



# British Birds

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British wetlands

Important Bird Areas – Cyprus

The Bass Rock Gannets

Phil Hollom



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# British Birds

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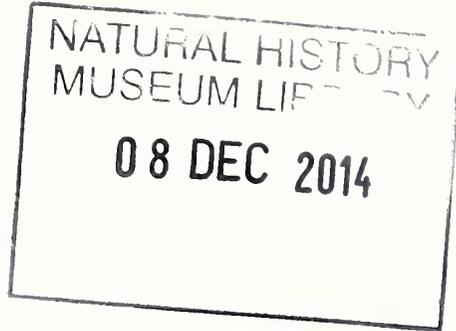
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# British Birds

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The last issue of the year is a lively cocktail of the present, the future and the past. The main paper this month is a fascinating look at what the coming years might bring in terms of new wetland breeding birds in Britain, based on predictions for climatic and environmental change and the evidence of how various potential colonists are faring in mainland Europe. It's perhaps not surprising that herons and their allies look set to continue on an upward trajectory, but only time will tell whether the likes of Whiskered Terns and White-spotted Bluethroats will gain a foothold in our lowland wetlands. Further into the issue, and looking back rather than forward, there is a lovely tribute to Phil Hollom, one of the great stalwarts of British ornithology in the last 100 years.

And, as we finish another volume, I want to say thank you to all our subscribers, on behalf of everyone at *BB*. Although we offer incentives to new subscribers (and now to young birders too – see p. 725), we have not forgotten that our long-term subscribers are the bedrock of this journal. The people who have stuck with *BB* through thick and thin have kept it afloat and helped to maintain a vehicle for publishing the great variety of material we've seen this year. This is the biggest volume of *BB* this century, nearly 30% bigger than my first as editor, in 2001. The trend of giving you more to read every year looks set to continue, and that can only happen with a strong subscriber base. So – thank you – and I hope that you enjoy Volume 108 in 2015. The quantity and quality of material in the pipeline gives me great optimism for 2015, and beyond. Whiskered Terns breeding in East Anglia in 2025? You'll read about it in *BB*!

*Roger Riddington*



**British Birds aims to:** ❖ provide an up-to-date magazine for everyone interested in the birds of the Western Palearctic; ❖ publish a range of material on behaviour, conservation, distribution, ecology, identification, movements, status and taxonomy as well as the latest ornithological news and book reviews; ❖ maintain its position as the journal of record; and  
❖ interpret scientific research on birds in an easily accessible way.

## Making better use of county bird clubs and volunteers

During recent years, we have heard endlessly about recession, 'double-dips' and financial restraint, and there is little doubt that the current state of the nation's finances has had a negative effect on the efforts to protect our wildlife and the habitats that it requires. Crucially, not one of the main political parties appears to have a credible green policy, central and local government spending on conservation has been considerably reduced, while much-needed legislation such as Marine Protection Areas and Vicarious Liability (except in Scotland) seem still to be but distant possibilities.

In the past, English Nature was a major player in the fight for wildlife and I was a willing and contented volunteer for more than 12 years. Sadly, the transition to Natural England was not only a glaring example of how *not* to manage change but has left the organisation as a mere subset of Defra with a mixed responsibility mandate that imposes many restrictions and compromises on the staff that remain. In the process, a number of very competent conservationists have departed and we have lost some excellent 'Champions of Nature'.

At a more local level, many county wildlife trusts are having difficulty in focusing beyond their own nature reserves, Wildlife Crime Officers and their budgets have come under threat, and many museum services have been reduced to little more than moth-balled status. The whole situation must be viewed as extremely worrying and, in my view, requires some lateral thinking if we are to harness the help that we need.

One obvious route is to maximise the use of volunteers, particularly where core skills are already in place, as is the case within most of the county bird clubs. Having been a member of several such clubs, and currently chair of Derbyshire Ornithological Society (DOS), I can vouch for a breadth of skills that range from those fully qualified to undertake survey work to management and IT proficiency. Membership also includes a good number of retirees, many of whom

retain considerable energy and are 'combat tested' in terms of experience and problem solving.

I fear that some of the organisations who attract volunteers are inclined to see them only as manual labour for outside work. Valuable though that is, there are a lot of very able and well-qualified people who can undertake many other tasks and with so many of these retired or semi-retired there are plenty of options in this reservoir of talent. The cost savings can be truly significant. During a seven-year period that I spent on RSPB Council, I frequently used my annual presentation at their AGM to praise the worth of voluntary help. On the final occasion, I amplified this point by a crude calculation based simply on the hours recorded and the statutory minimum wage. It worked out at a staggering £4.5 million for a full year!

It could even be possible to index the available talent on a more widespread scale. Back in February 2004, the West Midland Bird Club prompted an attempt to create an association of bird clubs via a 'Clubbing Together' event at Sutton Coldfield. A total of 47 clubs were represented with delegates from as far afield as Scotland and Cornwall and there was considerable enthusiasm for the project. At the event's conclusion, the BTO, who had co-hosted the seminar, offered to arrange a follow-up event, but this failed to materialise and the idea withered. Many of us felt that to be a chance missed so perhaps it is time to try again.

Another problem emanating from the shortage of paid resources is that data gaps will quickly appear and these may be difficult to fill when things (hopefully) improve. I accept that citizen science is still in its infancy, and that data from this source has to be validated, but in DOS we have managed to put in place a reliable screening process and we now have more than 700,000 bird records since the year 2000. Having seen some very unimpressive surveys from professional consultancies recently, I have had cause to

wonder whether the deficiencies are due to the commissioning body setting a limit on the spend. In which case, why not tap into those volunteer organisations where local knowledge is guaranteed and much of the data may already have been collected.

One only has to look at their annual reports to realise what a huge contribution comes from the county bird clubs. The recent spate of outstanding county avifaunas should provide a clue but, quite apart from this valuable level of recording and monitoring, there is much more besides. Single-species surveys, species protection, winter feeding stations, working with schools, workshops and public events are just examples. In the case of DOS, we also make our data available to a wide range of users, libraries and research bodies, as well as providing funding to appropriate projects and individuals via grants and bursaries. The clubs are arguably a resource that is still greatly undervalued and I am convinced that they could do even more if called upon to do so.

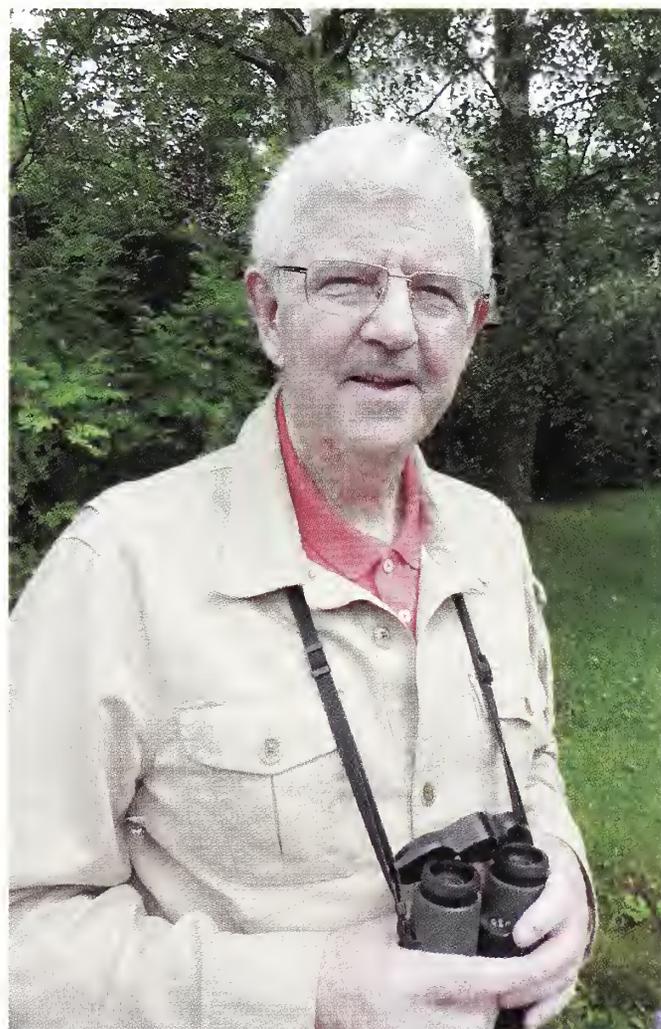
I hesitate to be critical of organisations such as RSPB and the Wildlife Trusts but I do feel that they could be far more proactive in turning to the county bird clubs for help and information, as well as supporting the clubs in their own work. In 2013, the Labour-controlled Derby City Council decided to build an outdoor track for cyclists and mountain bikers which, in the process, would have destroyed 40% of a designated Local Nature Reserve (The Sanctuary, at Pride Park) and left the remainder of it extremely vulnerable. Conveniently ignoring the recommendations of their own ecological survey, they lodged a planning application that would grant them permission to do this. Happily, as it turned out, the proposals were picked up at a very early stage and more than a thousand objections were registered thanks to a coalition of some 16 local conservation groups. The application was still bullied through via party political voting, with bulldozers on the site within 24 hours, but such was the determination of the locals that this was halted by prompt legal action (led superbly by Derbyshire Wildlife Trust) and the council eventually backed off and withdrew the scheme. A splendid example of volunteers leading the way, a fully involved county bird

club and the creation of a coalition which will undoubtedly be used as a future model.

Without doubt, a big part of the success in saving The Sanctuary was due to the use of modern technology and social media. The use of Twitter and blogs, not to mention a blizzard of communication by e-mail, was crucial, forming the platform to recruit such heavyweight (sic!) supporters as Mark Avery, Simon Barnes and Chris Packham. The level of publicity created certainly shook the council officials.

We now head towards a general election in 2015 with, I fear, little recognition for the 25 wildlife bodies who contributed to the *State of Nature* report. As before the last such election, we may see manifestos that are full of promise for conservation but which are unlikely to reach the statute books, whoever is elected. All of the evidence from the recent party conferences points to further financial restrictions and we are even more likely to need unpaid help to protect the environment. The county bird clubs and their willing volunteers are there to fill part of that gap, if we can only create the will to use some of their expertise and skills.

