

#BOU2018

21st Century Ornithology: challenges, opportunities and decisions

27 – 29 March 2017 | University of Norringham, UK



ABSTRACTS

Abstracts for the oral programme are in programme order. Poster abstracts will be added by the end of January 2018.

TUES, 27 MARCH, 2030 h

ALFRED NEWTON LECTURE

The role of bird data and science in conservation management and policy: what information really counts?

Hugh Possingham

The Nature Conservancy, 4245 Fairfax Drive, Arlington, VA 22203, USA

The University of Queensland, St Lucia, QLD 4072, Australia

hugh.possingham@TNC.ORG  @hugepossum

We are repeatedly reminded that conservation is a crisis discipline. We know that extinction rates are maybe 1000 times the “background” rate and the overall abundance of birds is also in decline. For those of us interested in reducing the loss of birds, what is the role of science and monitoring? Can we afford the luxury of pure discovery and undirected monitoring in this time of crisis?

In this talk I will classify and illustrate the different ways in which bird science and data inform management and policy, from The Nature Conservancy and beyond. There are examples of spectacular success. I will introduce the idea of Value of Information Theory and argue that we can prioritise our research efforts much more tightly if we take a cost-effectiveness approach to deciding what research and monitoring will likely change management and policy for the greatest net benefit to bird conservation. Notably, the things we know least about are not necessarily the things that require most study. The simple question – “Explain in detail how the results of your study change how we act?” needs to be part of every applied research proposal. Some call this having a “theory of change”.

#BOU2018

21st Century Ornithology: challenges, opportunities and decisions

27 – 29 March 2017 | University of Norringham, UK



ABSTRACTS

Abstracts for the oral programme are in programme order. Poster abstracts will be added by the end of January 2018.

WEDS, 28 MARCH, 0905 h

KEYNOTE

Consequences of individual movement strategies

Jenny Gill

University of East Anglia, UK

J.Gill@uea.ac.uk  @jengill3

How will migratory birds respond to future changes in land use and climatic conditions? Our ability to predict such responses rests on our understanding of the links between environmental conditions and the demographic processes that can drive changes in population size and distribution. Many migratory species across the change are declining rapidly in number at present, creating an urgent need to identify potential conservation responses. While identifying causes of changes and appropriate conservation actions is complicated by the scales over which these species travel, and the range of environmental conditions that they can experience across the migratory range, rapid changes in phenology, demography and distribution are occurring in many migratory systems at present, and these can provide important clues about the mechanisms that drive these changes. In this talk, I will explore these changes and how they can help us to identify and target conservation actions.

Jenny Gill is Professor of Applied Ecology at the University of East Anglia. She has worked on a range of migratory systems, from waders and geese that migrate between subarctic and temperate ecosystems to Afro-Palaeartic migrants, and her work focusses on understanding the response of migratory species to environmental change.

#BOU2018

21st Century Ornithology: challenges, opportunities and decisions

27 – 29 March 2017 | University of Norringham, UK



ABSTRACTS

Abstracts for the oral programme are in programme order. Poster abstracts will be added by the end of January 2018.

WEDS, 28 MARCH, 0935 h

Seasonal niche overlap as a measure of migratory bird's flexibility to the global change

Guillermo Fandos¹, José Luis Tellería¹, Katrin Boehning-Gaese², Diana Bowler² & Susanna Fritz²

¹Universidad Complutense de Madrid. C/Jose Antonio Novais 12. 28040. Madrid, Spain

²Senckenberg Biodiversity and Climate Research Centre (BiK-F). Senckenberganlage 25. 60325 Frankfurt (Main), Germany

* gfandos@ucm.es  @gfandos

An increasing number of studies have shown that distributions and population dynamics of animals are affected by climate change and human land use practices. Birds performing long-distance migrations are more vulnerable to ongoing climate change than residents and short-distance migrants, because of their complex annual cycle. However, population declines have not been uniform across long-distance migratory species, implying that some species traits might confer particular sensitivity to environmental change. Migratory species differ in their abilities to respond to changes in the environmental spatial heterogeneity across seasons, hence seasonal niche overlap can be an indicator of general niche flexibility in migratory species under global change. In this study, we used the available data on occurrence of Palearctic long-distance migrants (eBird and range maps) in combination with the population trend European Bird Census Council; EBCC) and the phylogeny, to explore the link between seasonal niche overlap in bird species and their recent population trends. We explore this relationship between the seasonal niche overlap and the population trends using phylogenetic generalized least squares (PGLS) regressions. The results suggest that long-distance migratory passerines wintering in Sub-Saharan Africa with high niche overlap between seasons (niche trackers) experience greater declines in breeding population size following extreme climate and land use changes, than those species that inhabit different niches between seasons. Identifying the characteristics of long-distance migrants that increase susceptibility to global change is critical for implementing effective conservation measures to protect this threatened group of animals

Guillermo Fandos is a biologist with a main research focus on the understanding of the multiple environmental drivers that govern migratory bird's distributions along the year. He is particularly interested in the processes underlying large-scale biogeographic patterns and their relationships with the abiotic environment, and in consequences for global conservation.

#BOU2018

21st Century Ornithology: challenges, opportunities and decisions

27 – 29 March 2017 | University of Norringham, UK



ABSTRACTS

Abstracts for the oral programme are in programme order. Poster abstracts will be added by the end of January 2018.

WEDS, 28 MARCH, 0950 h

Fuelling conditions at staging sites can mitigate Arctic warming effects in a migratory bird

Eldar Rakhimberdiev^{1,2} & Theunis Piersma^{2,3}

¹ NIOZ Royal Netherlands Institute for Sea Research, Department of Coastal Systems and Utrecht University, PO Box 59, 1790 AB Den Burg, Texel, The Netherlands

² Department of Vertebrate Zoology, Biological Faculty, Lomonosov Moscow State University, 119991, Moscow, Russia

³ Chair in Global Flyway Ecology, Conservation Ecology Group, Groningen Institute for Evolutionary Life Sciences (GELIFES), University of Groningen, PO Box 11103, 9700 CC Groningen, The Netherlands

* eldar@nioz.nl

As they cross latitudes, migratory birds utilize sequences of seasonally peaked resources. To cope with rapid warming in the Arctic and slower warming in the tropics, migratory birds have to adjust multiple components of the annual cycle at different rates. We show that despite this challenge, the need for multiple adjustments can actually offer the opportunity for change in one phase to be mitigated in another. We demonstrate this potential in bar-tailed godwits (*Limosa lapponica taymyrensis*) who travel 10 000 km from their wintering grounds in West Africa to the rapidly warming central Eurasian Arctic breeding grounds, with a single refuelling stop in the Wadden Sea in north-western Europe. Using a 20-year time series of observations collected at wintering, refuelling and breeding areas, we show that godwits adjusted the time of breeding with the advancing phenology at the breeding grounds by shortening refuelling time in the Wadden Sea. However, to facilitate earlier departures to the breeding grounds with sufficient stores, refuelling godwits need better refuelling conditions than currently available. Rapid Arctic warming, in combination with ongoing development of coastal refuelling areas, will have synergistic negative effects on their already declining populations. At the same time our findings indicate that proactive management to improve refuelling conditions can mitigate Arctic-warming effects for these long-distance migrants.

Eldar Rakhimberdiev is a quantitative ecologist focused on full annual cycle population ecology of migratory animals. He studies how connected parts of annual cycles interact to mitigate effects of climate change and human imposed pressures on population dynamics. For that he develop statistical models, approaches and software.

#BOU2018

21st Century Ornithology: challenges, opportunities and decisions

27 – 29 March 2017 | University of Norringham, UK



ABSTRACTS

Abstracts for the oral programme are in programme order. Poster abstracts will be added by the end of January 2018.

WEDS, 28 MARCH, 1005 h

Predicting the individual- and population-level effects of land use changes on three species of overwintering swan (*Cygnus* spp.).

Kevin A. Wood¹, Richard A. Stillman², Julia L. Newth¹, Rascha J.M. Nuijten³, Geoff M. Hilton¹, Bart A. Nolet^{3,4} & Eileen C. Rees¹

¹Wildfowl & Wetlands Trust, Slimbridge, Gloucestershire, GL2 7BT, UK

²Department of Life & Environmental Sciences, Faculty of Science & Technology, Bournemouth University, Poole, Dorset, BH12 5BB, UK

³Department of Animal Ecology, Netherlands Institute of Ecology, Droevendaalsesteeg 10, 6700 AB, Wageningen, The Netherlands.

⁴Theoretical and Computational Ecology, Institute for Biodiversity and Ecosystem Dynamics, University of Amsterdam, PO Box 94248, 1090 GE, Amsterdam, The Netherlands.

* kevin.wood@wwt.org.uk  @drkevinwood

As conservationists we need to predict how birds will respond to changes in their environment, and how such responses may be affected by conservation interventions. Calls for conservation to become more predictive have led to the development of models that base predictions on fitness maximization decision-rules, including individual-based models (IBMs). The decision rules of fitness-maximizing models are based on adaptive behaviour and so are not expected to change even if the environment changes. Thus these rules are considered more likely to maintain their predictive power as environmental conditions change than extrapolations of empirical correlative relationships.

We built and tested an IBM of three overwintering swan species at a key overwintering site in the UK; Bewick's Swans (*Cygnus columbianus bewickii*), Whooper Swans (*Cygnus cygnus*) and Mute Swans (*Cygnus olor*). Our model made predictions at both the individual- (e.g. behaviour, energy reserves) and population-levels (e.g. population size). We compared these model predictions with real world data to validate our IBM using a Pattern Oriented Modelling approach. We used our validated model to forecast how expected future changes in land use, such as changes in crop types and the loss of feeding habitat to development, will affect our suite of individual- and population-level predictions. Ultimately, these simulations allowed us to assess how the carrying capacity of the landscape would respond to land use changes. The IBM-based approach allowed the effects of each aspect of land use change to be modelled synergistically, as well as independently. Finally, we used a sensitivity analysis to assess how parameter value uncertainty influenced our conclusions. Our work highlights that IBMs are useful tools to predict avian responses to environmental change and improve our understanding of the mechanisms which underpin such responses.

