



Aims

The aim of our topic this year is to draw connections between food security, biodiversity and bioenergy and to use the meetings to think about the research pathways that will help us to prepare for and address the challenges we will face in the future.

This month, the meeting will ask 'Does the way we think need to change?' and our aim is to use the interests of the panel of three witnesses to explore new ways of thinking about the impact of land use change on the supply of natural resources and drivers behind the demand for them.

Agenda

All the witnesses will give a 10 minute introduction and their perspective on the two core questions followed a general discussion:

- 5:00pm Welcome by the Chair and an introduction to the topic
Each witness gives a short introduction and thoughts about the questions (10 mins)
Questions and beginning the open discussion
- 6:00pm Coffee break
Continue the discussion in three groups and then come together for final thoughts
- 7:15pm Reception and dinner, which will include a working session

Witnesses

This month, the three witnesses are:

Professor Charles Godfray	Hope Professor and Director of the Oxford Martin Programme on the Future of Food at Oxford University
Professor Georgina Mace	Professor of Biodiversity and Ecosystems and Director of the Centre for Biodiversity and Environment Research (CBER) at University College London (UCL)
Dr David Nally	Senior Lecturer in Human Geography in the Department of Geography at the University of Cambridge

Questions

This month, the witnesses have all been asked two core questions:

- 1) What do you perceive as being the main gaps in our knowledge?
- 2) What would you include in the 'next generation' of research questions?

Each of these questions will be posed to everyone and their answers will then be used as a springboard for further discussion. The main points raised will then sent to everyone to use as a starting point for the next meeting.

Witnesses

Professor Charles Godfray

Hope Professor and Director of the Oxford Martin Programme on the Future of Food at Oxford University

Charles Godfray is a population biologist with broad interests in the environmental sciences and has published in fundamental and applied areas of ecology, evolution and epidemiology.

He is interested in how the global food system will need to change and adapt to the challenges facing humanity in the 21st century, and in particular in the concept of sustainable intensification, and the relationship between food production, ecosystem services and biodiversity.

He chaired the Lead Expert Group of the UK Government's Foresight Project on the Future of Food and Farming and is a member of the Strategy Advisory Board of the UK Global Food Security Programme and the Steering Group of the UK Government Green Food Project. He is also a member of the writing team for the UN's Committee on World Food Security, High Level Panel of Experts report on Climate Change and Food Security.

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Professor Georgina Mace

Professor of Biodiversity and Ecosystems and Director of the Centre for Biodiversity and Environment Research (CBER) at University College London (UCL)

Georgina Mace is Professor of Biodiversity and Ecosystems and Director of the UCL Centre for Biodiversity and Environment Research (CBER). She joined UCL in 2012 from Imperial College where she was Director of the NERC Centre for Population Biology.

Her research interests are in measuring the trends and consequences of biodiversity loss and ecosystem change. She led the development of criteria for listing species on IUCN's Red List of threatened species, and was a coordinating lead author for biodiversity in the Millennium Ecosystem Assessment (www.maweb.org). Recently she has worked on the UK National Ecosystem Assessment (uknea.unep-wcmc.org/), was a co-investigator on the NERC Valuing Nature Network, and Associate Director of the Ecosystem Services for Poverty Alleviation Programme, funded by DfID, NERC and ESRC (www.espa.ac.uk). She was elected FRS in 2002, and was the 2007 winner of the international Cosmos prize. She was President of the Society for Conservation Biology from 2007-2009, and President of the British Ecological Society from 2011-2013. Currently she is a NERC Council member, member of the Council of the Royal Society, and Chair of the science committee for the DIVERSITAS global change research programme.

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David Nally

Senior Lecturer in Human Geography in the Department of Geography, University of Cambridge

David Nally is a human geographer and member of the Natures, Cultures, Knowledges and the Population, Health and Histories Research Groups. His research interests include the political economy of agrarian change; the economic and socio-cultural dimensions of colonisation; the history of subsistence crises; and the geopolitics of disaster relief.

He recently completed a monograph, *Human Encumbrances: Political Violence and the Great Irish Famine* (University Notre Dame Press, 2011) and a co-authored textbook, *Key Concepts in Historical Geography* (Sage, 2014). David teaches courses on historical and contemporary human geography, research methods, and the politics of hunger. He was the editor of the RGS-IBG's monograph series on Historical Geography from 2007-2011.