*Bryan Barnacle*



# News and comment

Compiled by Adrian Pitches

Opinions expressed in this feature are not necessarily those of *British Birds*

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## Buzzard poisoner receives suspended sentence

There was understandable outrage among birders on social media when Norfolk gamekeeper Allen Lambert, convicted of poisoning ten Common Buzzards *Buteo buteo*, received only a suspended prison sentence.

Bob Elliot, Head of RSPB Investigations, said: 'This is the worst case of bird of prey poisoning we are aware of in England, and one of the worst in the UK.' District Judge Peter Veits said that the offences had 'crossed the custody threshold' but handed him a ten-week suspended jail sentence. Lambert was ordered to pay £930 prosecution costs.

As we reported last month (*Brit. Birds* 107: 664), Lambert, 65, was found guilty in October of deliberately killing ten Buzzards and one Eurasian Sparrowhawk *Accipiter nisus*, and of being in possession of banned pesticides (mevinphos and aldicarb) and items used to prepare poison baits. This followed an RSPB investigation in April 2013, after reports of several dead birds of prey in a wood on the Stody Estate.

Lambert's pitiful defence was that the dead Buzzards had been 'planted' by a dog walker with a grudge and that, as Buzzards were so scarce in north Norfolk, he couldn't possibly have killed ten birds on one shooting estate. This is where a detailed survey by BB Trustee Richard Porter and fellow Norfolk birder Chris Abrams, published in the 2012 *Norfolk Bird & Mammal Report*, was used by the prosecution to devastating effect.

Richard and Chris spent 14 days surveying the central part of north Norfolk (including the Stody Estate) in March–April 2012 and recorded a total of 233 Buzzards, including 79 displaying pairs. Their

field notes and annotated OS maps provided incontrovertible proof of the healthy Buzzard population now established in north Norfolk following decades of persecution by gamekeepers like Lambert.

Richard said after the case: 'Whilst I am pleased that a suspended prison sentence sends out a strong message, wouldn't it have been of greater value to have also given the gamekeeper a community service order where, say, for three years he had to regularly help with conservation tasks on an RSPB or Norfolk Wildlife Trust reserve? This may have helped change his attitude too.'

'As an expert witness in this case, I saw at first hand the dedication and professionalism of the RSPB Investigations staff, as well as the Police Wildlife Crime Unit. Those who care about the protection of birds in Britain owe them a big thank you.'

In sentencing Lambert, District Judge Veits criticised the running of shooting estates. He said: 'Those who employ gamekeepers have a strict duty to know what is being done in their name and on their property [and] to ensure that their gamekeepers are properly trained and capable of keeping abreast of the complex laws relating to the use of poisons. In other industries, employers as well as the employee could be facing prosecution in such cases and I hope therefore that this case can serve as a wake-up call to all who run estates as to their duties.'

He added: 'It is clear that the Buzzard population in Norfolk is increasing and this is something to be applauded and not seen as an inconvenience by those who choose to run shoots.'

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## RSPB renews call to shooting industry to clean up its act

The sentencing of Allen Lambert came a week after the RSPB issued a challenge to the shooting community to acknowledge the problem of illegal persecution in the UK – and start to take action to put a stop to the killing.

The RSPB's recently published *Birdcrime 2013* report revealed 48 confirmed pesticide abuse incidents across the UK, resulting in the poisoning of at least 76 individual birds or other animals. Victims included 30 Buzzards, 20 Red Kites *Milvus milvus*, a Golden Eagle *Aquila chrysaetos* and a White-tailed Eagle *Haliaeetus albicilla*. These figures are clearly just a fraction of illegal

persecution incidents in the UK, with most going undetected or unreported.

This report marks four years since more than 230,000 people signed an RSPB pledge, handed in to the UK Government, asking for action to put an end to bird of prey persecution. However, in the four years since then, around 560 raptors have been confirmed shot, trapped or poisoned.

Bob Elliot, Head of RSPB Investigations, said: 'The Lambert case is only one example of the senseless killing of birds of prey that takes place and will continue to happen unless there is a change of attitude in the shooting industry.'

'We are now calling on the UK Government to show their commitment to the protection of birds of prey by introducing stronger legislation. This includes vicarious liability, to make employers and managers legally accountable for the actions of their staff – and stronger controls on possession of certain pesticides.'

An analysis of 164 convictions for raptor persecution offences between 1990 and 2013 shows that nearly three-quarters of those convicted have interests relating to the rearing, managing and shooting of gamebirds. The vast majority of these (113 individuals) were gamekeepers.

The rather predictable reaction of the shooting industry has not been an admission that they have a barrel of rotten apples to deal with, but rather to take a potshot at the RSPB in a campaign fronted by former cricketer Sir Ian Botham, who runs a commercial shoot in Yorkshire. The *You Forgot the Birds* campaign claims that the RSPB misleads its members and donors by spending 'only' £30m on its nature reserves (a quarter of its annual £120m income) and has reported the Society to the Charity Commission.

There are, of course, many strands to the RSPB's work and the Society maintains that 90% of its income is devoted to bird and wildlife



Ben Hall rspb-images.com

367. Eurasian Sparrowhawk *Accipiter nisus*.

conservation, including education, research, international work and investigations like the one that convicted gamekeeper Allen Lambert. The shooting industry is never going to win a PR battle with the charity that beams its positive conservation message into millions of BBC TV viewers' homes every *Springwatch* (hosted at RSPB Minsmere) and *Autumnwatch* (hosted at RSPB Leighton Moss). Botham and his fellow shooters' only hope of gaining some credibility is by agreeing to vicarious liability – and signing up to the licensing of grouse moors and all other commercial game shoots too.

## English egg-collector exports his crimes to Bulgaria

An English egg-collector has been handed a six-month prison sentence, suspended for three years, and a 5,000 Lev (£2,024) fine by a court in Bulgaria after pleading guilty to the illegal possession of 16 birds' eggs and three taxidermy specimens.

Jan Frederick Ross, formerly from Bury, Greater Manchester, is believed to have moved to Bulgaria around 2004 following three convictions for egg-collecting in the UK. After reports that Ross was continuing his illegal collecting overseas in Bulgaria, a Bulgarian police investigation proceeded following approaches from the Bulgarian Society for the Protection of Birds and the RSPB.

In December 2011, Ross's seafront apartment in Burgas was raided by the police, supported by representatives from BSPB and RSPB. Only 16 birds' eggs were found, all taken during 2011, including the egg of a Griffon Vulture *Gyps fulvus*, a rare breeding bird in Bulgaria (60 pairs) and with additional legal protection. A selection of climbing equipment used to gain access to cliff- and tree-nesting sites was also found during the raid.

The investigation also uncovered detailed diaries and photographs, hidden behind artwork on the lounge wall, which suggested that Ross's egg-collecting in Bulgaria stretched further than the 16 eggs found at his apartment. The diaries revealed more than 1,000 potentially illegally collected eggs, including those of a number of very rare breeding birds, such as Egyptian Vulture *Neophron percnopterus* (24 pairs in Bulgaria) and three clutches of Eastern Imperial Eagle *Aquila heliaca* (24 pairs in Bulgaria). No charges could be brought against Ross for these since the eggs were not located.

Guy Shorrocks, a Senior Investigations Officer for the RSPB, said: 'Ross has exported egg-collecting to Bulgaria. He plundered eggs of rare birds from the Bulgarian countryside as he could operate below the radar of the authorities, who had no knowledge of this strange crime. We believe Ross still holds a substantial egg collection somewhere in Bulgaria, including many eggs previously taken in the UK.'

## Severe declines in ‘common birds’

Two recent reports have highlighted shocking declines in formerly widespread British and European breeding birds. A joint study by Exeter University, the RSPB and the Pan-European Common Bird Monitoring Scheme (PECBMS), published in *Ecology Letters*, revealed a decrease of 421 million individual birds over 30 years. Around 90% of these losses were of the 36 most common and widespread species, including House Sparrow *Passer domesticus*, Common Starling *Sturnus vulgaris*, Skylark *Alauda arvensis* and Grey Partridge *Perdix perdix* – highlighting the need for greater efforts to halt the Continent-wide declines of our most familiar countryside birds.

Meanwhile, the latest *State of the UK's Birds* report includes population trends for 29 migrant species which nest in the UK and winter around the Mediterranean, or in Africa south of the Sahara Desert. For the first time the recent population trends for these migratory species have been combined into an indicator revealing some

marked differences between species that winter in different areas. Species such as Common Nightingale *Luscinia megarhynchos*, Tree Pipit *Anthus trivialis* and Spotted Flycatcher *Muscicapa striata*, which winter in the humid zone of Africa, show the most dramatic declines: the indicator for this group of species has dropped by just over 70% since the late 1980s. This contrasts with species such as Sand Martin *Riparia riparia* and Sedge Warbler *Acrocephalus schoenobaenus*, wintering in the arid zone of the Sahel: these species have fluctuated considerably since 1970, but show a decline of less than 20% overall.

One of the most dramatic declines is that of the Turtle Dove *Streptopelia turtur*, which has decreased by 88% since 1995, but the statistics for some other species provide grim reading too: Wood Warbler *Phylloscopus sibilatrix* down by 66%, Pied Flycatcher *Ficedula hypoleuca* by 53%, Common Cuckoo *Cuculus canorus* 49% and Yellow Wagtail *Motacilla flava flavissima* 43%.

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## Long-term Guillemot survey saved by crowdsourcing

In the early months of 2014, a series of fierce storms battered Europe's western seaboard. Seabirds struggle to feed in rough water, and some 40,000 of them soon washed up dead on beaches. Climate change is expected to increase the frequency of such storms, so to understand the impact of global warming on ecosystems, we need to analyse the long-term biological impact of these events.

For more than 40 years, Tim Birkhead has studied populations of Common Guillemots *Uria aalge* on Skomer, in Pembrokeshire. His research has revealed, for example, that the birds now breed two weeks earlier than they did in the 1970s, probably as a result of climate change. Guillemots are among our most abundant seabirds, and they are excellent indicators of the quality of the marine environment.