#BOU2018

21st Century Ornithology: challenges, opportunities and decisions

27 – 29 March 2017 | University of Norringham, UK



ABSTRACTS

Abstracts for the oral programme are in programme order. Poster abstracts will be added by the end of January 2018.

Kevin Wood is an early-career researcher with broad interests in how avian populations respond to environmental change. His research uses a mix of field ecology, statistical analyses, and simulation modelling to identify threats to waterbird populations and inform their conservation and management.

WEDS, 28 MARCH, 1020 h

Does warming along migration routes explain the advancement of spring arrival in long distance migrants?

Mark Eddowes

Independent Researcher, Hollybank, The Dale, Bonsall, Derbyshire, DE4 2AY, UK
mark@eddoesaviationsafety.com

The climate change-related advancement of the onset of spring at the breeding grounds represents an adaptive challenge to long distance migrant that may need to adjust their arrival timing in order to synchronise breeding with the peak availability of food. A trend towards earlier arrival in recent years is evident across a range of species, raising the question as to whether the observed changes are driven by evolutionary adaptation or phenotypic plasticity and whether they may be sufficient to keep up with advancement of spring on the breeding grounds.

Open-access internet platforms such as the UK BirdTrack survey represent a new data source for estimating the arrival timing of a wide range of migrant species. Twenty first century survey approaches may therefore assist with addressing twenty first century questions in ornithology.

The dependence of median UK arrival dates for a range of migrants upon weather conditions along migration routes has been evaluated using BirdTrack. A significant correlation with local temperatures in particular is found for this UK data set, supporting the findings of earlier studies of arrival timings in Scandinavia which indicate that climate warming along the migration route accelerates the migration process resulting in earlier arrival at the breeding grounds. A substantial element at least of the observed recent advancement in arrival dates would therefore appear to arise from phenotypic plasticity.

Further insights into the mechanisms influencing arrival date advancement can be gained from comparative studies of the comprehensive range of migrants covered by the available BirdTrack data.

Mark Eddowes is an independent researcher with a particular interest in long-distant migrant arrival phenology developed through volunteer involvement in ornithology. He has a Doctorate in Chemistry and published on a variety of topics in electrochemical kinetics before moving into technical consultancy.

#BOU2018

21st Century Ornithology: challenges, opportunities and decisions

27 – 29 March 2017 | University of Norringham, UK



ABSTRACTS

Abstracts for the oral programme are in programme order. Poster abstracts will be added by the end of January 2018.

WEDS, 28 MARCH, 1130 h

KEYNOTE

Patterns of alien species: future scenarios and consequences for birds

Tim M. Blackburn^{1,2*}, Ellie E. Dyer² & Hanno Seebens³

¹Department of Genetics, Evolution and Environment, Centre for Biodiversity and Environment Research, University College London, Gower Street, London WC1E 6BT, UK

²Institute of Zoology, Zoological Society of London, Regent's Park, London NW1 4RY, UK

³Senckenberg Biodiversity and Climate Research Centre (BiK-F), Senckenberganlage 25, 60325 Frankfurt am Main, Germany

* t.blackburn@ucl.ac.uk  @TimBLackburn66

One of the primary ways that humans are causing global environmental change is by translocating a wide range of species to areas beyond their normal biogeographic distributions. Such species – here termed aliens – are now a feature of more or less every biological community worldwide. A proportion of alien species become invasive (invasive alien species, or IAS), meaning that they spread potentially widely across their new recipient area, causing negative impacts on the natural and/or socio-economic environments they encounter. These impacts provide a strong incentive to understand the process of invasion, for biosecurity and conservation biology.

Here, we explore the history of alien species, and what the past tells us about the likely future for such species, both in terms of patterns of alien species occurrence, and alien species impacts. We focus mainly on birds as a model taxon, both as aliens and as a group that has suffered from the impacts of aliens. We start by showing how the history of bird species introductions has been affected by human activities, and the consequences of this for current and future patterns of alien species richness. We show that invasions are continuing to accumulate at ever-greater rates, but that birds are somewhat anomalous in the occurrence of new alien species. We go on to consider evidence for the impacts of birds as IAS, and IAS on birds, and what that may mean for the future of avian conservation biology.

Tim Blackburn is Professor of Invasion Biology at the Centre for Biodiversity & Environment Research, University College London. He is jointly employed by the Zoological Society of London, where he was until recently Director of their Institute of Zoology. His research interests concern large-scale patterns in the distribution and abundance of species, particularly focusing on the causes and consequences of alien invasions, using birds as a model taxon.

#BOU2018

21st Century Ornithology: challenges, opportunities and decisions

27 – 29 March 2017 | University of Nottingham, UK



ABSTRACTS

Abstracts for the oral programme are in programme order. Poster abstracts will be added by the end of January 2018.

WEDS, 28 MARCH, 1200 h

Codispersal services by waterbirds: implications for expansion of alien species and redistribution of native species under climate change

Andy J. Green^{1*}, Ádám Lovas-Kiss², Víctor Martín-Vélez¹, Marta I. Sánchez¹, David M. Wilkinson³

¹ Department of Wetland Ecology, Estación Biológica de Doñana, EBD-CSIC, Américo Vespucio 26, 41092 Sevilla, Spain

² Department of Botany, University of Debrecen, Egyetem sq. 1., H-4032, Debrecen, Hungary

³ Visiting Professor in Ecology, University of Lincoln, UK and Honorary Research Fellow, Department of Archaeology, University of Nottingham.

* ajgreen@ebd.csic.es  [@drAndyGreen](https://twitter.com/drAndyGreen)

Seed dispersal has been considered the most important ecosystem service provided by birds. However, the vast majority of research has focused on frugivores and scatter-hoarding corvids, wrongly implying that birds are not important vectors for plant species that lack a fleshy fruit or a large nut (thus overlooking the great majority of plant taxa). Ultimately, this research habit is likely to be explained by Darwin's legacy. Using new data from the UK and continental Europe, we describe the broad range of plants dispersed by migratory Anatidae, shorebirds and gulls, as well as the increasing variety of invertebrate taxa. This includes unique observations of dispersal of mosses, ferns, sponges, and a range of alien angiosperms by survival of passage through the avian gut. We illustrate the major implications of these findings for the spread of alien species, as well as the redistribution of native species in response to climate change and to changing patterns of bird migration. For example, many aliens assumed to be spread by human activity are readily spread by bird populations that concentrate in areas of low human density, and management of invasions is unlikely to be successful until this is recognized. Furthermore, migratory birds provide far greater maximum dispersal distances for seeds than other vectors such as wind or water, such that they are critical vectors if plants are to change their distributions in pace with climate change. We suggest this area of research provides both a major *opportunity* and *challenge* for ornithology. Avian codispersal services exemplify the benefits of conserving migratory bird populations in a changing world. A major challenge that remains is how to predict *which* taxa are dispersed effectively by migratory birds, since the limits remain very unclear and traditional methods (e.g. based on seed morphology) are inadequate.

Andy Green is an ecologist focusing on waterbirds and wetlands. Since completing his DPhil on sexual selection at Oxford and researching into globally threatened wildfowl at WWT Slimbridge, he has spent over two decades based in the Doñana Biological Station researching mainly in Mediterranean systems.

WEDS, 28 MARCH, 1215 h

#BOU2018

21st Century Ornithology: challenges, opportunities and decisions

27 – 29 March 2017 | University of Norringham, UK



ABSTRACTS

Abstracts for the oral programme are in programme order. Poster abstracts will be added by the end of January 2018.

Prioritising wetland conservation by quantifying resistance and resilience to extinction among papyrus-endemic birds in East Africa

Lynda Donaldson^{1*}, Jonathan Bennie², Robert J Wilson³ & Ilya MD Maclean¹

¹Environment & Sustainability Institute, University of Exeter, Penryn Campus, Cornwall TR10 9FE

²Department of Geography, University of Exeter, Penryn Campus, Cornwall TR10 9FE

³College of Life and Environmental Science, University of Exeter, Exeter EX4 4PS

* L.Donaldson@exeter.ac.uk  @donaldsonlynda1

Limited conservation resources and ambitious biodiversity targets necessitate effective and efficient conservation planning. Traditional site-based conservation approaches often focus on reducing the extinction risk of species at particular sites. However, with increasing levels of fragmentation from land use change and pressures from climate change and overexploitation, the surrounding landscape will play a role in ensuring persistence as a whole. Using metapopulation theory, we present a framework for quantifying the resistance and resilience of populations to extinction, depending on their likelihood of survival and probability of re-establishment following extinction events. We apply this framework for the conservation of a group of bird's endemic to papyrus (*Cyperus papyrus*) swamps in E and C Africa, which are highly threatened by large-scale habitat loss and degradation, yet currently receive very little protection. We use occupancy data collected from a network of swamps in SW Uganda to identify the locations which contribute to regional resistance and resilience for individual species, and determine the potential to invest in areas that are most important for all species combined. The results demonstrate that resilience to extinction is low across the landscape, causing concern for the persistence of particular species following localized extinction events. Despite varying degrees of resistance and resilience among species, several sites support populations of all species that are both highly resilient and resistant to extinction, highlighting where future efforts should be focused to halt further declines. Overall this work demonstrates the utility of the resistance-resilience framework for the conservation of multiple species occurring in human-dominated landscapes, where wise decisions surrounding the investment of limited conservation resources are paramount.

Lynda Donaldson is a PhD student researching the conservation and ecology of African wetland birds. Broadly her research focuses on conservation planning in fragmented landscapes, with a focus on papyrus-endemic birds in Uganda. She is interested in identifying practical solutions for conservation that work for both biodiversity and rural livelihoods.

WEDS, 28 MARCH, 1230 h

#BOU2018

21st Century Ornithology: challenges, opportunities and decisions

27 – 29 March 2017 | University of Norringham, UK



ABSTRACTS

Abstracts for the oral programme are in programme order. Poster abstracts will be added by the end of January 2018.

