South Downs Research Conference 2017,
sponsored by Coast to Capital

Conference Proceedings

Key Note Speakers:

Professor Brett Day – University of Exeter

Professor of Environmental Economics, Director of the Land, Environment, Economics and Policy Institute (LEEP). Brett is an environmental economist working in the field of ecosystem services, the particular focus of his research being the development of methods and knowledge for the support of environmental decision-making. He received a PhD in Economics from University College London in 2004, took up a faculty position in the School of Environmental Sciences at the University of East Anglia in 2005, and in 2015 joined the Department of Politics in Exeter University. Brett has published widely in the academic literature including outlets such as Science, the Review of Economics and Statistics and the Journal of Environmental Economics and Management. He also maintains close links with government and business, applying the methods of environmental economics to problems of environmental management in both public and private sectors.

Dr Ruth Feber – WildCRU, University of Oxford

Dr Ruth Feber is a Zoology Research Fellow with the Wildlife Conservation Research Unit (WildCRU) at Oxford University. Brought up in Hampshire, she first moved to Oxford as a Biology undergraduate, and there developed her interest in farming and wildlife, staying on to undertake a D. Phil at the University's farm at Wytham on the effects of arable field margin management on butterflies. She went on to study the effects of organic farming on biodiversity at HRH's Duchy Home Farm and, since then, her research has broadened to encompass work on a range of plants, invertebrates and mammals on farmland, from single-site to landscape-scale projects on field margins, ditches, set-aside and woodland, within the wider context of human-wildlife conflict in the UK and abroad.

Ruth is co-editor of two major academic volumes which synthesize the results of WildCRU's agroecology studies over the last 25 years, Wildlife Conservation on Farmland, and has written an accompanying practitioner's handbook communicating key results from WildCRU's farmland research in a more accessible format. She has just finished writing a similar style handbook on the wildlife of Britain's canals and navigable waterways for the Canal and River Trust.

SESSION 1

Sensing the landscape: Recreational walking in the South Downs National Park for people who have impaired vision

Karis Petty - University of Sussex

I am an anthropologist finalising my PhD in the sensory perception of the environment at the University of Sussex. My research investigates the perception and experience of the South Downs for people who have impaired vision. This engages themes including perception, notions of disability, inter-species connection, recreational walking, sensory experience, memory, changing landscapes, and senses of place.

Countryside and disability organisations have been at the forefront in researching how walkers who have disabilities experience the countryside. This has often focused on identifying attitudes of countryside service providers and visitors, and proposing environmental adaptions. This research investigates how people who have impaired vision perceive the South Downs; that is, how they feel, sense and engage with the landscape. These findings are fundamental to developing tailored strategies and programmes for accessibility and inclusivity in South Downs National Park, but also provides a deeper insight and appreciation of the unique qualities of this landscape and the diversity of human experience.

I conducted eighteen months of qualitative ethnographic fieldwork, using a case study approach of walking one-to-one with people who have impaired vision as their sighted guide. I started walking with people throughout the South Downs National Park, but became interested in how participants developed a sense of place and therefore focused on two sites: Stanmer Park and Wild Park. I used apprenticeship methods, 'walk along' interviews and studied participants' activities of perception to investigate what and how they perceived, and their sense of the landscape emerging through this. This approach prioritises each participant as full-bodied, in which their impaired vision is but a thread in the rich tapestry of their experience.

This research demonstrates the breadth of experiences of impaired vision, whilst identifying consistencies in perceptions of the South Downs National Park and techniques of sensory engagement for people who have impaired vision. These sensory techniques included activities of listening, feeling and guiding, but was not restricted to non-visual sensory perception. The majority of people who have impaired vision have a visual appreciation of the South Downs, which invites us to look at this landscape in different ways. The participants described frustrations in moving beyond a sense of sequentiality and detail, describing challenges with spatial orientation and gaining a broader sense of the parks. These findings have application for developing the inclusivity of recreational activities in the South Downs National Park and illustrates the diversity of perceptions and experiences of this landscape.

SESSION 2

Assessing land management and habitat structural features as predictors of use by bats in a complex managed landscape

Agatha Thompson - University of Southampton

UK bat populations have undergone severe declines historically due to factors including urbanisation, habitat degradation and commuting route severance. All 18 species in the UK are listed on the IUCN red list and protected by European and UK law. These species are important bioindicators of habitat quality and change, but also provide a valuable ecosystem service, regulating insect populations and suppressing pests and invasive species, both in natural and agricultural landscapes. A quantitative assessment of the variety of habitats utilised by different species is important for understanding the impacts of land use on bat populations, especially within a multifunctional landscape.

There have been relatively few studies investigating the effect of land use practices on bat populations in Europe. The research here proposes to assess the landscape and structural influences on bat populations across the area including and surrounding the ancient woodlands at Marwell Wildlife in Hampshire. Systematic bat surveys are lacking for the area, hence this research also seeks to improve knowledge of bat distribution within the landscape to inform future conservation management decisions and studies.

