evolutionary timeframes. This is critical for mycorrhizas because they are one of the dominant symbioses in terrestrial ecosystems. Martin will present recently uncovered examples of how a fungus can be essential for the establishment, survival and / or diversification of plants; this realization “turns the tables” on plant conservation by placing the spotlight on individual keystone fungi.

5 March ‘Maintaining soil fertility for gardening while protecting the environment’

Guy Barter runs the Members' Advisory Service of the Royal Horticultural Society. He started out as keen amateur gardener, studied horticulture at Bath University and, after working in commercial horticulture, joined the curatorial staff of RHS Garden, Wisley. After a stint as a horticultural journalist with ‘Which? Gardening’ he rejoined the RHS, this time on the science staff, with the remit to provide science-based advice to the gardening public.

His lecture will cover the following themes

Controlling soil fertility is central to good gardening, but the environmental cost in using fertilisers, lime and manures can be high. It does not have to be this way. This lecture examines how the modern gardener controls fertility in ways that are benign or even beneficial to the environment.

12 March ‘Impacts of food production on soils overseas’

Professor Keith Goulding joined Rothamsted in 1974 after gaining an MSc in Soil Chemistry at Reading University, and has worked his way up through the organisation. He gained his PhD at Imperial College in 1980. He is currently Head of the Department of Soil Science, where his research focuses on nutrient cycling, especially losses of nitrogen to air and water and their environmental impact, with a strong emphasis on policy-relevant research. He also manages the Biotechnology and Biological Sciences Research Council’s Cross-Institute Programme for Sustainable Soil Function. He is a visiting Professor at the University of Nottingham, a Fellow of the Institute of Professional Soil Scientists and a Chartered Scientist. He was awarded the Royal Agricultural Society of England’s Research Medal in 2003 for his research into diffuse pollution from agriculture and a Nobel Peace Prize certificate for his contribution to the work of the Intergovernmental Panel on Climate Change, for which the Panel and Al Gore were jointly awarded the Prize in 2007.

His lecture will cover the following themes

Approximately 90% of the world’s food is grown in soil. Maintaining if not enhancing soil quality is therefore vital if we are to produce the increased 50% of food that the world is predicted to need by 2050. But growing food can deplete soils of nutrients, water and organic matter, introduce pollutants and increase erosion, with consequences for air and water quality. Particular problems encountered include salinity, acidification, toxic metal pollution and erosion. Developing countries desperate to grow more food, such as China and many parts of Africa, are especially prone to focusing on short-term increases and risking long-term soil damage. The talk will describe some of these problems and possible solutions using examples from research conducted at Rothamsted in such countries as Bangladesh, China and Brazil.

19 March 'The unseen majority: soil biodiversity and ecosystem nutrient cycling'

Richard Bardgett graduated from the University of Newcastle-upon-Tyne in 1987 with an Honours degree in Soil and Land Resource Science, and then moved to Lancaster University where he gained his PhD in 1991. Afterwards, he held posts at the Institute of Grassland and Environmental Research and Manchester University, before returning to Lancaster University where he is now Professor of Ecology. His primary research interest is the study of soil biodiversity as a driver of nutrient and carbon cycling and plant community dynamics in natural and managed ecosystems. He has published many papers on this topic and his book 'The Biology of Soil: A Community and Ecosystem Approach' won the 2006 Marsh Ecology Book of the Year Award from the British Ecological Society. He is an Editor of the Journal of Ecology and serves on the Editorial Boards of Ecology Letters and Ecosystems. Richard is recognised as a Highly Cited Researcher in the area of Environment/Ecology and was elected an Honorary Fellow of the Royal Society of New Zealand in 2006.

His lecture will cover the following themes

It has long been known that soil organisms are central to the maintenance of soil fertility and the functioning of terrestrial ecosystems. Despite this historical recognition of the contribution of soil organisms to soil fertility, it is only in recent years that ecologists have more fully recognized the role that belowground organisms play in determining a range of important ecosystem processes, including decomposition, nutrient and carbon cycling, and soil formation. Moreover, it has only recently been recognised that the soil biological community represents a major, but largely unexplored, reservoir of global biodiversity. In this talk, Richard will consider some of the key roles that this vast diversity of organisms that live in soil play in terrestrial ecosystems, and discuss how they can influence the productivity, diversity and composition of plant communities in often surprising ways.

The Ecology and Conservation Studies Society aims to foster interest in conservation based on sound ecological principles by arranging lecture courses, field visits and meetings, and by keeping its members up to date on literature, new concepts, research and practical field studies techniques. Membership is open to all who have relevant experience or interests. Non-members are most welcome at these lectures series.

The ECSS Autumn 2010 Free Public Lecture Series will be run in collaboration with **Birkbeck Institute of Environment**. It will be held on six Friday evenings in October and November 2010

This series will examine, in depth : -

'Seas for life'

The broad effects of climate change are established, but the biodiversity and ecology of oceans have not yet been adequately researched and are little understood. We already know that there is a wonderful diversity of life in our oceans, which will play a vital role in our future climates, foods and minerals. New discoveries on the ocean floor show us a world we had never imagined, one we can still care for. The skills to understand and adequately monitor changes in the oceans depend upon a sound knowledge of ecosystems, including life-cycles of the species found there. This series looks at oceans, their biodiversity and their future.

Watch our website; - details will be posted by summer 2010.

<http://www.bbk.ac.uk/environment/prospective/ecss>