Convergent evolution connects form to function in the world's birds

Joseph A. Tobias^{1*}, Alex Pigot² & Catherine Sheard³

¹Department of Life Sciences, Imperial College London, Silwood Park, Buckhurst Road, Ascot SL5 7PY, UK

²Centre for Biodiversity and Environment Research, Department of Genetics, Evolution and Environment, University College London, Gower Street, London, WC1E 6BT, UK

³Department of Archaeology & Anthropology, University of Bristol, 43 Woodland Drive, Bristol BS8 1UU, UK

* j.tobias@imperial.ac.uk  @ja_tobias

The link between morphological form and ecological function is a central organizing principle in nature, but a lack of data has prevented a general understanding of how organismal traits are connected to ecological niches. Using comprehensive beak and body measurements for >96% bird species, we demonstrate that avian phenotypes map onto niches with remarkable fidelity, predicting variation in resource use and foraging strategy with over 70% accuracy. We also show that this fundamental association arises through the independent convergence of ecologically similar bird lineages toward the same regions of phenotypic space, particularly when their geographic ranges are isolated, presumably reducing competition. Our analyses suggest that ecological adaptation generates a universal structure to bird diversity, and offer a quantitative trait-based framework for understanding the evolution, assembly and functioning of bird communities worldwide.

Joe Tobias started out as a behavioural ecologist with a PhD on European Robins at Cambridge University, then worked for BirdLife International and other conservation NGOs, before returning to academia as a Lecturer in Evolutionary Ecology at the Edward Grey Institute, Oxford University. He is now a Senior Lecturer in Biodiversity at Imperial College London, where his research group studies avian macroecology and macroevolution, with a particular focus on understanding how complex ecosystems function and respond to environmental change.

WEDS, 28 MARCH, 1415 h

KEYNOTE

Habitats in a changing climate: population impacts and implications for conservation

Malcolm Ausden^{1*} & Rob Fuller²

RSPB, The Lodge, Sandy, Beds SG19 2DL, UK

BTO, The Nunnery, Thetford, Norfolk IP24 2PU, UK

* Malcolm.Ausden@rspb.org.uk

#BOU2018

21st Century Ornithology: challenges, opportunities and decisions

27 – 29 March 2017 | University of Norringham, UK



ABSTRACTS

Abstracts for the oral programme are in programme order. Poster abstracts will be added by the end of January 2018.

We expect key drivers of changes in bird populations over the next few decades to be changes in climate, increased global food demand, and the direction of environmental government policy. Changes in climate are expected to cause continuing shifts in bird distributions and result in an overall decline in the breeding populations of several species groups including seabirds and mountain birds. Low-lying coastal habitats are expected to be under increasing pressure from sea level rise and erosion, leading to a reduction in the extent and quality of some current coastal waterbird hotspots. Escalating food demand is likely to drive further intensification in farming. The direct effects of climate change on farmland birds are likely to be small, compared to the effects of agricultural policy and practice. The effects on birds of future forest management are difficult to predict and depend both on future markets for forest products and on measures adopted to increase resilience to climate and tree diseases. Against a backdrop of changing climate and a less wildlife-friendly wider environment, it will be essential to ensure that protected areas increase in extent and continue to provide suitable conditions for conservation-dependent species. In some cases high levels of intervention management will be required to achieve this, though rewilding may benefit a small suite of species. The delivery of large-scale habitat restoration, through schemes designed to provide other public benefits, particularly climate regulation, flood defence and outdoor recreation, represents a major conservation opportunity.

Malcolm Ausden is Principal Ecologist at the RSPB, where he advises on habitat creation and the management of the RSPB's nature reserves, particularly wetlands and heathlands, and how best to respond to the effects of climate change. His current projects include leading on the ecological design of Wallasea Island Wild Coast, the largest coastal wetland ever created in the UK, and production of a natural capital account for the RSPB's nature reserves in England.

#BOU2018

21st Century Ornithology: challenges, opportunities and decisions

27 – 29 March 2017 | University of Nottingham, UK



ABSTRACTS

Abstracts for the oral programme are in programme order. Poster abstracts will be added by the end of January 2018.

WEDS, 28 MARCH, 1445 h

Evidence for contrasting climate change impacts at different life history stages in the Mauritius kestrel

Joseph Taylor^{1,2*}, Ken Norris², Malcolm Nicoll², Emily Black³, Pier Luigi Vidale³, Carl Jones^{4,5} & Vikash Tatayah⁵

¹ Centre for Agri-Environmental Research, School of Agriculture, Policy and Development, University of Reading, Reading, RG6 6AR, UK

² Institute of Zoology, Zoological Society of London, London, NW1 4RY, UK

³ Department of Meteorology, University of Reading, Reading, RG6 6BB, UK

⁴ Durrell Wildlife Conservation Trust, Les Augrès Manor, Trinity, Jersey, JE3 5BP, UK

⁵ Mauritian Wildlife Foundation, Grannum Road, Vacoas, Mauritius

* Joseph.Taylor@ioz.ac.uk

Projected climate change is expected to be accompanied by changes in the frequency and severity of extreme weather events, which may pose a greater risk to ecosystems than changes in average weather regimes. However, we still lack sufficient understanding of the long-term demographic impacts of extreme weather on animal populations, including island endemic species, which are expected to show particularly high vulnerability and low adaptive capacity to climate change. The definition of extreme weather events in ecological research is a subject of ongoing discussion.

We extended previous research into weather impacts on the demography of the Mauritius kestrel (*Falco punctatus*), an endemic forest raptor whose extinction has been averted by targeted conservation work. It breeds in the austral spring, with many young fledging in the cyclone season. Previous research on a reintroduced population in eastern Mauritius found that rainfall negatively impacts breeding success, causes delays in egg-laying and negatively affects juvenile survival. In the present study, we placed emphasis on extreme weather events and used meteorological definitions, which can be directly related to climate research. Local weather station data indicate increases in overall and extreme rainfall in the study area.

Our analyses, using >20 years of data, confirm the findings of previous research regarding rainfall impacts on breeding success and phenology, and identify prolonged rain spells during the cyclone season as a factor in reduced juvenile survival. While delayed breeding is linked to increased rainfall, there is a stronger correlation between increasing average temperatures and earlier breeding. The overall trend towards earlier breeding could mitigate negative density dependence in breeding success and reduce the exposure of nests and fledglings to heavy and prolonged rainfall. This research illustrates the importance of studying

#BOU2018

21st Century Ornithology: challenges, opportunities and decisions

27 – 29 March 2017 | University of Norringham, UK



ABSTRACTS

Abstracts for the oral programme are in programme order. Poster abstracts will be added by the end of January 2018.

multiple weather dimensions and life history stages when untangling climate change effects and projecting future impacts.

Joseph Taylor is a PhD candidate with particular interests in wildlife conservation and the impacts of extreme weather events. His wider interests include the interface between the needs of human society and biodiversity when building resilience to climate change.

WEDS, 28 MARCH, 1500 h

Implications of increasing hurricane intensity: sensitivity to catastrophic disturbance among bird guilds in a Mexican wetland

Matthew D.M. Ruiz*, José Luis Rangel-Salazar, Jorge L. León-Cortés & Paula L. Enríquez-Rocha

Department of Biodiversity Conservation, El Colegio de la Frontera Sur, Carretera Panamericana y Periférico Sur s/n. Barrio de María Auxiliadora, 29290 San Cristóbal de Las Casas, Chiapas, Mexico

* Email: truz@ecosur.edu.mx  @MatDMRuiz

A human-induced upturn in sea surface temperature is a probable cause of increasing hurricane intensity in the Pacific and North Atlantic over the last 40 years, with serious implications for future coastal ecosystem damage. Hurricanes in the Neotropics can change the composition of forest bird assemblages, particularly in plant-consumer guilds. Although mangroves are prone to hurricane impact, the trophic resources they supply to landbirds are mainly invertebrates, rather than fruit or seeds. Empirical observations can help establish whether plant-consumer, insectivore or aquatic bird guilds in mangroves undergo change after hurricane impact.

To identify bird guilds that are potentially sensitive to increasing disturbance intensity, we analysed the effect of category II Hurricane Carlotta on bird assemblages in mangrove and marsh habitat types of a coastal lagoon in Oaxaca, Mexico. We used 36 consecutive months of intensive point count data to expose patterns of inter-annual turnover in trophic guilds, to test for relationships between turnover and disturbance intensity, and to separate effects for resident and migratory species. We used two years of observations to evaluate changes in detection ratios.

Turnover among terrestrial insectivores was significantly high in the mangrove between years before and after Carlotta, but not between the two years prior to the disturbance. This pattern held in more heavily impacted red mangrove (*Rhizophora mangle*), but not in white mangrove (*Laguncularia racemosa*). When resident and migratory species were analysed separately, the effect was only apparent among residents. The proportion of observations between 25 m and 50 m count radii was lower after Carlotta, but this

#BOU2018

21st Century Ornithology: challenges, opportunities and decisions

27 – 29 March 2017 | University of Norringham, UK



ABSTRACTS

Abstracts for the oral programme are in programme order. Poster abstracts will be added by the end of January 2018.

reflected an absolute increase in observations <25 m rather than decreased detectability at greater distances. The degree of change in terrestrial insectivores provided an indirect measure of hurricane impact across habitat types and resident species in red mangroves emerged as the most sensitive bird species group.

Matthew D.M. Ruiz has worked in tropical research and conservation during twelve years of residency in rural Mexico. His research focuses on bird assemblage structure and temporal dynamics across wetland habitats. He has on-going involvement in community-based bird monitoring and mangrove restoration in Mexico and has recently returned to England.