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Background papers

Paper 1: Charles Godfray (Garnett et al. 2013)

Sustainable Intensification in Agriculture: Premises and Policies

Food security is high on the global policy agenda. Demand for food is increasing as populations grow and gain wealth to purchase more varied and resource-intensive diets. There is increased competition for land, water, energy, and other inputs into food production. Climate change poses challenges to agriculture, particularly in developing countries, and many current farming practices damage the environment and are a major source of greenhouse gases (GHG). In an increasingly globalized world, food insecurity in one region can have widespread political and economic ramifications. These challenges require action throughout the food system. One response has been a call to increase food production from existing farmland in ways that place far less pressure on the environment and that do not undermine our capacity to continue producing food in the future. This “sustainable intensification” (SI) approach is a policy goal for a number of national and international institutions but also attracts criticism as being too narrowly focused on production or representing a contradiction in terms. The origins of SI lie in discussions about increasing yields, chiefly of arable crops, in the face of resource scarcity and environmental challenges (see the photo). Our goal here is to articulate a more sophisticated definition of SI, one that clarifies the logic on which it rests and the context and conditions within which it should be implemented. We define four underpinning premises of SI, situating it within a broader framework of priority actions for the food system. We then explore how SI interfaces with other major foodsystem goals and show how they may guide SI implementation. We argue that this broad perspective is essential if SI is to fulfill its goal of helping foster global food security.

T. Garnett, M. C. Appleby, A. Balmford, I. J. Bateman, T. G. Benton, P. Bloomer, B. Burlingame, M. Dawkins, L. Dolan, D. Fraser, M. Herrero, I. Hoffmann, P. Smith, P. K. Thornton, C. Toulmin, S. J. Vermeulen, H. C. J. Godfray (2013) Sustainable Intensification in Agriculture: Premises and Policies. *Science*, 341, 33-34.

Paper 2: Georgina Mace (Mace 2014)

Whose conservation?

When we think of nature conservation, some of us may imagine wilderness protected in a natural park. Others may think of species closer to home, such as birds and butterflies helped to recovery by the reintroduction of hedges. In this essay, Georgina Mace traces the changes in conversation thinking in the past 50 years. She identifies four different views of nature as emphasis has shifted from individual species to ecosystems, and from viewing nature as separate from humans to considering direct benefits to humans from nature. The different views have important implications for how scientists can measure conservation success and how policy-makers value and manage nature.

G.M. Mace (2014) Whose conservation? *Science* (New York, N.Y.), 345, 1558-1560.

Paper 3: Georgina Mace (Bateman et al. 2013)

Bringing ecosystem services into economic decision making: Land use in the UK

Landscapes generate a wide range of valuable ecosystem services, yet land-use decisions often ignore the value of these services. Using the example of the United Kingdom, we show the significance of land-use change not only for agricultural production but also for emissions and sequestration of greenhouse gases, open-access recreational visits, urban green space, and wild-species diversity. We use spatially explicit models in conjunction with valuation methods to estimate comparable economic values for these services, taking account of climate change impacts. We show that, although decisions that focus solely on agriculture reduce overall ecosystem service values, highly significant value increases can be obtained from targeted planning by incorporating all potential services and their values and that this approach also conserves wild-species diversity.

Ian J. Bateman, Amii R. Harwood, Georgina M. Mace, Robert T. Watson, David J. Abson, Barnaby Andrews, Amy Binner, Andrew Crowe, Brett H. Day, Steve Dugdale, Carlo Fezzi, Jo Foden, David Hadley, Roy Haines-Young, Mark Hulme, Andreas Kontoleon, Andrew A. Lovett, Paul Munday, Unai Pascual, James Paterson, Antara Sen, Gavin Siriwardena, Daan van Soest and Mette Termansen (2013) Bringing ecosystem services into economic decision making: Land use in the UK, *Science*, 341: 45-50

Paper 4: David Nally

Governing precarious lives: land grabs, geopolitics, and 'food security'

This paper has a two-part structure. The first part of the paper explores contemporary land grabs and shows how they both reflect and constitute a new neoliberal governance structure over land and land-based resources. In this sense, what is noteworthy about land grabs is their world-making capacity: the deals structure and make possible new relations of power in the global food economy. For this very reason, it is crucial to understand how land grabs affect both the pace and direction of agrarian change. The second part of the paper examines the discursive strategies that align 'food security' concerns with land-grabbing practices. Here I suggest that 'food security' supplies a moral sanction for land grabs. By mustering public empathy around a desire to 'feed the future', food security discourse – to borrow an idea from Fassin (2012) – converts a relationship of dominance (the governance of precarious lives) into a relationship of assistance (the provision of a remedy).

Nally, D. (2014), Governing precarious lives: land grabs, geopolitics, and 'food security'. *The Geographical Journal*. doi: 10.1111/geoj.12063