This kind of research is not easy. It has taken four decades to accumulate the data necessary for us to understand how the population works,

because to do so requires accurate measures of how long adult Guillemots live, how many chicks they produce, how old they are when they breed, what proportion of young birds survive to breed, and so on. But no more. Funding for the project has been axed.

In 2013, the Countryside Council for Wales (which had funded the study for the past 20 years) was consumed by a new quango, Natural Resources Wales (NRW), which terminated the funding of about £12,000 per year. Tim says: 'There is a feeling out there that conservation and monitoring is low-quality science and should be cheap; there is also a feeling that monitoring does not matter.' But he hasn't taken the decision lying down – and has resorted to 'crowdsourcing' to continue this vital research: [www.justgiving.com/timbirkheadguillemots](http://www.justgiving.com/timbirkheadguillemots)

The initial target of £12,000 for 2015 has been reached *already* – and NRW will hopefully be shamed into reviewing their priorities.

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## And the winners are...

The end-of-year awards season has arrived and there are some worthy winners of prestigious 'gongs' handed out by the RSPB and BTO. The RSPB Medal has been awarded to the team behind *Bird Atlas 2007–11* and was received at the RSPB annual conference by Dawn Balmer, Iain Downie, Rob Fuller and Simon Gillings from the BTO, Brian Caffrey from BirdWatch Ireland and Bob

Swann from the Scottish Ornithologists' Club. Presenting the medals, RSPB Chief Executive Mike Clarke said: 'The new Bird Atlas is an extremely valuable resource not only for RSPB but for all organisations involved in conserving, researching or understanding Britain and Ireland's birds.'

Atlas Co-ordinator and lead author Dawn Balmer commented: 'The Bird Atlas project was a



rspb-images.com

**368.** The *Bird Atlas 2007–11* team: (from left) Rob Fuller, Iain Downie, Brian Caffrey, (RSPB president Miranda Krestovnikoff), Dawn Balmer, Simon Gillings and Bob Swann.

monumental citizen science effort with thousands of volunteer birdwatchers mobilised.' And Dawn – who also sits on the Editorial Board of *BB* – accepted the medal on behalf of 'the volunteer birdwatchers and local volunteer atlas organisers who worked tirelessly throughout the project and were such a pleasure to work with.'

Meanwhile, at its annual awards ceremony, the BTO has recognised five people or groups for their contributions to ornithology. BBC journalist Victoria Gill was awarded the Dilys Breese Medal for outstanding communication, in particular for her coverage of the BTO Cuckoo project, which brought this important satellite-tracking story to a wider audience. Francis Daunt was awarded the Marsh Award for Ornithology, for

his significant contribution to the understanding of Britain's seabirds. The Friends of Skokholm and Skomer were recognised with the Marsh Award for Local Ornithology for returning Skokholm to its former glory and reinstating its bird observatory; the Marsh Award for International Ornithology was awarded to Shiwua Manu of the A. P. Leventis Ornithological Institute (APLORI) in Nigeria for training students and building biodiversity conservation capacity in this part of Africa; and the Wildfowl and Wetlands Trust Conservation Breeding Team were awarded the Marsh Award for Innovative Ornithology for their work to help save the Spoon-billed Sandpiper *Calidris pygmeus* from extinction.

## Young birders' *BB* subscription – the ideal Christmas present!

Can you remember first subscribing to *BB*, maybe in your late teens or early 20s? And the anticipation of receiving the journal through your door every month, packed full of bird news and features! Perhaps your first subscription came from a relative or friend keen to share a magazine they enjoyed reading?

The board of *British Birds* recognises that young people, the bird conservationists of the future, have many distractions today but we feel that they should have the opportunity to share *BB* at an affordable price to reflect the fact they're still at school/college or embarking on their career. So we've launched a reduced-price subscription offer for a limited period. It's open only to the under-25s, will cost them £25 for their annual subscrip-

tion and is available for 25 weeks only (offer expires on 25th April 2015). We call it our 25/25/25 offer – and it could be the ideal gift on 25th December! See [www.britishbirds.co.uk/subscribe/25](http://www.britishbirds.co.uk/subscribe/25)

Young subscribers have to provide a scan of their passport or driving licence to prove their age – but if you want to pay for a young birder to join the *BB* community, please visit the website.

We appreciate that many of us *over* the age of 25 would also appreciate a 50% discount on our *BB* subscription – but we feel that recruiting the next generation of *BB* subscribers is a priority for all of us who value this journal.

Happy Christmas from all at *BB* and good birding in 2015.

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# Managing and re-creating wetlands in Britain for potential colonists

Malcolm Ausden, Graham Hirons, Leigh Lock and Graham White



Glossy Ibises *Plegadis falcinellus*

**Abstract** We identify bird species that have the potential to establish, or re-establish, regular breeding populations in lowland wetlands in Britain. For many of these species, there is probably sufficient habitat in Britain to support only very small breeding populations. We describe measures aimed at increasing the area of suitable wetland for these species and discuss the compatibility of these measures with those aimed at benefiting bird species of current high conservation priority. We argue in favour of targeting habitat re-creation to establish a small number of very large wetlands (or clusters of sites in close proximity), rather than a large number of small, isolated wetlands. For a given cost, this should provide far greater population benefits for current priority bird species and potential colonists and recolonists.

## Introduction

Since 2008, there has been an extraordinary series of breeding records of wetland birds in Britain: the first British breeding records of Cattle Egrets *Bubulcus ibis*, Purple Herons

*Ardea purpurea* and Great White Egrets *A. alba*; the recommencement of regular breeding by Eurasian Spoonbills *Platalea leucorodia* (hereafter 'Spoonbills'), and the first recorded regular breeding by Little

### Box 1. Projected changes in Britain's climate

Changes in climate are difficult to predict, because of uncertainties over future levels of greenhouse gas emissions, and also how these will affect climate. Nonetheless, there is a strong consensus on the likely 'direction of travel' (Alexander *et al.* 2013). Changes in climate during the past few decades are consistent with this direction of travel.

The latest projections (from UK Climate Projections: UKCP09) show Britain becoming generally warmer all year round, with the greatest increases in temperature in southeast England. Precipitation is projected to be, on average, slightly higher in winter, and slightly lower in summer. There is also predicted to be an increase in the frequency and magnitude of intense rainfall events throughout the year (Kendon *et al.* 2014). The combination of slightly drier summers and higher rates of evapotranspiration is expected to result in significantly lower water levels in spring and summer, with these changes expected to be greatest in east and southeast England. Reductions in water availability in these regions are likely to be exacerbated by increased demand for water from agriculture, industry and services (Committee on Climate Change 2013).

Sea levels are expected to continue to rise due to thermal expansion of the sea and melting of ice caps, and at a faster rate than observed in the last century. Coastal wetlands, potentially the first home for many colonists, are likely to be especially vulnerable.

Extreme weather events, such as drought, can strongly affect species' populations and distributions, but their frequency and magnitude are especially difficult to predict. But since the early 1980s, there has already been an increase in the frequency of extreme temperature and rainfall events in the northern hemisphere (Hansen *et al.* 2012).

Further information on projected changes to Britain's climate can be found at <http://ukclimateprojections.defra.gov.uk> Information on observed and predicted impacts of climate change on terrestrial and marine wildlife in Britain is summarised by MCCIP (2010) and Morecroft & Speakman (2013).

Bitterns *Ixobrychus minutus*. There have also been several recent influxes of Glossy Ibises *Plegadis falcinellus*, an influx of Baillon's Crakes *Porzana pusilla* and several recent breeding attempts by Black-winged Stilts *Himantopus himantopus*.

We discuss which birds have the potential to establish, or re-establish, regular breeding populations at lowland wetlands in Britain, and the implications of considering the requirements of these species when managing and re-creating wetlands. Increasing the quality, size, total area, and connectivity of wildlife sites in England has been recommended following a review of England's wildlife sites by Lawton *et al.* (2010), while increasing the extent of wetland habitat has also been identified as a key aim in England's Wetland Vision (Hume 2008).

### Climate change

There are undoubtedly various reasons for the recent changes in distribution of these wetland birds, and it is not possible to definitively attribute changes in the distribution of individual species to the impacts of climate change. However, populations and distributions of birds and other wildlife in Britain as a whole are already changing, in some cases quite dramatically, in ways consistent with

their being caused by recent changes in Britain's climate (Hickling *et al.* 2006; Green *et al.* 2008; MCCIP 2010; Bradbury *et al.* 2011; Morecroft & Speakman 2013). Similar changes in population and distribution are also being observed at a larger scale in Europe (e.g. Parmesan *et al.* 1999, Gregory *et al.* 2009). Given projections for changes in climate (Alexander *et al.* 2013), it is likely that the rate of change in species' distributions driven by climate change will increase. Projected changes in Britain's climate are summarised in Box 1.

### Which birds have the potential to establish/re-establish regular breeding populations at lowland wetlands in Britain?

Bird species that we consider to have the potential to colonise, or recolonise, lowland wetlands in Britain in the near future comprise two main groups (table 1). First, species whose populations have recently been increasing in western Europe (table 1a), excluding those which stem from introduced populations, such as Sacred Ibis *Threskiornis aethiopicus*. Second, additional species for which the results of climate envelope modelling (see Box 2 for definition) by Huntley *et al.* (2007) predict that Britain will have a

**Box 2. Climate envelope modelling**

Climate envelope modelling involves building a mathematical model that describes a species' current/recent distribution using climate variables. This model is then used to describe the species' potential future distribution under a different climate, given the ways in which climate is predicted to change, assuming that the relationship between its current/recent distribution and climate remains the same.

Climate envelope modelling is a valuable technique to foster a broad understanding of how species distributions might change, but it is important to be aware of its limitations. First, although the range of many species is well described by climate, the range of some species is poorly predicted if they are currently absent from areas which are climatically suitable for them because of, for example, human land-use factors or persecution. There are also a number of reasons why a species might not fully occupy areas that become climatically suitable for it. Species might be physically or behaviourally unable to disperse to these areas. Additionally, there might be a lack of potential colonising individuals from the species' current range. There might also not be suitable habitat for the species in areas that become climatically suitable.

more suitable climate, based on a 3°C rise in global temperatures above those of pre-industrial times (table 1b). Current projections suggest that we might expect this level of warming to take place sometime this century (the global combined land and ocean temperature has already risen by about 0.85°C over the period 1880–2012; Alexander *et al.* 2013). Although climate envelope modelling provides valuable insight into how species distributions might change in relation to climate, it is important to be aware of its assumptions and limitations (Box 2).