WEDS, 28 MARCH, 1515 h

Effects of climate change and land use intensity on laying dates and population growth rates of Black-tailed Godwits

**Rosemarie Kentie^{1,*}, Tim Coulson¹, Jos C.E.W. Hooijmeijer², Ruth A. Howison²,
A.H. Jelle Loonstra², Mo A. Verhoeven² & Theunis Piersma^{2,3}**

¹ Department of Zoology, University of Oxford, Oxford, OX1 3PS, UK

² Groningen Institute for Evolutionary Life Sciences, University of Groningen, P.O. Box 11103, 9700 CC Groningen, the Netherlands

³ NIOZ Royal Netherlands Institute for Sea Research, Department of Coastal Systems and Utrecht University, P.O. Box 59, 1790AD Den Burg, Texel, The Netherlands

* rosemarie.kentie@zoo.ox.ac.uk  [@RoosKentie](https://twitter.com/RoosKentie)

In this era of global climate change and large scale human induced habitat degradation, species need to respond to change in order to avoid population declines or even extinction. In seasonal environments, increasing spring temperatures often leads to advanced timing of reproduction in many taxa. However, not all trophic levels advance at the same rate, which leads to ecological mismatches. Simultaneously, deteriorated habitats may influence timing of breeding due to social or habitat cues. We studied the effect of changing spring temperatures and habitats differing in quality on the laying date and population dynamics of black-tailed godwits, a grassland bird breeding in agricultural fields in North-West Europe. We parameterised Integral Projection Models (IPM) with long term data of godwits breeding on farmland of low, intermediate and high land use intensity, and simulated three temperature scenarios reflecting the period from 1900-1970, the period during data collection (2007-2016) and an invented, warmer, future scenario. Early breeding birds on low intensity land use produced most offspring, and laying date was negatively influenced by current spring temperature, while positively influenced by spring temperature in previous year. We found no relationship between adult survival and laying date, nor a relationship between the laying date of the parents and its offspring. We predicted that laying dates on low and intermediate

#BOU2018

21st Century Ornithology: challenges, opportunities and decisions

27 – 29 March 2017 | University of Norringham, UK



ABSTRACTS

Abstracts for the oral programme are in programme order. Poster abstracts will be added by the end of January 2018.

land use would be similar, and higher on high land use, and advancing when spring temperature increases. Moreover, we found that growth rate was only positive in the past and recent spring temperature scenario on low intensity fields, and overlapping zero or negative for all the other scenario's. Our study shows that, even with pressures selecting for earlier breeding, deteriorating habitats may prevent advancing laying dates.

Rosemarie Kentie focusses on ecological and evolutionary processes that determine the dynamics of populations. She is particularly interested in how or if animal populations adapt to the ever greater changes of our natural environment. She is an International Newton Fellow working at the Department of Zoology, University of Oxford.

WEDS, 28 MARCH, 1530 h

Climate change impacts on seabird populations: latest evidence and future research priorities

Francis Daunt^{1*}, **Ian Mitchell**² & **Morten Frederiksen**³

¹Centre for Ecology & Hydrology, Bush Estate, Penicuik, Midlothian, EH26 0QB, UK

²Joint Nature Conservation Committee, Inverdee House, Baxter Street, Aberdeen AB11 9QA, UK

³Department of Bioscience, Aarhus University, Frederiksborgvej 399, 4000 Roskilde, Denmark

* frada@ceh.ac.uk  @CEHseabirds

The UK holds internationally important populations of seabirds which have shown substantial declines in recent decades. These populations are legally protected, act as cost-effective indicators of marine environmental change and play an important role in recreation and culture. Climate change is considered to be one of the main causes of the recent declines. Effects of climate on seabird populations may be indirect via changes in food supply, or direct such as mortality from extreme weather events. Understanding the extent of these effects is critical since climate models predict an increase in mean temperature and in the frequency and severity of extreme weather events. Furthermore, the extent to which climate change interacts with other anthropogenic drivers such as fisheries, plastics and marine renewables may be of profound importance. Accordingly, seabirds face an uncertain future and may decline further in the coming decades. The Marine Climate Change Impacts Partnership (MCCIP) recently celebrated ten years of science to policy reporting. Here, we will provide a synthesis of evidence for climate change impacts on UK seabird populations that was undertaken for MCCIP's 10 year review. The talk will review the latest research on indirect and direct effects of climate on seabird populations and interactions with other drivers. A key finding of our review is that, given the large body of research underway on the ecology of seabirds, there is surprisingly limited focus on climate change effects. More encouragingly, studies are emerging that are forecasting future change, complementing retrospective

#BOU2018

21st Century Ornithology: challenges, opportunities and decisions

27 – 29 March 2017 | University of Norringham, UK



ABSTRACTS

Abstracts for the oral programme are in programme order. Poster abstracts will be added by the end of January 2018.

analyses of past change. We will argue that a key research priority is to bridge the gap between current foci in seabird research on foraging and migration dynamics and climate change research needs. This can be achieved with more emphasis placed on longer-term temporal change and better connection between individual variation in behaviour and population dynamics.

Francis Daunt is a seabird biologist and his research links ecology, life history variation and population dynamics to understand the drivers of change in seabird populations, in particular climate change, fisheries and marine renewables. He coordinates CEH's long term seabird study on the Isle of May.

WEDS, 28 MARCH, 1630 h

KEYNOTE

The uplands – reflecting on change and challenging the challenges

Des Thompson

Scottish Natural Heritage, UK

Des.Thompson@snh.gov.uk

Covering a third of Britain's land surface, the uplands are exceptional in their diversity and richness of landscapes and wildlife. Much of this has been shaped by human influence over millennia, and now we have reached a phase of unprecedented change, which some argue is characterised by a series of tipping points. For some the uplands offer a refuge for wildlife in retreat from more intensively managed areas. For others the uplands offer scope for transformational opportunities to restore woodland cover, meet renewable energy needs, change agricultural practices, and create new recreational and amenity space. For many, however, the uplands are still characterised as being distant – remote even - in public consciousness, though passionately debated over by those who live in or spend time in these areas. I reflect on the international importance of the uplands, the nature of changes, and then look ahead to what lies in wait for upland birds. I will draw on field and socio ecological studies, and applications of advanced technology, to consider and challenge the challenges ahead.

Des Thompson is the Principal Adviser on Science and Biodiversity in Scottish Natural Heritage and heavily involved in work supporting *Scotland's Biodiversity - a Route Map to 2020*. He has particular interests in field ecology, and his books cover a broad range of interests including birds of prey, shorebirds, alpine and upland habitats, and the Cairngorms and other mountain areas in Scotland. He chairs the Technical Advisory Group advising the UN Convention on Migratory Species (CMS) on the conservation of migratory birds of prey in Africa and Eurasia. As Chairman of the Field Studies Council (the UK's leading provider of

#BOU2018

21st Century Ornithology: challenges, opportunities and decisions

27 – 29 March 2017 | University of Nottingham, UK



ABSTRACTS

Abstracts for the oral programme are in programme order. Poster abstracts will be added by the end of January 2018.

outdoor environmental education) he enjoys encouraging students and others to pursue field studies. He is a Senior Research Fellow at Hatfield College, Durham University, and Fellow of the Chartered Institute of Ecology and Environmental Management, and of the Royal Society of Edinburgh.

WEDS, 28 MARCH, 1700 h

From radio tags to drop-off GPS-loggers: new tracking technologies can improve the efficacy of conservation programs for Nightjars

Ruben Evens^{1*}, Natalie Beenaerts¹, Thomas Neyens², Nele Witters³, Karen Smeets¹ & Tom Artois¹

¹ Hasselt University, Centre for Environmental Sciences, Research Group: Zoology, Biodiversity and Toxicology, Campus Diepenbeek. Agoralaan, Gebouw D, 3590 Diepenbeek, Belgium

² Hasselt University, Centre for Statistics, Research Group: I-BIOSTAT, Campus Diepenbeek. Agoralaan, Gebouw D, 3590 Diepenbeek, Belgium

³ Hasselt University, Centre for Environmental Sciences, Research Group: Environmental Economics, Campus Diepenbeek. Agoralaan, Gebouw D, 3590 Diepenbeek, Belgium

* ruben.evens@uhasselt.be  @REVNJ

To evaluate the accuracy of conservation programs for the European Nightjar (*Caprimulgus europaeus*) in Flanders (Belgium), we studied its habitat use between 2009 and 2017. Following new technological developments and personal technical adjustments, we changed from deploying radio tags (120; 2009-2014), over GPS-backpacks (60; 2014-2016) to VHF-GPS drop-offs (44; 2017). Each technology provided better insight into Nightjars' foraging behaviour, which can lead to an improvement of the efficacy of conservation programs.

Nightjars breed in semi-natural habitats, closely associated to sandy soils. In Flanders, breeding areas are mainly found in heathlands. Using radio telemetry, we found that these crepuscular insectivorous birds actually forage in extensively-grazed farmlands. In Flanders, Nightjars' breeding and foraging sites therefore occur in fragmented landscapes and are separated by unsuitable habitats.

Protection of foraging areas is not included in Flemish conservation programs. Nevertheless, reduced connectivity between complementary resources, such as nesting sites and foraging areas, are known to influence birds' survival. Therefore, we assessed if landscape heterogeneity affects Nightjars' foraging behaviour. We studied 210 foraging tracks (GPS-backpacks) between breeding and foraging sites, compared food availability between both sites and measured a biomarker for oxidative stress in Nightjars. We found that Nightjars' foraging distance varies between study sites ($1201 \pm 1059\text{m}$ vs. $3345 \pm 1921\text{m}$) depending on habitat composition and configuration near breeding sites. Nightjars exploit a higher prey

#BOU2018

21st Century Ornithology: challenges, opportunities and decisions

27 – 29 March 2017 | University of Norringham, UK



ABSTRACTS

Abstracts for the oral programme are in programme order. Poster abstracts will be added by the end of January 2018.

biomass in foraging sites, yet, birds that fly further spend more time foraging and show higher levels of oxidative stress. Landscape heterogeneity clearly influences foraging decisions of Nightjars. Improving the connectivity between essential resources seems elementary and will involve the redesign of landscape scenarios to optimize composition and configuration of complementary habitats.

Finally, to compensate for the annual loss of GPS-backpacks (50%), we now developed an efficient low-tech drop-off system to retrieve VHF-GPS loggers (11% loss). This allows us to track more birds in different areas, and support a continued improvement of conservation programs.

Ruben Evens is a biologist with a main research focus on foraging ecology and conservation. He is mainly interested in analysing foraging behaviour in order to describe the implications of landscape configuration on population processes in order to improve conservation management.

WEDS, 28 MARCH, 1715 h

How does native woodland restoration affect breeding bird communities?