Two main research aims are set out. The first aim is to determine the relative effects of different woodland management interventions, woodland type and the degree of connectivity on bat foraging inside woodland blocks. The second aim is to evaluate how the use of woodland edges and corridors by bats is influenced by the habitat and management type, degree of connectivity and localised environmental conditions. The woodland edges will be sampled using waypoints 50 metres apart along 2km circular transects where two minute recordings of bat calls will be made and subsequently analysed. The woodland blocks will be sampled using a series of static bat detectors (Wild Acoustics Song Meter SM2BAT+ and SM4BAT FS) over four consecutive nights at 12 locations within the landscape with three repetitions per location.

The study will generate baseline data for future ecological studies, validating conservation management decisions. Results will be extrapolated and considered in the wider context of ancient woodland management across the South Downs. The work will provide evidence of the use of habitat and structural features by bats in a complex managed landscape as well as their foraging and dispersal along connected features, supporting their broader conservation within an increasingly developed environment.

Forgotten fields: Tithe mapping of land use in the Rother Valley and implications for the changing nature of soil erosion risk.

Chryssa Brown, Catherine Hudson and Samuel Pitman – University of Portsmouth

Additional Authors: Dr Philip Soar, Dr Alastair Pearson

The Forgotten Fields project aims to establish a reliable benchmark dataset based on the Tithe Surveys of the mid-nineteenth century in order to facilitate research on landscape change within the catchment of the western Rother, West Sussex. To achieve this, a multi-disciplinary research initiative, partly funded by the South Downs National Park and the National Trust for England, is currently underway at the Department of Geography, University of Portsmouth. Using GIS, the department has assembled a comprehensive inventory of the Tithe Survey data for the West Sussex section of the Rother catchment. With over 36,000 individual agricultural fields containing data relating to land ownership, tenancy, land use and value for each individual field, the Forgotten Fields database offers a unique opportunity to explore historic landscape change.

Three students, registered on the University's Masters by Research Programme (MRes), are investigating different but complementary avenues of research, one of which explores the relationship between the great estates of Petworth, Uppark and Cowdray and settlement pattern. A second project is focusing on the hay meadows of the past and their subsequent decline with a third offering retrospective and prospective assessments of the catchment conditions in relation to broad-scale soil erosion risk. This joint presentation will present preliminary results from each of the projects.

On completion, the historical land-use database will be made publicly available as an open-access web resource. Additional research outputs will include maps reflecting historical large estate extents, quantified change in meadow prevalence, and past, present and future erosion risks. These documents are expected to assist authorities with the development of various plans including the SDNP 'Local Plan' and the 'Arun and Western Streams: Catchment Flood Management Plan'. Regional utility provision may also be enhanced through application of the research to Southern Water's 'Water Resource Plan'.

Overall, the individual project outputs will provide a unique perspective of the catchment's history which will be of value to a range of stakeholders including planners, estate managers and historians. Reconstructing past meadow locations and management systems will inform any contemporary restoration of these invaluable resources and systematic mapping of erosion risk will identify areas of the catchment at greatest risk and correlate the contributions of land-use and climatic change to aid future policy-making.

Research on forest soils in the South Downs National Park

Dr Elena Vanguelova – Forest Research

Soil quality is of significant importance for: (1) the productivity and sustainability of forest systems, (2) the conservation of soil and water functions and resources, (3) the accumulation of persistent toxic substances, (4) the contribution forested systems make to the global carbon cycle and (5) supporting the belowground biota and its diversity. Like soils under other land uses, forest soils experience a range of pressures, some due to forestry operations and the growth of trees themselves, others outside the control of the forest manager. Spatial and temporal monitoring of soil function and dynamics is vital in improving our understanding of the response of forest soil to changes in climate, pollution and forest management practices. Increasingly, climate change and pollution policies have required an effects-based approach to proposing solutions for environmental problems and implementing the mitigation and acclimatisation policies and strategies to aid forest carbon sequestration and emissions reductions in a targeted and cost-effective way. Ecosystem services are the conditions and processes through which forest ecosystems, including their component soils and species, sustain and fulfil human life. These services include carbon sequestration, biodiversity, stabilization of hydrologic cycles, removal of air pollutants, aesthetic beauty, moderation of weather extremes and mitigation of natural disasters. Likewise, forest managers and policy makers have increasingly focused on ecosystem services, developing new incentive schemes for production and payment of these services.

This presentation will provide systematic overview of the research and monitoring carried out by Forest Research on the main forest soil functions, quality and ecosystems services provision in the South Downs National Park.

SESSION 3

Small farms, big landscapes: how can we deliver agri-environment at a landscape scale?

Cath Jackson – Natural England / University of Reading

This abstract outlines an PhD project starting this year.
It is widely acknowledged that environmental restoration needs to be delivered on a landscape scale. The English Agri-Environmental Scheme (AES), Countryside Stewardship, is a key mechanism for delivering environmental enhancement. Ensuring the adoption of land management at an appropriate scale is difficult because farm size is variable and AES is voluntary. Research about the effectiveness of AES has shown it can be effective at the option and field scale but there is less evidence about its positive impact at national and landscape scale.