In table 1b we also include species' population trends since 1990 towards the northern limits of their range in the nearest breeding areas to lowland Britain. We chose this time period because, since the early 1990s, birds in Europe have in general shown population trends consistent with the level of warming that has already taken place (Gregory *et al.* 2009). If a species has increased towards its northern range limits during this period, it does not necessarily mean that this has been due to changes in climate. It does, though, show that its population increase has not been prevented by other factors. Conversely,



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**369.** There has been a spectacular increase in the number of Glossy Ibises *Plegadis falcinellus* recorded in Britain since 2007, reflecting the species' rapid population growth in southwest Europe. This is one of a pair of birds seen displaying at Frampton Marsh RSPB reserve, Lincolnshire, in 2014, one of which then built the first Glossy Ibis nest recorded in Britain. It will surely not be long before Glossy Ibises begin breeding in Britain.

### Box 3. Red Swamp Crayfish – an ecological disaster waiting to happen in Britain

Red Swamp Crayfish *Procambarus clarkii* were introduced into Spain from the south-central USA and northeast Mexico for aquaculture in the early 1970s, and now occur throughout Spain, much of France, northern Italy and at scattered locations in other parts of Europe (Geiger *et al.* 2005). They attain very high densities, and in some wetlands in southwest Europe have become an important prey of many of the species discussed in this article: Night Heron, Cattle Egret, Great White Egret, White Stork, Glossy Ibis, Spoonbill, Black Kite, and even Whiskered Tern (Correia 2001; Tablado *et al.* 2010). Red Swamp Crayfish have almost certainly been responsible for population increases of some of these waterbirds in southwest Europe (Tablado *et al.* 2010).

Despite the benefits to these birds, the presence of Red Swamp Crayfish is highly damaging to most aquatic wildlife. The crayfish's feeding and burrowing can cause clear water dominated by submerged macrophytes to become turbid and dominated by phytoplankton, and probably causes big declines in the abundance of larger aquatic invertebrates, amphibians, and herbivorous waterfowl (Geiger *et al.* 2005; Rodríguez *et al.* 2005). Small populations of Red Swamp Crayfish have already become established in the London area, and lowland Britain is expected to become increasingly suitable for them as the climate continues to warm (Liu *et al.* 2011; Ellis *et al.* 2012).



370. Red Swamp Crayfish, Nijmegen, the Netherlands, March 2012.

Jelger Herder/Minden Pictures/FLPA

if a species has not increased towards its northern range limits during this period, then it suggests that any climatic benefits have (so far) been overridden by other factors. Two species in table 1b, Kentish Plover *Charadrius alexandrinus* and Great Reed Warbler *Acrocephalus arundinaceus*, have shown large population declines towards their northern range limits in the nearest breeding areas to Britain since the early 1990s (see table 1b for details).

It is important to note that the recent increases in range of many of the species in table 1 (especially Squacco Heron *Ardeola ralloides*, Great White Egret, White Stork *Ciconia ciconia*, Glossy Ibis, Spoonbill, White-tailed Eagle *Haliaeetus albicilla* and Osprey *Pandion haliaetus*) are almost certainly due mainly to conservation measures, which have enabled them to re-expand their breeding range following declines caused by factors such as persecution, habitat loss and pollution. The potential future range of these species in western Europe is undoubtedly poorly simulated by climate envelope modelling, because of the species' current/recent absence from areas which are climatically

suitable. A key factor in the more recent population increase of some of these species in southwest Europe has been the spread of non-native Red Swamp Crayfish *Procambarus clarkii* (Box 3).

Many of the species in table 1 already breed very close to Britain. For example, the marshes at the Baie de Somme in northern France are just 80 km from the coast of Kent and currently support regular breeding populations of Night Heron *Nycticorax nycticorax*, Cattle and Great White Egrets, Spoonbill, White Stork, Kentish Plover, Black-winged Stilt, Golden Oriole *Oriolus oriolus*, White-spotted Bluethroat *Luscinia svecica cyaneola* and Savi's Warbler *Locustella luscinioides*. It is notable how common the last two species are in the Baie de Somme area, given their rarity in Britain. For example, the main 70-ha reedbed at Basse Vallée de la Somme supports 15–20 singing Savi's Warblers and about 25 pairs of White-spotted Bluethroats. Of the species listed in table 1, Glossy Ibis is the most distant breeder from Britain, its nearest regular breeding colonies currently being in southern France.

**Table 1.** Bird species considered to have the potential to establish, or re-establish, regular breeding populations at lowland wetlands in Britain.

**Notes:** Simulated distribution is the number of c. 50 x 50 km squares in Britain which the results of climate envelope modelling by Huntley et al. (2007) showed to be presently climatically suitable for the species, and potentially suitable for the species in the future with a 3°C rise in global temperatures above those of pre-industrial times. All figures shown are for species which had a 'good' or better model fit. It is important to be aware of the methods and limitations of climate envelope modelling (Box 2), and these figures should be used only as an approximate guide to the direction and magnitude of change in climatic suitability for these species.

Little Bittern, Great White Egret and Spoonbill are included because, although all three have recently established regular breeding populations in Britain, their future status as regular breeding species in Britain is still precarious. We have also included Golden Oriole and Savi's Warbler, because both species are now very rare breeders in Britain (with a five-year mean of just 4–5 breeding pairs of each in Britain between 2008–12; Holling et al. 2014), and with Golden Oriole probably just about extinct as a breeding species in Britain. We have not included Common Crane *Grus grus*, because its wild population is increasing in Britain, and its reintroduced population is also faring well.

**(a) Species whose populations have been increasing in western Europe**

Species	Simulated distribution		Population trend since the early 1990s		Additional information
	Present	Potential future	Britain	Elsewhere in western Europe	
Little Bittern <i>Ixobrychus minutus</i>	0	9	No trend in numbers recorded but one pair has summered or bred in Britain during 2010–13 (with 2–4 unpaired males present in the same area in 2013, and several males also present at the site in 2014). Only one previous breeding record in Britain prior to that ( <a href="http://www.rbbp.org.uk">www.rbbp.org.uk</a> ; <a href="http://www.bbrc.org.uk">www.bbrc.org.uk</a> ; Hudson et al. 2014).	Breeding population in the Netherlands and France thought to be increasing (in the Netherlands only since the early 2000s), following a large decline across Europe between 1970 and 1990 (BirdLife International 2004; Marion et al. 2006; van Turnhout et al. 2010; <a href="http://www.sovon.nl/nl/content/vogelinfo">www.sovon.nl/nl/content/vogelinfo</a> ).	
Night Heron <i>Nycticorax nycticorax</i>	0	12	Decline in numbers recorded (White & Kehoe 2014a).	Breeding population increasing in the Netherlands (this very small population is thought to be mainly/entirely derived from escaped captive birds) (van Turnhout et al. 2010; <a href="http://www.sovon.nl/nl/content/vogelinfo">www.sovon.nl/nl/content/vogelinfo</a> ). Declining in France (Marion & Reeber 1997; Marion 2009).	Strong evidence that population trends of many breeding colonies in western Europe are affected by rainfall in the species' wintering areas in sub-Saharan Africa (Den Held 1981; Fasola et al. 2000 & 2010; Zwarts et al. 2009).
Squacco Heron <i>Ardeola ralloides</i>	0	0	More regularly recorded since the mid 1990s ( <a href="http://www.bbrc.org.uk">www.bbrc.org.uk</a> ).	Long-term increase in breeding population in France, and now breeds regularly in northwest France (Marion & Reeber 1997; Marion 2009).	The breeding population in France is still small (576 pairs in 2007; Marion 2009), so colonisation of Britain appears unlikely in the short to medium term. Strong evidence that population trends of some breeding colonies in western Europe are affected by rainfall in the species' wintering areas in sub-Saharan Africa (Fasola et al. 2000 & 2010; Zwarts et al. 2009).