David Douglas

RSPB Centre for Conservation Science, RSPB Scotland, 2 Lochside View, Edinburgh Park, Edinburgh EH12 9DH

* david.douglas@rspb.org.uk  @davidjtdouglas

Habitat restoration will become an increasingly important conservation tool in the 21st Century. This includes re-creation of native woodland to reverse historic deforestation. In the UK, much reforestation comprises non-native conifer plantations. However, extensive restoration of native woodland is increasingly taking place, driven by national policies for woodland expansion and non-governmental initiatives (e.g. "rewilding"). This will result in one of the largest shifts in habitat type across the UK in modern times, with the replacement of large areas of open habitats with new native woodland.

Much woodland creation in the UK is expected to be targeted at land of low productivity value, for example unenclosed upland 'moorlands' that were formerly forested but have been largely treeless for centuries. Woodland restoration on and adjacent to moorland is expected to benefit woodland biodiversity, including species of high conservation importance. However, it may impact negatively on moorland biodiversity, which is itself of international conservation importance. Understanding the ecological effects of native woodland restoration in upland environments is of high policy importance.

This talk will present a study of the response of breeding bird communities to native woodland restoration in the Scottish uplands. In the study area, creation of native woodland has taken place since the late 1980s,

#BOU2018

21st Century Ornithology: challenges, opportunities and decisions

27 – 29 March 2017 | University of Norringham, UK



ABSTRACTS

Abstracts for the oral programme are in programme order. Poster abstracts will be added by the end of January 2018.

mainly under government grants. The study area provides a chronosequence of woodland plots of differing age and varying proximity to unplanted moorland. This enables the testing of how bird communities change with woodland age and along a gradient from woodland to open ground.

Native woodland plots in the study area were found to support a range of bird species of high conservation concern. Breeding bird communities change with woodland age and between woodland and moorland-dominated areas. These results have implications for potential changes in bird communities more widely as woodland cover expands in the UK.

David Douglas works for the Scottish research section of RSPB Centre for Conservation Science. He leads RSPB's UK upland research, including work to inform the recovery of priority species such as curlew and whinchat, and wider land use issues including forestry, grazing, moorland burning and onshore wind farms.

WEDS, 28 MARCH, 1730 h

The World at our fingertips: how the Open Data Revolution is boosting opportunities for bird-habitat analyses

Richard K Broughton

¹Centre for Ecology & Hydrology, Maclean Building, Benson Lane, Crowmarsh Gifford, Wallingford, OX10 8BB, UK

* rbrou@ceh.ac.uk  @woodlandbirder

Analyses of relationships between birds and their habitats have been limited by issues of scale and data availability. Whilst tracking and surveying allow bird locations, movements and activity to be mapped at high resolution across entire habitat patches, regions or continents, the collection of associated habitat data at the same scale and detail has hitherto been impossible. Due to issues of cost and practicality, habitat data has typically been limited to field-based sampling of small areas for extrapolation to the wider landscape, or to a coarse characterisation of broad habitat types. This mismatch between the scale and resolution of bird and habitat data has limited analyses of the associations between them.

Technological advances in remote sensing and mapping are rapidly improving the characterisation of habitats, with lidar and multi-spectral satellites offering models of landscape/vegetation structure and composition at scales that can surpass the bird data itself. From the three-dimensional precision modelling of entire forests or hedgerow networks, to the tracking of spring phenology across continents, and the monitoring of habitat change and degradation, bird habitat can be comprehensively mapped and summarised at the scale of the nest site, individual territory, population or global range. Additionally, climate, hydrological, geochemical and pollution data are now also widely available.

#BOU2018

21st Century Ornithology: challenges, opportunities and decisions

27 – 29 March 2017 | University of Norringham, UK



ABSTRACTS

Abstracts for the oral programme are in programme order. Poster abstracts will be added by the end of January 2018.

Whilst the collection and analysis of such high-quality data has often been prohibitively expensive, due to costs of hardware, software and specialist skills, the widespread adoption of Open Data policies by governments and institutes has led to a revolution in the availability of free data. Furthermore, open-source software has provided the tools for relatively non-specialist users to access and analyse this information. Examples of data portals and case studies will illustrate how Open Data can revolutionise bird-habitat analyses, made possible by the increasing alignment of remote sensing, environmental modelling, and avian tracking and surveying.

Richard Broughton is an ecologist and GIS specialist, with particular interests in integrating field-based data with remote sensing of habitats, especially when applied to woodland and farmland birds.

#BOU2018

21st Century Ornithology: challenges, opportunities and decisions

27 – 29 March 2017 | University of Norringham, UK



ABSTRACTS

Abstracts for the oral programme are in programme order. Poster abstracts will be added by the end of January 2018.

THURS, 29 MARCH, 0900 h

KEYNOTE

The times they are a changing: What does the future the hold for seabirds?

Beth E. Scott

University of Aberdeen, UK

b.e.scott@abdn.ac.uk

The marine environment is changing rapidly due to effects of climate change and increasing anthropogenic activities in terms of new fishing practices & ecosystem-based policies, as well as very large-scale renewable energy extraction. What will this mean for our contrasting seabird species? To answer this question we need to look closely at how the pressures are effecting preferred marine foraging habitats and the availability/catchability of seabird's prey. We are just starting to understand which type of marine habitat seabirds prefer to forage in and with the aid of tags and accelerometers we are beginning to appreciate WHY species may prefer these habitats. This talk will cover the increased mechanistic understanding of how seabirds use different types of habitats and will show how this knowledge may help us to understand why our surface feeding seabirds are faring so much worse than those that can dive deeper for prey.

This talk will also explore how climate change is rapidly varying the biological and physical characteristics of these habitats with new fine-scaled coupled 3D bio-physical oceanographic information. Different habitat variables such as primary production and temperature are changing in quite different directions such that seabirds and their highly mobile prey may be reacting to climate changes quite differently. Future marine environments may have highly altered spatial distributions of prey availability and the decisions we are making today concerning spatial management and where we allow what types of anthropogenic activities to take place - need to take these changes into account.

Beth Scott has a multi-disciplinary background in marine ecology, oceanography and fisheries. Her approach has been to focus on the functional linkages between fine scale bio-physical oceanographic processes, flexible individual life history traits and population dynamics of a range of fish and seabird species through both empirical data collection and modelling approaches. Beth's current focus has been the spatial and temporal identification of critical marine habitats where mobile predator and prey species interact.

#BOU2018

21st Century Ornithology: challenges, opportunities and decisions

27 – 29 March 2017 | University of Nottingham, UK



ABSTRACTS

Abstracts for the oral programme are in programme order. Poster abstracts will be added by the end of January 2018.

THURS, 29 MARCH, 0930 h

How to use science to inform decision-making; the case of birds and renewable energy development

**Lucy J. Wright¹, Aly McCluskie², Alex Sansom³, Saskia Wischniewski¹, Ellie Owen², Mark Bolton¹,
Alison E. Beresford⁴, Emma Teuten⁵ & Rowena H. W. Langston**

¹ RSPB Centre for Conservation Science, RSPB, The Lodge, Sandy, Bedfordshire SG19 2DL, UK

² RSPB Centre for Conservation Science, RSPB North Scotland Regional Office, Etive House, Beechwood Park, Inverness IV2 3BW, UK

³ RSPB Centre for Conservation Science, RSPB Tayside & Fife Office, Robertson House, 1 Whitefriars Crescent, Perth PH2 0PA, UK

⁴ RSPB Centre for Conservation Science, RSPB Scotland, 2 Lochside View, Edinburgh Park, Edinburgh EH12 9DH, UK

⁵ RSPB Scotland, 2 Lochside View, Edinburgh Park, Edinburgh EH12 9DH, UK

* lucy.wright@rspb.org.uk  @LucyWright

Climate change is one of the biggest threats to biodiversity in the 21st century, and a key measure to minimise its magnitude is renewable energy development. However, such developments bring their own potential threats to birds. Careful siting and design of renewable energy projects is important to minimise their impacts, especially on populations already depleted by the damaging effects of climate change. A critical scientific challenge for ornithologists is to understand the impact of developments in the marine environment where it is difficult to monitor birds, particularly in poor weather and at night. We must work with the industry to determine how best to site and design renewable energy projects such that the impacts to birds, and other biodiversity, are minimised.

We present RSPB's current work using new technologies such as GPS and accelerometer tracking, complemented by more established ecological monitoring methods and expertise, to tackle some of these scientific challenges. We describe how we use our science, and that published by others, to influence decisions and policies regarding the deployment of offshore renewable energy in the coming decades. Specifically, we present ongoing work in collaboration with a wind farm developer, DONG Energy, to study how seabirds at one of the UK's most important colonies may change their behaviour around wind turbines, that will address questions about collision risk and avoidance behaviour, currently a critical evidence gap. We demonstrate how we use tracking data to identify important areas for seabirds where development is more risky. We describe how we use science to challenge high-risk development proposals, to shape the design of offshore renewable energy schemes to minimise the risk to seabirds, to influence the methods used by developers and policymakers to assess impacts, and to advocate for renewable energy strategies that meet emissions targets whilst minimising the impact on biodiversity.

Lucy Wright is a Principal Conservation Scientist at the RSPB Centre for Conservation Science. Her team investigates the environmental impact of proposed developments, including renewable energy

#BOU2018

21st Century Ornithology: challenges, opportunities and decisions

27 – 29 March 2017 | University of Norringham, UK



ABSTRACTS

Abstracts for the oral programme are in programme order. Poster abstracts will be added by the end of January 2018.

installations, and the effectiveness of protected area networks for species conservation. We provide scientific evidence to underpin casework, policy and advocacy on these issues.

THURS, 29 MARCH, 0945 h

Population and Individual responses to environmental variability

Alice Trevail¹, Jonathan Green¹, Jonathan Sharples¹, Jeffrey Polton², Samantha Patrick¹

¹School of Environmental Sciences, University of Liverpool, UK

²National Oceanography Centre, Liverpool, UK

* alice.trevail@liverpool.ac.uk  @AliceTrevail

In ecosystems the world over, animals rely on resources scattered over patchy, heterogeneous landscapes. Birds journey to exploit large-scale environmental features that persistently enhance prey availability, however the importance of fine scale environmental changes for behaviour and reproduction is less well understood. Do populations adapt to their proximal environment to reliably find food? Which is more important: the constant physical landscape or dynamic oceanographic features that change in time? Here, we pose these questions to a species occupying a wide range of environments around the UK to explore the mechanisms behind different foraging strategies that emerge between populations. By comparing the drivers of foraging behaviour and reproductive success of black-legged kittiwakes from 20 colonies governed by different oceanographic regimes, we will ask whether species are suited to an optimal environment or can adapt via behavioural plasticity. In light of rapid regime shifts, these results will develop our understanding of the ecology of top predators that perform key ecosystem roles and that we so often rely on as environmental indicators.