Several models of AES delivery could be used to address landscape delivery. Collaborative approaches, where groups of farmers deliver environmental outcomes together, are used in the Netherlands and Germany. In the UK, collaborative initiatives have been pioneered by the Game Conservancy Council through cluster farm groups and by projects such as the Dartmoor Farming Futures Initiatives. The cluster farm model has been integrated into the current AES through Natural England's Facilitation Fund launched in 2015. However, despite the rapid rise of these initiatives is little research on the effectiveness of this approach.

Broadly, the aim of the PhD research is to attempt to address this research gap by:

- Comparing facilitation funds/cluster to similar initiatives
- Identifying what prevents and encourages participation in these groups and,
- Investigating the effectiveness of facilitation funds/cluster farms compared to the 'scattergun' approaches, in terms of AES uptake, land management and environmental outcome delivery.

Identifying the potential to enhance and improve future collaborative approaches.

SESSION 4

Stansted Forest – an Evaluation of Field Systems and Pits

Mark Seaman – South Downs Heritage Volunteers

The SDNPA Secrets of the High Woods Project revolutionised our understanding of the history of the South Downs. In particular, the LiDAR used by the project has revealed that the South Downs was once covered by an extensive system of fields, the remains of which are still preserved in the woodland.

The field systems at Stansted were examined in detail. The National Mapping Project identified these systems to be radial – i.e. appearing to radiate out from a single point. This is an unusual alignment as other field systems in the South Downs were of a different form – coaxial, agglomerated or linear. Research on the other systems indicated that they tended to follow the topography of the land. However, the topography at Stansted has an escarpment to the north west with a gentle slope to the south.

Careful examination of the Lidar and ground surveys revealed a number of trackways leading from the escarpment into the forest. The field systems appear to align with these tracks. Consequently, it is proposed that there is no relevant central point that the field system radiated out from, but instead the field systems were built out from the trackways.

Stansted is also unusual in the number of pits it contains. Several different uses have been suggested for these pits. However, the LiDAR has revealed that the pits appear to be associated with the field systems. From their shape and position, it is proposed that these pits were used for the extraction of marl, an ancient method to improve fertility. Chemical analysis of soil samples provides support for this theory.

A barrage of barrows - bronze age past and bronze age future in the Rother Valley region

Sabine Stevenson – University of Winchester

Historically the western Weald has been neglected in archaeological investigations, yet the testimony of Bronze Age monuments in the landscape of this region are widely visible to the visitor in the South Downs National Park, and accessible along a webbed network of walking routes, which traverse the study area.

Investigation into 15 Bronze Age monuments on Petersfield Heath over the last three years, as part of the People of the Heath (PotH) Project (2014 – 2018), hosted by Petersfield Museum, funded by the Heritage Lottery Fund and the South Downs National Park (SDNP), have yielded radiocarbon dated finds from excavated barrows, dating monuments to the Early Bronze Age, and providing evidence for different funerary practises, as well as highlighting the construction of diverse types of barrows.

The PotH barrow survey undertaken in parallel with the excavations, established the extent of Bronze Age monuments in the western Weald, the Rother valley and the South Downs. HER, published and unpublished data from the PotH project were combined with cartographic information in a GIS. LiDAR images generated from Environmental Agency as well as SDNP data were scanned for possible sites. All sites were ground-truthed to confirm or discount the evidence, measured and besides topographical observations, the various stages of preservation were assessed. This comprehensive survey of the Bronze Age barrows located throughout the Rother Valley Bronze Age landscape established, that just under half had not been previously recorded and provides new data, which proves crucial to the analysis of the ritual landscape in the Rother valley region.

The case study of Priors Dean barrow cemetery highlights, how integrating both recorded and known, obliterated as well as rediscovered barrows in the western Weald, the Rother valley and the South Downs, changes our understanding of the Bronze Age ritual landscape by revealing new topographical constellations in this region.

POSTER PRESENTATIONS

Behaviour and condition as a determinant of reintroduction success of individual sand lizards (*Lacerta agilis*) Bethan Govier – University of Southampton
Forgotten Fields: Risk-based assessment of the changing nature of soil erosion as a function of land-use change in the Lower Rother valley Catherine Hudson – University of Portsmouth
Forgotten Fields: Reconstructing hay meadow decline in the Western Rother catchment, West Sussex, UK Chryssa Brown – University of Portsmouth
Forgotten Fields: The impact of large landowners in the Lower Rother catchment, West Sussex C. 1840 Samuel Pitman – University of Portsmouth
The assessment and communication of climate change related flood risks at national, regional and local scales Katie Donnelly – University College London
How does tree seed provenance affect budburst date for oaks in southern England? Matthew Wilkinson – Forest Research
Examining the relationships between large wood and hyporheic invertebrates across lowland reaches Chiara Magliozzi – Cranfield University
Evaluating the predictors of reptile population assemblages across a multifunctional landscape within the south downs national park, u.k. Victoria Stoodley – University of Southampton
Connectivity of Sediment Transport in the River Rother Catchment Megan Tomlinson – University of Portsmouth
Green open spaces for health: progress towards delivery and mainstreaming Prof Dan Osborn – University College London