Species	Simulated distribution		Population trend since the early 1990s		Additional information
	Present	Potential future	Britain	Elsewhere in western Europe	
Cattle Egret <i>Bubulcus ibis</i>	0	0	Large increase in numbers recorded, with first British breeding record in 2008 and possible breeding in 2009 (Hudson <i>et al.</i> 2008; <a href="http://www.rbbp.org.uk">www.rbbp.org.uk</a> ; White & Kehoe 2014a).	Large, long-term increase in breeding population in France, although with a marked decline in more northerly breeding colonies since 2008 following a series of cold winters (Marion & Reeber 1997; Marion 2009).	Range expansion in western Europe is the continuation of a much wider, and longer-term, expansion in breeding range, mainly since the 1950s (Voisin 1991).
Great White Egret <i>Ardea alba</i>	0	0	Large increase in records, mainly since about 2000; first recorded breeding in 2012, and subsequent breeding in the same area in 2013 and 2014 (Holt 2013; Anderson <i>et al.</i> 2013; White & Kehoe 2014a).	Increase in breeding population in the Netherlands since first bred in 1978, and in France since first successful breeding in 1994 (Marion 2009; Marion & Marion 1994; van Turnhout <i>et al.</i> 2010).	Large increase across much of Europe, and has nested for the first time in 15 countries across Europe since 1980 (Ławicki 2014; <i>Brit. Birds</i> 107: 444).
Purple Heron <i>Ardea purpurea</i>	0	5	Numbers recorded stable, but attempted to breed in 2007 and first successful recorded breeding in 2010 (White & Kehoe 2014a; <a href="http://www.rbbp.org.uk">www.rbbp.org.uk</a> ).	Breeding population increasing in France, large and sustained increase in the Netherlands (Marion & Reeber 1997; Marion 2009; van Turnhout <i>et al.</i> 2010).	Strong evidence that population trends of many breeding colonies in western Europe are affected by rainfall in the species' wintering areas in sub-Saharan Africa (Den Held 1981; Cavé 1983; Fasola <i>et al.</i> 2000; Barbraud & Hafner 2001; Zwarts <i>et al.</i> 2009).
White Stork <i>Ciconia ciconia</i>	0	0	Increase in number of records. A nesting attempt in Britain in 2004 involved a free-flying male from Belgium and a rehabilitated colour-ringed female from France (Fraser 2013; White & Kehoe 2014a).	Breeding population increasing in France since 2001 (the only period for which trend data available), and very large sustained population increase in the Netherlands ( <a href="http://vignature.mnhn.fr/page/resultats:www.sovon.nl/nl/content/vogelinfo">vignature.mnhn.fr/page/resultats:www.sovon.nl/nl/content/vogelinfo</a> ).	Recolonisation of former breeding range in northwest Europe is due in part to reintroduction programmes.
Glossy Ibis <i>Plegadis falcinellus</i>	0	0	Large increase in number of records, particularly since 2007 (Hudson <i>et al.</i> 2013). Recorded nest-building in Britain for the first time in 2014.	Large increase in breeding populations in southern France and Spain (Tour du Valat; Máñez <i>et al.</i> 2009).	
Eurasian Spoonbill <i>Platalea leucorodia</i>	0	0	Large increase in numbers recorded, with single pairs breeding successfully in 1999 and 2008, and a breeding colony established in 2010 that is still in use ( <a href="http://www.rbbp.org.uk">www.rbbp.org.uk</a> ). Known to have bred in Britain in the early 1700s (Holloway 1996).	Long-term increase in breeding populations in France, the Netherlands, Belgium and Denmark (Triplet <i>et al.</i> 2008; van Turnhout <i>et al.</i> 2010).	Increase in west European stronghold of the Netherlands probably largely due to recovery from declines caused by pollution of coastal waters by pesticides in the 1960s, and to subsequent conservation efforts (Voslamber 1994; van Turnhout <i>et al.</i> 2010).
Black Kite <i>Milvus migrans</i>	0	35	Increase in numbers recorded during the 1980s, but stable since then (White & Kehoe 2014a).	Increase in breeding population in France ( <a href="http://vignature.mnhn.fr/page/resultats">vignature.mnhn.fr/page/resultats</a> ).	Although they use a range of open habitats, Black Kites are strongly associated with wetland habitats (Cramp & Simmons 1980; Sergio <i>et al.</i> 2003).

Species	Simulated distribution		Population trend since the early 1990s		Additional information
	Present	Potential future	Britain	Elsewhere in western Europe	
White-tailed Eagle <i>Haliaeetus albicilla</i>	–	–	Reintroduced breeding population increasing in Scotland ( <a href="http://www.rbbp.org.uk">www.rbbp.org.uk</a> ).	Increasing in the Netherlands after first recorded breeding in 2006 ( <a href="http://www.sovon.nl/nl/content/vogelinfo">www.sovon.nl/nl/content/vogelinfo</a> ). Re-colonised Denmark (first nesting attempt in 1995) after becoming extinct as a breeding bird in 1911, population continues to increase (Pihl et al. 2006; <a href="http://www.dof.dk">www.dof.dk</a> ).	Good evidence that White-tailed Eagles were fairly widespread in lowland Britain in pre-medieval times (Evans et al. 2012). Although White-tailed Eagles already breed in Britain, they are included because they have the potential to colonise, or recolonise, large areas of the lowlands.
Short-toed Eagle <i>Circus gallicus</i>	0	27	Rare vagrant to Britain, two accepted records to end of 2013.	Probable population increase in France since 2001 ( <a href="http://vigenature.mnhn.fr/page/resultats">vigenature.mnhn.fr/page/resultats</a> ). Large increase in the Netherlands since early 2000s, some individuals now remaining for long periods in summer ( <a href="http://www.dutchavifauna.nl">www.dutchavifauna.nl</a> ).	In southern Europe, Short-toed Eagles are associated with dry habitats, but in northern Europe they are associated with a mixture of wet woodland, open heath, grassland and wetlands (Cramp & Simmons 1980).
Osprey <i>Pandion haliaetus</i>	–	–	Breeding population increasing, but absent from most lowland areas ( <a href="http://www.rbbp.org.uk">www.rbbp.org.uk</a> ).		Recolonisation of lowland wetlands is most likely by birds from northern and western Britain, as well as by birds from the translocation programme at Rutland Water.
Black-winged Stilt <i>Himantopus himantopus</i>	0	2	No overall trend in numbers recorded in Britain, but an increase in nesting attempts since 2008 ( <a href="http://www.rbbp.org.uk">www.rbbp.org.uk</a> ; <a href="http://www.bbrc.org.uk">www.bbrc.org.uk</a> ; Hudson et al. 2014).	Breeding population in France increasing since 2001, and generally more breeding attempts per year in the Netherlands since 1989 than during the previous two decades ( <a href="http://vigenature.mnhn.fr/page/resultats">vigenature.mnhn.fr/page/resultats</a> ; Boele 2012).	
Whiskered Tern <i>Chlidonias hybrida</i>	0	1	Increase in number of records in Britain since the early 2000s ( <a href="http://www.bbrc.org.uk">www.bbrc.org.uk</a> ; Hudson et al. 2014).	Increasing at those colonies in France which are closest to Britain (Latraube et al. 2005; Paillisson et al. 2006; Reeber 2013). In the Netherlands, formerly a very occasional breeder, but has recently bred for three consecutive years (2012–14).	
White-spotted Bluethroat <i>Luscinia svecica cyaneula/namnetum</i>	0	7	No information on trend in numbers of White-spotted Bluethroats in Britain. White-spotted bred in Britain in 1996, and males but no females were present at the same site in the following three years (Curtis 2000; Degnan & Dobbs 2001 & 2002).	Increase in breeding population in the Netherlands (van Turnhout et al. 2010). No overall trend in breeding population in France ( <a href="http://vigenature.mnhn.fr/page/resultats">vigenature.mnhn.fr/page/resultats</a> ).	
Zitting Cisticola <i>Cisticola juncidis</i>	–	–	Rare vagrant to Britain with eight accepted records to the end of 2013, six of those since 2000 ( <a href="http://www.bbrc.org.uk">www.bbrc.org.uk</a> ).	Increase in the Netherlands, but with a decline since 2009 following cold winters ( <a href="http://www.sovon.nl/nl/content/vogelinfo">www.sovon.nl/nl/content/vogelinfo</a> ). Population trend for France available since 2001, with a large decline since 2007 following cold winters ( <a href="http://vigenature.mnhn.fr/page/resultats">vigenature.mnhn.fr/page/resultats</a> ).	

**Table 1** continued: (b) Species for which the climate in Britain is predicted to become more suitable, but which are not thought to have increased towards the northern limits of their range in western Europe since the early 1990s

Species	Simulated distribution		Population trend since the early 1990s		Additional information
	Present	Potential future	Britain	Elsewhere towards the northern limits of the species' range in western Europe	
Kentish Plover <i>Charadrius alexandrinus</i>	2	14	Large decline in number of records (White & Kehoe 2014a).	Declining in the Netherlands and northern France, although has increased in Lower Normandy (Debout 2009; van Dijk <i>et al.</i> 2010).	Declines in the Netherlands thought to be due mainly to low breeding productivity caused by human disturbance, predation and by lack of early successional habitat (Meininger & Arts 1997; Arts <i>et al.</i> 2000). Formerly bred regularly in Britain, in a climate similar to that of today's; its loss is attributed to human persecution and habitat destruction (Holloway 1996).
Black Tern <i>Chlidonias niger</i>	0	1	Regular spring and autumn migrant, probably bred in 1983 (Spencer <i>et al.</i> 1986).	Stable in the Netherlands but declining in parts of France, following large, long-term decline in western Europe (Thomas & Godet 2010; van Turnhout <i>et al.</i> 2010).	Bred regularly in Britain until the mid-nineteenth century, last confirmed breeding in 1978 (Holloway 1996; Brown & Grice 2005). Long-term decline in western Europe undoubtedly caused largely by loss of suitable habitat, including deterioration in food supply probably caused by eutrophication (e.g. Beintema <i>et al.</i> 2010).
Savi's Warbler <i>Locustella luschnioides</i>	4	22	No overall trend in numbers recorded (www.bbrc.org.uk; Hudson <i>et al.</i> 2014).	Population stable or slightly increasing in the Netherlands (van Turnhout <i>et al.</i> 2010; www.sovon.nl/nl/content/vogelinfo). No data on population trend in France.	
Great Reed Warbler <i>Acrocephalus arundinaceus</i>	0	12	No overall trend in numbers recorded (www.bbrc.org.uk; Hudson <i>et al.</i> 2014).	Declining in the Netherlands (a continuation of a longer-term trend) (van Turnhout <i>et al.</i> 2010; www.sovon.nl/nl/content/vogelinfo). No overall trend in breeding population in France since 2001 (vignature.mnhn.fr/page/resultats).	Decline in breeding population in the Netherlands thought due to a reduction in the extent of wet reedbed, at least partly caused by a reduction in natural fluctuations in water levels (Graveland 1998).
Golden Oriole <i>Oriolus oriolus</i>	12	41	Breeding population has declined since the main poplar plantations they bred in were felled in the late 1980s (Milright 1998; www.rbbp.org.uk). Total numbers recorded in Britain have also declined (White & Kehoe 2014b).	Declining in the Netherlands (www.sovon.nl). Population stable in France since the early 1990s, and with a significant increase since 2001 (vignature.mnhn.fr/page/resultats).	Breeds in a variety of different types of deciduous woodland, but in northwest Europe particularly associated with wetter woodlands (Allsop & Mason 1993; Mason & Allsop 2009).

Table I continued: (c) Additional species

Species	Simulated distribution		Reason
	Present	Potential future	
Baillon's Crake <i>Porzana pusilla</i>	–	–	Bred in Britain in the nineteenth century (Holloway 1996). Recorded more regularly breeding in the Netherlands in recent years, where breeding might have been more overlooked until recently, and there was an influx into Britain in 2012 (Ausden et al. 2013). Influxes of Baillon's Crakes in NW Europe might occur more frequently in the future, because influxes appear to be associated with drought at their main breeding site in Spain, and Spain is projected to become increasingly prone to drought. Changes in population and range in Europe are not well monitored.