Alice Trevail is a third year PhD student, with a particular research interest in the link between the physical environment and individuals, as well as how we can use marine top predators as indicator species for conservation and management.

#BOU2018

21st Century Ornithology: challenges, opportunities and decisions

27 – 29 March 2017 | University of Norringham, UK



ABSTRACTS

Abstracts for the oral programme are in programme order. Poster abstracts will be added by the end of January 2018.

THURS, 29 MARCH, 1000 h

Environmental change and carry-over effects determine productivity and phenology at a European Shag *Phalacrocorax aristotelis* colony over half a century

Richard J Howells^{1*}, Sarah J Burthe¹, Jon A Green², Michael P Harris¹, Mark A Newell¹, Adam Butler³, Sarah Wanless¹, & Francis Daunt¹

¹Centre for Ecology & Hydrology Edinburgh, Bush Estate, Penicuik, Midlothian, EH26 0QB, UK

²School of Environmental Sciences, University of Liverpool, Liverpool, L69 3GP, UK

³Biomathematics & Statistics Scotland, JCMB, The King's Buildings, Edinburgh, EH9 3JZ, UK

* ricwel14@ceh.ac.uk  @howellsrj

Environmental conditions are a key determinant of fitness in wild animals. Principal mechanisms include the bottom-up effects of climate on resource availability and direct effects of weather on behaviour and survival. In long-lived species, these effects may be immediate or have downstream consequences where conditions experienced in one season may also affect the condition, life-history decisions and thereby fitness of populations in subsequent seasons ("carry-over effects"). Populations will be affected by both immediate conditions and carry-over effects concurrently, yet few studies have quantified both simultaneously.

We utilise long-term demographic data spanning five decades (1965–2016) collected at a North Sea European Shag *Phalacrocorax aristotelis* (hereafter shag) colony, to quantify trends and test the immediate and delayed determinants of reproductive performance. Productivity increased over the study, from 2.00 chicks nest⁻¹ in 1965 to 2.28 chicks nest⁻¹ in 2016. Concurrently, phenology has advanced, with shags now breeding ~26 days earlier than at the start of the study. Productivity was higher following poor winter weather, as indicated by stronger onshore wind. Furthermore, reproductive performance was also driven by mechanisms operating on breeding phenology, which is strongly negatively related to breeding success (i.e. early individuals are more successful). Phenology was determined by both lagged and current Sea Surface temperature, with individuals breeding later following higher SST in the previous year, but earlier when the SST was higher prior to breeding. Breeding was also earlier following high productivity in the previous year.

Crucially, this analysis demonstrates that trends in reproductive success observed within this population were largely determined by carry-over effects from past reproductive effort and environmental conditions, mediated via phenology. Our results indicate a complex suite of mechanisms that may have important demographic implications for this species in response to predicted future changes in climatic mean conditions and weather variability.

#BOU2018

21st Century Ornithology: challenges, opportunities and decisions

27 – 29 March 2017 | University of Norringham, UK



ABSTRACTS

Abstracts for the oral programme are in programme order. Poster abstracts will be added by the end of January 2018.

Rich Howells is an ecologist, currently undertaking a PhD on European Shags *Phalacrocorax aristotelis* breeding on the Isle of May, Scotland, using dataset collected over half a century. He is particularly interested in the role of mean environmental conditions and variability in determining key demographic parameters, including diet and reproduction.

THURS, 29 MARCH, 1015 h

Marine birds in trouble

Ian Mitchell^{1*}, Aonghais Cook², Graham French¹, Jane Hawkrigde¹, Volker Dierschke³, David Fleet⁴, Tycho Anker-Nilssen⁵, Kees Kofijberg⁶, Frederik Haas⁷ & Eric Stienen⁸

¹Joint Nature Conservation Committee, Inverdee House, Baxter Street, Aberdeen AB11 9QA

²British Trust for Ornithology, The Nunnery, Thetford, Norfolk IP24 2PU, UK

³Gavia EcoResearch, Tönnhäuser Dorfstr. 20, 21423 Winsen (Luhe), Germany

⁴The Schleswig-Holstein Agency for Coastal Defence National Park and Marine Conservation, National Park Authority, Schlossgarten, 5832 Tönning, Germany

⁵Norwegian Institute for Nature Research-NINA, PO Box 5685 Sluppen, 7485 Trondheim, Norway

⁶SOVON Dutch Centre for Field Ornithology, Toernooiveld 1, 6525 ED Nymegen, Netherlands

⁷Lund University, Dept of Animal Ecology, Ekologihuset, PO Box 117, 22362 Lund, Sweden

⁸Research Institute for Nature and Forest, Kliniekstraat 25, 1070 Brussels, Belgium

*Email: ian.mitchell@jncc.gov.uk

'Marine Birds in trouble' is one of the conclusions of the latest assessment of the northeast Atlantic ecosystem, which was undertaken by the OSPAR Commission in 2017 (<https://oap.ospar.org/en/ospar-assessments/intermediate-assessment-2017>). The aim of OSPAR's 'Intermediate Assessment 2017' (IA2017) was to describe the human pressures on the northeast Atlantic, their effects and the implications for biodiversity. The IA 2017 included the development and assessment of 41 indicators covering the status of marine habitats and species and the magnitude of pressures, such as contaminants, litter, underwater noise, non-indigenous species and fisheries.

This paper focuses on the assessment of marine bird abundance and marine bird breeding success/failure. The assessments of these two indicators is the culmination of 10 years of development by experts from countries bordering the northeast Atlantic. The assessments used time series data (1991-2015) on counts and breeding success of seabirds, waders and waterfowl collected (mostly from land) within the OSPAR Regions of the Celtic Seas and the Greater North Sea and the Norwegian Part of the Arctic Region.

#BOU2018

21st Century Ornithology: challenges, opportunities and decisions

27 – 29 March 2017 | University of Norringham, UK



ABSTRACTS

Abstracts for the oral programme are in programme order. Poster abstracts will be added by the end of January 2018.

The assessment concluded that in the Norwegian Arctic, the Greater North Sea and the Celtic Seas, there has been a considerable (>20%) drop in abundance compared to the levels observed 25 years ago, for more than a quarter of the marine bird species assessed. Species that use intertidal and inshore areas of the Greater North Sea during migration or over wintering were the exception, and have been present in healthy numbers since the early 1990s. Frequent and widespread breeding failure has been observed for many species, especially those feeding on small fish in the surface waters of the Greater North Sea and Celtic Seas. Prey availability is likely to be driven by ecosystem-specific changes, possibly impacted by commercial fisheries and climate change.

Ian Mitchell has worked on the monitoring and assessment of seabirds for 20 years. He now supports the development and implementation of the Marine Strategy Framework Directive and the OSPAR Convention, with particular emphasis on marine biodiversity assessments. He is co-chair of the ICES/OSPAR/HELCOM Joint Working Group in Marine Birds (JWGBird).

THURS, 29 MARCH, 1115 h

KEYNOTE

The Internet of Wings: Current advances in technology and future possibilities, and impacts on science, conservation and citizen science

Martin Wikelski

Max-Planck Institute for Ornithology & University of Konstanz, Germany

wikelski@orn.mpg.de  @martinwikelski

Nikolaas Tinbergen postulated half a century ago that in order to understand traits or behaviors of organisms, we need to analyze them at four levels: phylogeny, mechanism, ontogeny and survival. Whereas in birds we know much about phylogeny, we know little about mechanisms in the wild, much less about ontogeny and even less about where, when and why individuals die. New bio-logging technologies are on the horizon that now allow us to fill this essential knowledge gap in birds that often migrate across hemispheres. As avian biologists will start to understand the influence of ontogeny on life history decisions and survival of individuals, they will again set standards for the rest of animal ecology. At the same time, we will finally know how best to conserve our feathered friends. Citizen scientists will become ever more essential in ornithology as they can attach electronic bands instead of just numbered rings, and will be able to digitally follow their individual birds throughout space and time. Because bird amateurs then know the locations and behaviors of tagged birds, they become 'earth guardians' by personally observing and guarding their individual birds wherever they are. While doing so, they learn about the birds' collective

#BOU2018

21st Century Ornithology: challenges, opportunities and decisions

27 – 29 March 2017 | University of Nottingham, UK



ABSTRACTS

Abstracts for the oral programme are in programme order. Poster abstracts will be added by the end of January 2018.

behavior and habitat imprinting, as well as link remote sensing earth observation data to understand individual decision making in response to the environment. Linking together this knowledge in global data bases, we establish the Internet of Wings. A golden era for ornithology is on the horizon.

Martin Wikelski Director, Max-Planck Institute for Ornithology and Professor, University of Konstanz.

THURS, 29 MARCH, 1145 h

Balancing Afrotropical biodiversity and agriculture through food web models and DNA metabarcoding

Luke L. Powell^{1,2*}, Andreanna J. Welsh², Rachid Hanna³, Jason Matthiopoulos¹, Barbara Helm, Tom Smith⁴

¹ Institute of Biodiversity, Animal Health, and Comparative Medicine, Graham Kerr Building, University of Glasgow, Glasgow, G12 8QQ

² Department of Biosciences, University of Durham, Stockton Road, Durham, DH1 3LE

³ International Institute of Tropical Agriculture, Yaounde, Cameroon

⁴ Department of Ecology and Evolutionary Biology La Kretz Hall, Suite 300, Los Angeles, CA 90095-1496

* luke.l.powell@gmail.com  @Biodiversity

Anthropocentric destruction of natural ecosystems, such as tropical rainforests, has created an urgent need to balance agricultural production with biodiversity. If we are to maintain functioning ecosystems in this rapidly changing world, we must prioritize both species that maximize ecosystem support for crops ("ecosystem service species") and those that maximize biodiversity ("keystone species"). Food web models offer an ideal platform for exploring the sensitivity of ecosystems to management; however, two key components are missing. First, we need a method for rapidly quantifying relationships among organisms in the food web; second, we must train food web models to behave like the real systems. To overcome the first issue, we will characterize species interactions in cacao plantations in Cameroon and Equatorial Guinea with novel diet metabarcoding techniques, in which prey of hundreds of birds as well as the plant taxa consumed by prey can be simultaneously identified. Secondly, we will construct novel Bayesian food web models which will dynamically adapt connections among species to changes in abundance. With species identifications from metabarcoding, we will build food web models of African shade cacao plantations to address several objectives, including: 1) identifying the species that are most influential in encouraging crop yields and increasing biodiversity and, 2) understanding how landscape context (e.g., distance from cacao plantation to primary forest) affects food web dynamics. Our cutting edge approach will provide an ecosystemlevel understanding of the relationship between biodiversity and agricultural production, allowing sustainable management of crops alongside a highly diverse ecological community.

#BOU2018

21st Century Ornithology: challenges, opportunities and decisions

27 – 29 March 2017 | University of Norringham, UK



ABSTRACTS

Abstracts for the oral programme are in programme order. Poster abstracts will be added by the end of January 2018.

Luke Powell has worked in tropical rainforests across the Neotropics and Africa, primarily to understand the vulnerability of insectivorous birds to anthropogenic change. Dr. Powell also cofounded and now directs Biodiversity Initiative, an NGO dedicated to promoting biodiversity conservation, especially related to birds in Africa and beyond.

THURS, 29 MARCH, 1200 h

Infrared thermal imaging to assess physiological state in free-living birds

Paul Jerem^{1*}, Dominic McCafferty¹, Ruedi Nager¹ & Dorothy McKeegan²

¹Institute of Biodiversity, Animal Health & Comparative Medicine, Graham Kerr Building, University of Glasgow, G12 8QQ, UK

²Institute of Biodiversity, Animal Health & Comparative Medicine, Jarrett Building, University of Glasgow, G61 1QH, UK

* pauljerem@gmail.com

Understanding physiological processes is key to answering the questions of why organisms behave in the way they do, and how they interact with each other, and their environment. But, gathering physiological data from free-living organisms is challenging. Assessment of physiological state in the natural environment generally requires subjects to be trapped and handled, so blood/tissues can be sampled, or for measurement devices to be attached/implanted. Such methods limit research to species and individuals that can be caught, restricting the generalisability of findings. Also, natural behaviours are interrupted, and subsequent physiology, behaviour and performance can be affected.

One alternative strategy is to instead examine traits that can be measured without invasive sampling, that relate to underlying physiological processes in a predictable way. Body temperature is a promising candidate trait in this context, being linked with multiple physiological functions including metabolic activity, stress state and immune challenge. Yet, relationships between physiological state and body temperature remain poorly understood in free-living species, principally as measuring body temperature also used to require trapping and handling. Recently, however, the availability of low-cost, highly-portable thermal imaging cameras has opened up new opportunities to measure body surface temperature (T_s) remotely, and at high frequencies.

Here, we investigated the applicability of T_s , measured using thermal imaging, as an indicator of physiological state in free-living organisms. Specifically, we examined the effect of acute stress on T_s , and compared T_s with plasma glucocorticoid concentrations and body condition, in free-living blue tits (*Cyanistes caeruleus*). We observed that T_s exhibited a characteristic response to acute stress, that differed with circumstances. Additionally, baseline T_s was related to baseline glucocorticoid levels and body condition in undisturbed birds. These results suggest T_s , measured using thermal imaging, could provide a

#BOU2018

21st Century Ornithology: challenges, opportunities and decisions

27 – 29 March 2017 | University of Norringham, UK



ABSTRACTS

Abstracts for the oral programme are in programme order. Poster abstracts will be added by the end of January 2018.

novel, non-invasive method for assessing both shorter and longer term physiological state in free-living organisms.

Paul Jerem is a recent PhD graduate interested in using physiology to address questions of ecological function. His PhD research explored the possibility of using thermal imaging to infer physiological state non-invasively in wild animals, with a particular focus on stress-related traits and applications in conservation biology.

THURS, 29 MARCH, 1215 h

Application of Morphic-Google Images web tool for ornithological studies

Arjun Amar^{1*}, Gabriella Leighton², Pierre Hugo³, Vincent Naude², Chris Briggs⁴ & Chevonne Reynolds¹

¹FitzPatrick Institute of African Ornithology, University of Cape Town, Cape Town, South Africa

²Institute for Communities and Wildlife in Africa, Department of Biological Sciences, University of Cape Town, Cape Town, South Africa

³Department of Computer Science, University of Cape Town, Cape Town, South Africa

⁴Biology Dept. Hamilton College, Clinton, New York, USA

* arjundevamar@gmail.com  @arjundevamar

Information on the spatial distribution of phenotypic traits can be important for evolutionary and ecological studies. However, traditional approaches, such as fieldwork, can be time-consuming and expensive. Information technologies, such as Internet search engines, could facilitate the collection of these data.

We investigated the use of Google Images to extract data on geographical variation in phenotypic traits visible from photographs. We compared the distribution of visual traits obtained from Google Images with four previous studies. We found very good agreement between fieldwork data and Google Images data across all studies. Our results suggest that this method can work well for visible traits of common and widespread species and may have many other uses. To facilitate the data capture of this method we developed a free-to-use web application (Morphic).

Using the Morphic web app we use this approach to extract spatial data in a range of novel systems, and present the findings from two of these studies. Firstly, we use this approach to explore the suspected clinal variation in the morph distribution of Swainson's Hawks across their North American breeding distribution, and whether these patterns are correlated with environmental variables. Secondly, we investigate the diet

#BOU2018

21st Century Ornithology: challenges, opportunities and decisions

27 – 29 March 2017 | University of Norringham, UK



ABSTRACTS

Abstracts for the oral programme are in programme order. Poster abstracts will be added by the end of January 2018.

across Africa of the declining Martial Eagle, comparing prey items among regions and between adult and sub-adults.

Our results suggest that the Google Images method is cost-effective, rapid and can be used with some confidence when investigating patterns of geographical variation, as well as a range of other applications. The opportunities that this approach offers to tackle ecological and evolutionary questions in ornithology are only just being explored, and we provide suggestions for other avenues of research that might be explored using this approach.

Arjun Amar is an avian ecologist, with a main focus on raptor ecology and conservation. He has worked on issue related to human-wildlife conflict, drivers of population declines and more recently on colour polymorphism in birds. Arjun is currently a Senior Lecturer at the FitzPatrick Institute of African Ornithology at the University of Cape Town, and was previously a Senior Conservation Biologist with the RSPB.

THURS, 29 MARCH, 1230 h

Can drones count gulls?

Matt J. Wood^{1*}, Graham Rush¹ & Lucy E. Clarke¹

¹School of Natural & Social Sciences, University of Gloucestershire, Francis Close Hall, Cheltenham GL50 4AZ

* Email mjwood@glos.ac.uk  [@wood_mj](https://twitter.com/wood_mj)

Population monitoring demands accurate estimates of breeding population size and vital rates, enabling realistic and useful assessments of population dynamics. Counts of colony-nesting seabirds are relatively simple for open- or cliff-nesters, but some colonies can be obscured from ground observers due to inaccessible terrain or vegetation growth.

The capability and affordability of new technologies are advancing rapidly, with great potential to contribute to ornithology. Unmanned Aerial Vehicles (UAVs or 'drones') literally offer a bird's-eye view of seabird colonies using high resolution automated image capture, deployed to great effect in shore-nesting seabirds. Key to unlocking the potential of this technology is automated image analysis; to combine imagery of the colony into a usable GIS framework and to automate the counting of seabirds.

We explored the practicalities and utility of using a UAV to count breeding Lesser Black-Backed Gulls *Larus fuscus* in a colony where vegetation frequently obscures the view of observers counting gulls on the ground (Skokholm Island, Wales), focussing on the following objectives:

#BOU2018

21st Century Ornithology: challenges, opportunities and decisions

27 – 29 March 2017 | University of Norringham, UK



ABSTRACTS

Abstracts for the oral programme are in programme order. Poster abstracts will be added by the end of January 2018.

1. Can a UAV be flown at an optimum height, where imagery is sufficient for useful counts to be made without undue disturbance to breeding gulls?
2. Can semi-automated image processing be used to count gulls in the breeding colony?

By combining the skills of pilot and ornithologist, it was possible to survey breeding gull colonies using a UAV flown at an altitude of just 15 metres without undue disturbance, and with less disturbance than walk-through nest counts. Semi-automated processing based on supervised image classification was successful, yielding counts of gulls in the colony that were highly correlated with counts made manually from UAV imagery. Initial work shows promise for the automatic counting of the two other gull species present on Skokholm: Herring Gulls *Larus argentatus* and Great Black-Backed Gulls *Larus marinus*.

Matt Wood is a seabird biologist whose research focusses on advancements in population monitoring (UAVs, playback and thermal imaging), disease ecology and the effects of climatic variation. He manages part of JNCC's Seabird Monitoring Programme on Skomer Island, monitoring six species of seabird including shearwaters, gulls and auks.

THURS, 29 MARCH, 1415 h

#TheTweetingBird: its rise, relevance and impact in ornithology

Steve P. Dudley^{4*}, Tom Finch^{2,3} & Nina O'Hanlon⁴

¹ British Ornithologists' Union, PO Box 417, Peterborough, PE7 3FX, UK

² RSPB Centre for Conservation Science, The Lodge, Sandy, SG19 2DL, UK

³ Conservation Science Group, Department of Zoology, University of Cambridge, Cambridge, CB2 3EJ, UK

⁴ Environmental Research Institute, University of the Highlands and Islands, Thurso, KW14 7EE, Scotland, UK

* stevedudley@bou.org.uk  [@stevedudley_](https://twitter.com/stevedudley_)

Science communication is as fast moving as science itself, and in recent years, social media have come to the fore as important tools used for communicating science at the peer-to-peer and wider interested public levels. Within ornithology, Twitter is clearly the dominant platform with thousands of active users reaching a daily audience of over 500,000 people.