An additional reason why a species might not fully occupy areas that become climatically suitable is if its range expansion is limited by poor dispersal ability (Box 2). However, all the species in table 1, apart from Short-toed Eagle *Circaetus gallicus* and Zitting Cisticola *Cisticola juncidis*, already occur regularly in Britain, suggesting that poor dispersal is unlikely to be an important factor preventing colonisation of Britain, at least for these other species.

It is difficult to predict how the impacts of

non-climatic factors might affect species' populations in the future, relative to any future effects of changes in climate. A particular area of uncertainty for non-resident species is how changes in climate and land use might affect their populations by influencing conditions on migration and in their wintering areas. For example, there is strong evidence that, in recent decades, population trends of Night Herons, Squacco Herons and Purple Herons at some colonies in Europe have been affected by variation in rainfall in



Ruben Smit/Minden Pictures/FLPA

**371.** White-spotted Bluethroat *Luscinia svecica cyaneacula*, Apeldoorn, the Netherlands, April 2011. White-spotted Bluethroats are fairly common breeding birds in many scrubby wetlands in the Netherlands and northern France, and it seems surprising that so few are recorded summering or breeding in Britain.

their wintering grounds in sub-Saharan West Africa (see table 1). A further complication is how species might alter migration routes and wintering areas in response to changes in climate and land use.

There are several species, commonly considered as potential colonists, for which climatic conditions in Britain are unlikely to become more suitable (Huntley *et al.* 2007). These are Red-necked Grebe *Podiceps grisegena*, Little Gull *Hydrocoloeus minutus*, Icterine Warbler *Hippolais icterina* (which in its nearest breeding areas to Britain is strongly associated with stands of Alder *Alnus glutinosa*), Penduline Tit *Remiz pendulinus* and Common Rosefinch *Carpodacus erythrinus*. In addition, Britain is also predicted to become less climatically suitable for breeding Ruffs *Philomachus pugnax* and Marsh Warblers *Acrocephalus palustris* according to Huntley *et al.* (2007). Numbers of breeding Ruffs have been in long-term decline elsewhere in northwest Europe, almost certainly due to changes in land use and other pressures (Beintema *et al.* 1997; Zwarts *et al.* 2009). Although the prospects for a significant range expansion of Marsh Warblers appear to be limited, small and ephemeral populations may well continue to exist along the east coast of Britain, where there appears to be plenty of apparently suitable breeding habitat.

There is intriguing evidence that several of the species listed in table 1 that have never been confirmed breeding in Britain could perhaps have bred in Britain in recent centuries. There are written records of Night Herons, egrets and storks being eaten regularly in Britain in medieval times, although it is not known whether these birds were caught in Britain or imported (Bourne 2003). During this period, there are also accounts of large numbers of 'white herons', Spoonbills and Night Herons being taken from nests for human consumption in the Netherlands (van Eerden *et al.* 2010).

From here on, we shall describe the list of species in table 1 as potential colonists, irrespective of whether they have already bred regularly in Britain, and accepting the caveats regarding the potential future distributions of species in table 1b.

## How might we encourage potential colonists?

Before discussing the management and re-creation of individual habitats, we consider three important factors for a range of potential colonists. A striking feature of the list of potential colonists is the high proportion of colonial breeders.

## The importance of very large wetlands

Very large wetlands, and clusters of nearby large wetlands, are particularly important for many colonial waterbirds. Various herons and their allies require large areas of feeding habitat within commuting distance of a safe nest site. Colonial waterbirds specialise in feeding on temporary concentrations of prey, particularly small fish, and so need wetlands sufficiently large and varied to provide abundant and accessible prey throughout the breeding season. Temporary concentrations of small fish can occur when they become trapped in drying pools (Hafner *et al.* 1993), or when fish are concentrated near the surface of open water in the early morning, to avoid the low oxygen levels that develop overnight in areas with dense submerged vegetation (Kersten *et al.* 1991).

Colonial waterbirds can commute long distances to feed, but minimising the time and energy of travelling is likely to increase breeding success. Herons and egrets typically fly up to 5–10 km from breeding colonies to feed, but sometimes up to 25 km (Valverde 1958; Hafner & Fasola 1991; Platteeuw *et al.* 2004). Colour-ringed Spoonbills in the Netherlands regularly commute up to 30–40 km from nesting colonies to feed.

The size of nesting colonies of colonial herons and egrets tends to increase (usually more or less linearly) with the area of wetland within commuting distance of the colony (e.g. Hafner & Fasola 1991, Barbraud *et al.* 2002). In the Mediterranean, densities of breeding herons and egrets are generally lower when the area of freshwater feeding habitat within 5 km of their breeding colony is less than about 800 ha (Hafner & Fasola 1991). To gauge how large a wetland might need to be to support a breeding colony of a given size, we collated information on densities of some colonial waterbirds at large wetlands in France and the

Netherlands (Appendix 1). Maximum breeding densities of these species in Britain might be higher than these figures if wetlands were designed and managed to optimise conditions for them.

Based on the densities of breeding Night Heron, Great White Egret and Purple Heron in Appendix 1, the *minimum* area of wetland needed to support 20 pairs of one or more of these species would be 500–800 ha. In the Netherlands, most Purple Herons nest in reedbeds but feed on nearby lowland wet grassland (see below). Based on data from van der Hut *et al.* (2008), a colony of 20 pairs of Purple Herons would need roughly 400–1,600 ha of lowland wet grassland feeding habitat. There are currently very few good-quality freshwater wetlands of such a size in Britain.

The importance of very large wetlands is further emphasised by the role that such sites have played in the expansion in breeding

range of Great White Egret, Glossy Ibis and Spoonbill in west and southwest Europe. Very large wetlands, crucial in the range expansion of some or all of these species, include Doñana and the Ebro Delta in Spain, the Camargue in southern France, the Lac de Grand-Lieu in northwest France (Box 4), and the Oostvaardersplassen in the Netherlands. Unsurprisingly, the re-establishment of regularly breeding Spoonbills in Britain has occurred in the large expanse of coastal wetlands in north Norfolk, and colonisation by breeding Great White Egrets (and Little Bitterns) has taken place in the Avalon Marshes, in Somerset. The Avalon Marshes, a complex of c. 1,200 ha, has been created on disused peat workings since the early 1990s, and includes several nature reserves, such as Shapwick Heath NNR and Ham Wall RSPB Reserve.

A notable feature of the range expansion of some of these species is the role that occasional drying out of wetlands appears to have

#### Box 4. Colonial waterbirds at the Lac de Grand-Lieu



372. Lac de Grand-Lieu, June 2013. Malcolm Ausden

The 6,300-ha Lac de Grand-Lieu in northwest France is a key site for colonial waterbirds in western Europe. Since 2008 it has supported an average of about 2,400 pairs of breeding herons, egrets and Spoonbills, and up to 1,500 pairs of Whiskered Terns. This site, and the nearby marshes at Besné, is the source of all of the colour-ringed Great White Egrets so far recorded in Britain

([www.bto.org/volunteer-surveys/ringing/publications/online-ringing-reports](http://www.bto.org/volunteer-surveys/ringing/publications/online-ringing-reports)). A pair of Glossy Ibises also bred at the Lac de Grand-Lieu in 2011, only the second time that they have been recorded breeding in France north of the Mediterranean coast (Reeber 2011).

At the Lac de Grand-Lieu, there is an abundance of undisturbed nesting habitat for herons, egrets and Spoonbills, and these species show a variety of different nesting habits. Cattle Egrets, Little Egrets *Egretta garzetta*, Night Herons and Squacco Herons nest (often with larger species) in a small number of large, mixed colonies. Purple Herons nest in a small number of single-species colonies. In contrast, Great White Egrets, Spoonbills and Grey Herons *Ardea cinerea* nest in numerous small colonies, or even individually. Interestingly, colonies of all of these species change location regularly, with some sites being used for only one year, and others for 10–15 years. This suggests that, at many other wetlands, the continued presence of breeding colonies of these species at the same location over many years might be largely due to a lack of safe, alternative nest sites.

played, forcing birds to colonise new areas. The colonisation of the Lac de Grand-Lieu by breeding Squacco Herons, Night Herons and Whiskered Terns *Chlidonias hybrida* all followed dry conditions at wetlands in Spain, which support large populations of these species. An influx of 12 White-headed Ducks *Oxyura leucocephala* at the Lac de Grand-Lieu in autumn 2000 also followed severe drought in Spain. More Black-winged Stilts occur in Britain, and more breed in the Netherlands, when conditions are dry in southwest Europe (Figuerola 2007; Boele 2012). The influx of Baillon's Crakes into Britain and the Netherlands in 2012 also followed a period of drought in Doñana, which is thought to be their main breeding area in western Europe (Ausden *et al.* 2013).

Other species in the list of potential colonists also require large areas. White-tailed Eagles need large areas of foraging habitat during the breeding season and in winter, although they also use non-wetland habitats (van Rijn *et al.* 2010; Krone *et al.* 2013). In the Netherlands, breeding White-tailed Eagles hunt up to about 20 km from their nest. In Britain, Savi's Warblers are also thought to prefer larger wetlands (Bibby & Lunn 1982). Finally, there are some additional advantages of large wetlands: it is easier to carry out rotational and varied hydrological management and to provide a greater variety of habitat conditions on them; they are probably less affected by generalist predators from surrounding habitats; and they are likely to have lower levels of human disturbance, partly through more effective zoning of visitor access. A particularly important benefit is that, for a given cost, it is possible to maintain a far larger area of wetland habitat distributed in a small number of large blocks, than in a large number of smaller, isolated blocks.

## Human disturbance and predation

Ground-nesting waders, including Kentish Plovers and Black-winged Stilts, and colonial waterbirds are all vulnerable to human disturbance and to predation, especially by Red Foxes *Vulpes vulpes* (hereafter 'Foxes'). Dogs can also be an issue for ground-nesting birds.

Nesting colonies of most herons and their allies are usually located in wet reedbed, wet

scrub, or in trees, where they are safe from ground predators and people. In the Netherlands, when Foxes colonise an area, Purple Herons respond by nesting in wetter areas, and by nesting higher up in trees and bushes (van der Kooij 1995). Whiskered Terns nest mainly on floating vegetation in shallow lakes, and are sensitive to disturbance from boating. White-tailed Eagles usually avoid nesting close to human habitation (e.g. Radovic & Mikuska 2009).

Another issue is disturbance of spring overshoots in apparently suitable breeding habitat by a minority of birders and photographers. The Rare Breeding Birds Panel provides a list of species for which it suggests no records are publicised during the breeding season in circumstances that are suggestive of breeding, unless public viewing has been arranged ([www.rbbp.org.uk](http://www.rbbp.org.uk)).

On nature reserves, there is often a laudable desire to allow visitors to access a large proportion of the site, which needs to be set against the potential impacts of disturbance. One solution is well-designed zoning, to leave large areas of potential nesting habitat for sensitive species undisturbed while maximising the ability of visitors to obtain close views of wildlife elsewhere at the site. This might involve creating new paths, some of which are closed temporarily during sensitive periods of the year, and building tower hides. Herons and egrets often establish breeding colonies in areas used for roosting, so for these species it is important to minimise disturbance to potentially suitable nesting/roosting areas throughout the year.

## Eutrophication

High levels of nutrients can cause waterbodies to become dominated by algae rather than submerged higher plant species. High turbidity caused by algal blooms reduces habitat quality for herons and egrets, which hunt by sight, and for all birds which feed on submerged vascular plants and stoneworts and animals associated with these – both because the birds cannot see their prey and because the abundance of food is reduced. The impacts of eutrophication on wildlife per quantity of nutrients released into the environment are expected to increase as a result of climate change (Mooij *et al.* 2005; Moss *et al.* 2011).

## Management and creation of different wetland habitats

In this section, we discuss measures to increase the area of wetland habitat in Britain that might be suitable for potential colonists, based on these species' habitat use in their nearest breeding areas to Britain, mainly northern France and the Netherlands. Table 2 summarises the main wetland habitats used by these species in these areas.

### Freshwater reedbed and associated habitats

The creation and management of freshwater reedbeds has been a major focus of conservation work in Britain since the mid 1990s. Much of this has concentrated on providing suitable habitat for breeding Eurasian Bitterns *Botaurus stellaris*, which had declined to just 11 booming males in Britain by 1997. Management of existing reedbeds has

involved providing open water and wet reedbed (see table 2 for definition), also known as 'water reed' in the Netherlands (Brown *et al.* 2012). Wet reedbed surrounding open water is an important habitat for feeding Bitterns and Bearded Tits *Panurus biarmicus*, and the main breeding habitat for Great Reed Warblers in the Netherlands (Bibby 1981; Graveland 1998; Gilbert *et al.* 2005; Beemster *et al.* 2010). Wet reedbed is also an important nesting habitat for many colonial waterbirds (Cramp & Simmons 1977), in situations where there are sufficient areas of feeding habitat within commuting distance.

Reedbed creation has focused on increasing the area of freshwater reedbed in areas that are safe from coastal flooding, to help to offset imminent losses of important coastal freshwater reedbeds (through sea-level rise and perhaps greater frequency and



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**373.** At Ham Wall RSPB reserve in Somerset, part of the reedbed is now being managed by periodically drying it out, removing the reed by cutting and grazing, and then reflooding the area, as shown here (September 2013). The shallow, open water areas following reflooding provide productive feeding habitat for wildfowl, passage waders and Great White Egrets *Ardea alba*. A major practical constraint in carrying out this type of management over larger areas is disposal of the cut reed, which is unsuitable for thatching. The Wetland Biomass to Bioenergy Project, funded by the Department of Energy and Climate Change, has investigated ways to use this cut reed (and other unwanted vegetation from management of nature reserves) to provide bioenergy in a cost-effective way. Inset: **374.** Great White Egret, Somerset, October 2013. Robert Balch

intensity of storms) – see Brown *et al.* (2012).

Probably the main ways that the management of many reedbeds in Britain might be improved for a range of potential colonists is through having more dynamic water-level management, and by encouraging (or at least not removing) damp and wet scrub (see table 2a for definitions). White-spotted Blue-throats breed in a variety of scrubby wetland habitats on the near Continent (Hustings *et al.* 1995), but are thought to particularly favour reedbed with scattered damp willow *Salix* scrub. Significant areas of wet willow scrub are probably quite rare in reedbeds in Britain, yet they are a favoured and safe nesting habitat for herons, egrets and Spoon-bills, and an important component of breeding habitat for Little Bitterns (table 2a). Little Bitterns breed in a variety of types of wetland but are thought to especially favour areas of Common Reed *Phragmites australis* (hereafter ‘Reed’) or Bulrush *Typha latifolia* with small willow bushes that are dense in their lower levels, all growing in clear water which is typically 20–30 cm deep during the breeding season. Little Bitterns use the lower branches of this scrub to hunt for prey in the water below.

The development of wet willow scrub requires variation in water levels between years. Willow seeds need bare, moist soil for germination (although willows can also establish through rooting of broken branches). Wet willow scrub typically develops where low water levels in summer have exposed damp mud in which seeds have germinated, young willows have established, and water levels have then remained sufficiently high in subsequent years to immerse the willow stems in spring and summer.

Periodic drying out and reflooding parts of a reedbed can also provide open, shallow water for a range of wetland birds, which is eventually recolonised by Reed to provide wet reedbed. Shallow, open water can be rare in reedbeds because, in the absence of management, water less than about one metre deep is usually colonised by Reed. We have been trialling periodic drying out and reflooding in parts of the reedbed at Ham Wall RSPB Reserve (plate 373). Another technique for providing areas of shallow, open water in reedbeds is to allow cattle or ponies

to graze the outer margins of reedbeds as water levels fall in late spring and summer. This creates a ring of shallow, open water on the outer margins of the reedbed when water levels are raised again. This technique is known as ‘blue border’ management (Ausden 2007), and we have been using it on several RSPB reserves.

The water-level management regimes described above have the potential to be detrimental to breeding Bitterns and other waterbirds. In particular, large drawdowns in water levels during the breeding season can leave Bittern nests (and the nests of colonial waterbirds in wet reedbed) accessible to ground predators, and a drawdown over a high proportion of a reedbed could significantly reduce the area of wet reedbed for Bitterns to feed in (Brown *et al.* 2012). Changing water-level management can also damage other existing wildlife interest of a wetland. One solution is to introduce the new water-level management over only part of a site.

Finally, we suspect that Savi’s Warblers might also benefit from variations in water regime between years. Savi’s Warblers typically breed in areas dominated by Reed or Bulrush. Like other *Locustella* warblers (but unlike Reed Warblers *Acrocephalus scirpaceus*), they feed and nest low down amongst litter, sedges or other vegetation beneath the canopy of Reed or Bulrush (Pitt 1967; van der Hut 1986). We suspect that this more structurally diverse and multi-layered vegetation is more characteristic of wetlands where the water-level regime varies between years, meaning that hydrological conditions do not remain suitable for long enough for any one species of emergent plant (particularly Reed) to exclude all other plants. Savi’s Warblers also use scattered bushes in reedbeds as song-posts.

### Shallow freshwater lakes and early successional swamps

Shallow freshwater lakes and early successional swamps have not generally been considered a high priority for bird conservation in Britain but in mainland Europe they provide valuable habitat for a wide range of our potential colonists (table 2a). They also provide the main breeding habitat for two other rare breeding species in Britain,

**Table 2.** The main wetland habitats used by potential colonists and recolonists during the breeding season. (a) **Freshwater habitats**

● = nesting, ○ = feeding (in parentheses = less frequently used habitat). (✓) = loosely colonial. Wet willow scrub = bushes whose stems remain immersed in water during spring and summer. Damp willow scrub = bushes which are flooded in winter but dry out in spring to leave moist ground beneath. Wet reedbed = reedbed with standing water during the breeding season; dry reedbed = reedbed with no standing water during the breeding season.

Species	Colonial breeder	Wet woodland (including floodplain forest)	Main habitat									
			Reedbed & associated habitats				Shallow lakes & early successional swamps (other than reedbed)	Lowland wet grassland				
			Wet willow scrub	Damp willow scrub	Dry reedbed	Wet reedbed		Mixtures of Reed, Bulrush & sedge	Damp grassland	Temporary floods, permanent pools & ditches		
Little Bittern		● ○				● ○						
Night Heron	✓	● ○				(●)		○				
Squacco Heron	✓	●				(●)		○				○
Cattle Egret	✓	●				(●)				○		○
Great White Egret	✓	●				●		○		○		○
Purple Heron	✓	●				●		○		○		○
White Stork								○		○		○
Glossy Ibis	✓	●				●		○		○		○
Spoonbill	✓	●				●		○		○		○
Black Kite	(✓)	●						○		○		○
White-tailed Eagle		●						○		○		○
Short-toed Eagle										○		
Osprey		●						○				
Baillon's Crane								● ○				● ○
Black-winged Stilt	(✓)							● ○				○
Whiskered Tern	✓							● ○				○
Black Tern	✓							● ○				○
Bluethroat								● ○				
Savi's Warbler								● ○				○
Great Reed Warbler								● ○				○
Golden Oriole		● ○										

Table 2. continued: (b) Coastal habitats

Species	Main habitat							
	Colonial breeder	Intertidal areas	Sandy beaches	Bare & sparsely vegetated shingle	Saline lagoons (& salinas)		Small-scale mosaics of shrubs, saline mud and grass	Tall grassland
					Shallow water	Islands		
Great White Egret	✓	(O)			(O)			
Eurasian Spoonbill	✓	O			O	●		
White-tailed Eagle		O						
Osprey		O						
Kentish Plover		O	●	●		●		
Black-winged Stilt	(✓)	(O)			O	●		
Bluetthroat							●	
Zitting Cisticola								●

Black-necked Grebe *Podiceps nigricollis* and Spotted Crake *Porzana porzana*.

Temporary, shallow freshwater (c. 15–20 cm deep during the breeding season) provides breeding habitat for Black-winged Stilts in the Netherlands and northern France (plate 375). Temporary pools tend to have a higher invertebrate biomass than permanent pools, which contain fish and larger, predatory invertebrates. Slightly deeper, invertebrate-rich, well-vegetated, early successional waterbodies are a favoured breeding habitat of Black-necked Grebes. In the case of Black-winged Stilts (and Avocets *Recurvirostra avoetia*), periodically drying out different pools in different years might reduce predation levels, as discussed below.