The rapid growth of online tools to communicate science raises the important question of whether online attention is associated with citations in the scholarly literature. The Altmetric Attention Score (AAS) quantifies the attention received by a scientific publication on various online platforms including news media, blogs and social media. It has been advanced as a rapid way of gauging the impact of a piece of research, both in terms of potential future scholarly citations and wider online engagement.

#BOU2018

21st Century Ornithology: challenges, opportunities and decisions

27 – 29 March 2017 | University of Norringham, UK



ABSTRACTS

Abstracts for the oral programme are in programme order. Poster abstracts will be added by the end of January 2018.

Here, we explore variation in the AAS of 2,677 research articles published in 10 ornithological journals between 2012 and 2016, analyse the contribution of the main scoring sources for AAS within ornithology publications and track the rise of the average AAS score within these publications. For a subset of articles published in 2014 we also investigated whether the AAS influenced the citation rate of these articles.

With the increasing take-up of social media amongst scientists, and in particularly the well-established and maturing online ornithology community, social media are set to play an increasing role in the communication of science and contribution to the citation of published research.

Steve Dudley is the BOU's Chief Operations Officer with overall responsibility for running and delivering most BOU activities including social media and communications.

THURS, 29 MARCH, 1430 h

Predicting the response of British bird populations to future scenarios of land-use and food production

Tom Finch^{1,2*}, Andrew Balmford², Rhys Green^{1,2} & Will Peach¹

¹ RSPB Centre for Conservation Science, Royal Society for the Protection of Birds, Sandy SG19 2DL, UK

² Conservation Science Group, Department of Zoology, David Attenborough Building, University of Cambridge, Cambridge CB2 3QY, UK

* Email: tom.finch21@gmail.com  [@tomfinch89](https://twitter.com/tomfinch89)

Globally, agriculture presents the greatest source of threat to biodiversity, and recent empirical evidence from many parts of the world suggests that most species would fare least badly if food demand was met through high-yield production linked to the sparing of non-farmed habitats. However, in Britain our long history of glaciation and land clearance has potentially filtered out the species most sensitive to agriculture. In addition, many species of conservation concern are associated with 'wildlife-friendly' farmland, are threatened by the intensification of agricultural production, and so may be favoured by a 'land sharing' strategy. There is thus an urgent need – particularly pressing given reduced public spending and Brexit – to evaluate the trade-offs between food production, nature conservation and other ecosystem services in Britain.

For two regions of lowland England – The Fens and Salisbury Plain – we quantify the relationship between agricultural production (energy, protein and profit) and population densities of all assessable bird species. As in previous studies from other parts of the world, our results suggest that many species would do best

#BOU2018

21st Century Ornithology: challenges, opportunities and decisions

27 – 29 March 2017 | University of Norringham, UK



ABSTRACTS

Abstracts for the oral programme are in programme order. Poster abstracts will be added by the end of January 2018.

under land sparing, though this is the worst strategy for some priority species. We use these relationships to evaluate various spatially explicit land-use scenarios – including sparing, sharing, intermediate and mixed approaches – in which total food production is maintained whilst varying the yield of farmed land and the area and configuration of non-farmed land. Our scenarios incorporate projected changes in other land-based services including, (1) climate-change-driven increases in flood water storage requirements, (2) wastage of fen peat soils, (3) housing needs and (4) military training requirements. Scenarios are then assessed in terms of implications for birds, human recreation, carbon storage, and future agricultural potential.

Tom Finch is interested in population ecology, land-use and conservation. His research generally focuses on birds, especially long-distance migrants and those inhabiting agricultural landscapes. He currently works for the RSPB and the Conservation Science Group in the University of Cambridge's Department of Zoology.

THURS, 29 MARCH, 1445 h

UK Forests and Forestry in the 21st Century . . . the implications for birds and other wildlife as foresters respond to climate change and the increasing threat of novel pests and diseases

Jonathan Spencer

Forest Enterprise, Forestry Commission England, 620 Bristol Business Park, Bristol, BS16 1EJ, UK

* jonathan.spencer@forestry.gsi.gov.uk

Climate change and globalisation will force significant changes to the way UK forests are deployed, used and managed, and as the role of woodlands and forests emerges in support of both a low carbon landscape and a low carbon economy, there will be considerable change to the extent, composition and structure of both upland and lowland forests across the UK. Forest management practices will also change the scale and pattern of disturbance, and hence successional structures, within forests and woods implying more change to bird habitat. Moves towards continuous cover forestry and mixed species stands, designed to maximise resilience against disease and disruption, and an anticipated growth in respect for forests soils as the underpinning of both forest performance and disease resilience, will change the character of plantations that are currently monocultural in character, while restoration of ancient woodland and an increase in both the extent and management of native woodland will effect further changes to established lowland woods and forests. In combination, the geography of these changes may well have considerable impact on birds and other wildlife associated with our woods and forests. This paper seeks to explore the nature of these changes as currently understood and the implications for the bird fauna of such forests as they evolve over the coming century.

#BOU2018

21st Century Ornithology: challenges, opportunities and decisions

27 – 29 March 2017 | University of Norringham, UK



ABSTRACTS

Abstracts for the oral programme are in programme order. Poster abstracts will be added by the end of January 2018.

Jonathan Spencer is Head of Planning and Environment for Forest Enterprise England, joining them in the New Forest in 1995. Work ranges from SSSI and ancient woodland management to supporting the work of District Ecologists. Most recently Jonathan has been working on forest resilience in the face of climate change.

THURS, 29 MARCH, 1500 h

What role for agri-environment in 21st Century land bird conservation?

Will Peach^{*1}, Andrew Bladon¹, Tony Morris¹, Dave Buckingham¹, Tom Lancaster¹ & Phil Grice²

¹RSPB Centre for Conservation Science, Royal Society for the Protection of Birds, Sandy SG19 2DL, UK

²Natural England, Suite D, Unex House, Bourges Boulevard, Peterborough PE1 1NG, UK

* will.peach@rspb.org.uk

Recovery of depleted land bird populations across large geographic areas is an ambitious but commonly-held aspiration of Governments and conservation NGOs. Agri-environment schemes (AES) provide a potential policy mechanism to meet such objectives but the achievability of such aims have rarely been tested. Given the ongoing costs of AES, and their uncertain future in a post-Brexit UK, it is important to understand and quantify the benefits that AES may deliver for wildlife, and to set realistic objectives for future schemes.

Drawing on 159 published studies from across temperate Europe, we review the evidence and circumstances under which AES interventions enhance the abundance or diversity of farmland plants, arthropods and birds. Success rates for birds were higher where AES measures provided specific ecological requirements (such as foraging or nesting habitat) and lower for simpler measures (such as field boundary and grassland management), for ground-nesting species and for grassland habitats. We report the findings of recent 10-year farm-scale multi-region evaluation of a generic higher level AES aimed at farmland birds in England but involving only modest levels of advisory support for landowners. Generic AES management packages substantially increased the abundance of a range of priority species and the suite of species comprising the Farmland Bird Indicator (FBI). We use these empirical findings to predict the amount of higher level AES that might be required to halt and reverse ongoing declines of farmland birds at the landscape scale. Such predictions will inform the development of realistic objectives for future interventions that aim to recover depleted land bird populations. Generic higher level AES may struggle to deliver the specialist ecological requirements of some of the more rapidly declining species, and in these cases more bespoke and carefully targeted packages will be required.

#BOU2018

21st Century Ornithology: challenges, opportunities and decisions

27 – 29 March 2017 | University of Norringham, UK



ABSTRACTS

Abstracts for the oral programme are in programme order. Poster abstracts will be added by the end of January 2018.

Will Peach is an ecologist based at the RSPB with long-standing interests in the causes of bird declines, and the design and delivery of conservation action. He is currently involved in research and conservation of a range of UK land birds mainly in lowland agricultural landscapes.

THURS, 29 MARCH, 1515 h

KEYNOTE

Changes in International Conservation issues

Juliet Vickery^{1,4}, Stuart H.M. Butchart^{2,4}, Paul Donald^{2,4} & James W. Pearce-Higgins^{3,4},

¹ RSPB Centre for Conservation Science, Royal Society for the Protection on Birds, The Lodge, Sandy, SG19 2DL UK

² BirdLife International, The David Attenborough Building, Pembroke Street, Cambridge CB2 3QZ, UK

³ British Trust for Ornithology, The Nunnery, Thetford, UK, IP24 2PU, UK

⁴ Conservation Science Group, Department of Zoology, Downing Street, Cambridge CB2 3EJ, UK

* Juliet.Vickery@rspb.org.uk

An analysis of threats to the world's birds, based on data from BirdLife International's assessments for the IUCN Red List of Threatened Species, indicates that the most important threats to birds worldwide are agriculture (impacting over 80% of threatened species), logging (>50%), invasive species (>50%) and hunting/trapping (>35%). Climate change is a growing threat, but its impact on future population declines remains unquantified or uncertain for most species. In this talk we consider, first, how the nature and extent of the most important threats are likely to change in the next few decades under rapid environmental degradation and increasing human pressure on ecosystems. Second, we consider how this will require new scientific methods and approaches to provide the evidence needed to support decisions about how to maintain and restore global bird populations and their habitats. We do so in the context of change in four broad areas: disrupted earth systems including climate change and chemical cycles, social changes including rising consumption in developing countries and loss of connection to nature as the world urbanises; technology such as use of drones, tracking devices, earth observation data and novel methods for tackling invasives, and political change such as global mobilization around multilateral environmental agreements, post-2020 biodiversity targets and changes in global governance.

Juliet Vickery is head of international research at the RSPB Centre for Conservation Science, following a university research career at the universities of Oxford, Edinburgh and East Anglia, and at Scottish Natural Heritage and the British Trust for Ornithology. She is an honorary research fellow at the University of Cambridge, BOU Vice President, Chair of the Policy Committee of the BES and on the expert advisory panel for the Darwin Initiative and the Cambridge Student Conference on Conservation Science.

#BOU2018

**21st Century Ornithology:
challenges, opportunities and decisions**

27 – 29 March 2017 | University of Norringham, UK



ABSTRACTS

Abstracts for the oral programme are in programme order. Poster abstracts will be added by the end of January 2018.