Whiskered Terns also use shallow, eutrophic lakes. They feed mainly on insects in and above shallow water and grassland, but nest on floating vegetation in shallow lakes, and less commonly among emergent vegetation. In central and northwest France, the terns nest mainly on the floating leaves of White Water-lilies *Nymphaea alba* within dense water-lily beds, and particularly favour shallow lakes during the first year or so after reflooding (Latraube *et al.* 2005).

If shallow waterbodies are not periodically dried out (i.e. they become permanent), they are invariably eventually colonised by fish, and can provide good feeding habitat for herons, egrets and Spoonbills. In the absence of heavy grazing, shallow water usually becomes increasingly vegetated by swamp plants, such as Reed Sweet-grass *Glyceria maxima* and Common Spike-rush *Eleocharis palustris*. Early successional swamps such as these can provide breeding habitat for Baillon's Crake (Ausden *et al.* 2013) and also Spotted Crake. Succession usually (though not always) results in such swamps eventually becoming dominated by Reed and unsuitable for these two crake species.

Management can re-create the early successional waterbodies and swamps favoured by many of these potential colonists by periodically drying out an area, removing most of the vegetation, and then reflooding it. However, drying out the habitat makes it temporarily unsuitable for wetland birds. The best option is therefore to dry out and reflood only a proportion of the site at any



**375.** Towards the northern limits of their range in Europe, most Black-winged Stilts *Himantopus himantopus* breed at shallow, temporary, nutrient-rich freshwater pools. This site, the Reserve de Grand-Laviers, near Abbeyville in northern France, consists of 81 ha of former sugar-beet lagoons, most of which dry out each year in late summer or autumn, and reflood in early winter. In



spring 2013, when the above photograph was taken, these lagoons supported 16 pairs of breeding Black-winged Stilts, as well as 42 pairs of Black-necked Grebes *Podiceps nigricollis*.

Inset: **376.** Black-winged Stilt, Berry Fen, Cambridgeshire, May 2014. Simon Stirrup

one time, to provide a continuity of different successional stages. In Britain (as opposed to warmer climates farther south), for temporary pools to contain reasonable densities of aquatic invertebrates in early spring, they probably need to be (re)-flooded by the end of the preceding September, allowing time for colonisation by adult insects with aquatic larvae (particularly non-biting midges (Chironomidae)) before they become inactive over winter.

### Lowland wet grassland

The main current bird conservation interest of lowland wet grassland in Britain is its suite of breeding waders (Northern Lapwing *Vanellus vanellus*, Eurasian Curlew *Numenius arquata*, Black-tailed Godwit *Limosa limosa*, Common Redshank *Tringa totanus* and Common Snipe *Gallinago gallinago*), breeding wildfowl, and wintering wildfowl and waders. Conservation management of lowland wet grassland for birds usually focuses on providing suitable conditions for these groups, principally through managing water levels, and by grazing and cutting the vegetation (Ausden & Bolton 2012). Foxes

and sometimes Carrion Crows *Corvus corone* are also killed at some sites to increase breeding productivity of waders (Ausden *et al.* 2009).

A wide range of potential colonists feed on wet grassland and its associated pools and ditches during the breeding season but nest in other habitats (table 2a). Probably the greatest potential to improve the quality of lowland wet grassland for many of these species is to increase the abundance and accessibility of important prey.

In mainland Europe, Common Voles *Microtus arvalis* can form a large component of the diet of Great White Egrets, Purple Herons and White Storks, especially in peak vole years (Schulz 1998; van der Winden & Krijgsveld 2006; Voslamber *et al.* 2010). Common Voles do not occur in mainland Britain, but the smaller Field Vole *M. agrestis* should still provide valuable prey. Field Voles occur at the highest densities in unflooded, rank grassland. There is thus a potential conflict between management aimed at providing high vole densities and management aimed at providing shorter vegetation for breeding waders (Laidlaw *et al.* 2012).

Water frogs *Pelophylax* spp. are an important prey for colonial waterbirds and White Storks in mainland Europe (Cramp & Simmons 1977; Schulz 1998). The only widespread water frog in Britain is the non-native Marsh Frog *P. ridibundus*, now abundant in parts of southeast England, but with only scattered populations elsewhere in England. We are not, however, advocating the introduction of water frogs to sites to provide prey for waterbirds, which would be illegal.

Small fish are particularly important prey for Great White Egrets, Spoonbills and Purple Herons, while Glossy Ibises and Cattle Egrets feed mainly on large invertebrates (Cramp & Simmons 1977, 1980). In northern France, Great White Egrets and Spoonbills feed in shallow, permanent pools on coastal grazing marshes and nest in nearby woods. Apparently similar habitat occurs on coastal grazing marshes with water-filled creeks and pools in north Kent and Essex. In Mediterranean wetlands, such as the Camargue, the movement of a range of fish species from permanent waterbodies to seasonally flooded marshes to breed provides good feeding conditions for many colonial waterbirds. The fish become particularly accessible to birds as

temporary pools dry up (Poizat & Crivelli 1997). In Britain, the fish species most likely to enter temporary waterbodies in large numbers to breed is the Three-spined Stickleback *Gasterosteus aculeatus* (hereafter 'Stickleback'), which is an important prey item for Great White Egrets and Spoonbills (Triplet *et al.* 2008; Voslamber *et al.* 2010).

Measures to increase the area of good feeding habitat for Great White Egrets and Spoonbills on lowland wet grassland include: creating shallow pools suitable for small fish; maintaining temporary floodwaters during most/all of the breeding season, which are connected to rivers and more permanent waterbodies that contain good fish populations (and ideally managing these to provide a succession of drying out pools throughout the breeding season); providing shallow ditch margins; and grazing shallow ditch margins and pools with cattle or ponies to prevent them from being dominated by emergent vegetation. On coastal grazing marsh, creating brackish pools suitable for shrimps is also expected to benefit Spoonbills (Fagot *et al.* 2009). Glossy Ibises should benefit from the presence of temporary floods and damp soil in which they can feed on earthworms and



Hans Gebuis/Minden Pictures/FLPA

**377.** Purple Heron *Ardea purpurea*, Alblasserwaard, the Netherlands, July 2007. In the Netherlands, most Purple Herons nest in colonies in reedbeds, but feed mainly in nearby areas of lowland wet grassland. As with other large, colonial waterbirds, significant-sized colonies of Purple Herons require large areas of good-quality feeding habitat within commuting distance of their nesting colony.

insect larvae, and from the presence of more permanent waterbodies (and/or temporary floods connected to them) that contain larger aquatic invertebrates. Cattle Egrets will feed in fairly dry grassland and benefit from the presence of livestock, especially cattle, to feed around.

Most Purple Herons recorded in southeast England and East Anglia are presumably from the increasing population in the Netherlands, where most Purple Herons nest in reedbeds, but feed mainly along ditches in wet grassland, which have clear water and a high diversity of fish (van der Winden & Krijgsveld 2006; van der Hut *et al.* 2008). In some parts of the Netherlands, Weatherfish *Misgurnis fossilis* are an important prey of Purple Herons (van der Winden *et al.* 2002). This small loach lives in shallow water among emergent vegetation, and is thus accessible to Purple Herons. Weatherfish do not occur in Britain, but small European Eels *Anguilla anguilla* (now rare in Britain and globally Critically Endangered), might provide similarly accessible prey. Work has been carried out in Britain to benefit European Eels, by

removing, or modifying, structures that inhibit their migration (Self 2005); much more of this work is needed.

A key challenge for the management of many lowland wet grasslands in east and southeast England is how to manage water levels from late winter to early summer to benefit current breeding wader populations. Optimal conditions for most wader species are thought to be provided by a slow rate of drawdown in water levels during the breeding season, to provide a continuity of pools that are drying out for feeding, and to keep the upper soil sufficiently moist for snipe and godwits to probe for food (Ausden & Bolton 2012). Probably the ideal is to achieve this without extensive and prolonged flooding during winter, since this reduces the abundance of larger soil invertebrates, which are a key prey of waders on wet grassland (Ausden *et al.* 2001). However, in east and southeast England, changes in climate are expected to significantly increase the rate that water levels fall during the breeding season (Box 1).

There are two possible responses to the expected, climate-driven increase in rate of drawdown in water levels during the wader breeding season. One is to maintain only a slow rate of drawdown in water levels, by minimising water loss and increasing water supply. This can involve storing water abstracted from rivers in winter (when flows are high) in reservoirs, and using this to supplement water supply in spring and early summer. The other is to accept an increased rate of drawdown in the breeding season, but to allow deeper and more extensive flooding over a pro-



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**378.** On some lowland wet grasslands in southeast England, water levels are expected to fall more rapidly in spring in future, meaning that it might become increasingly difficult to maintain suitable conditions for breeding waders. An alternative approach would be to maintain higher water levels in winter to create more of a mosaic of grassland, shallow pools and swamp as water levels fall, as shown here at De Goene Jonker in the Netherlands in July 2011. This site supports breeding Baillon's *Porzana pusilla* and Spotted Crakes *P. porzana*, Black-winged Stilts *Himantopus himantopus*, Black-necked Grebes *Podiceps nigricollis* and Savi's Warblers *Locustella luscinioides*.



Stefan Huwiler/Imagebroker/FLPA

**379.** Male Golden Oriole *Oriolus oriolus*, Bulgaria, May 2009. Floodplain forest supports breeding Golden Orioles and Night Herons *Nycticorax nycticorax* in continental Europe, together with very high densities of songbirds. We have virtually no floodplain forest left in Britain. Should we create more?

portion of the site in winter, meaning that some areas remain wet enough for waders to feed, despite greater drawdown. The success of this second approach will depend on sufficient variation in topography/water levels to provide unflooded areas for nesting, as well as damp areas and shallow water for feeding. This would change these grasslands into more of a mixture of grassland, swamp and shallow, temporary floodwaters that remain during the breeding season, and might in turn make these wetlands more suitable for feeding egrets, Spoonbills and Glossy Ibises, and possibly for breeding Baillon's Crakes (plate 378). However, this might not be optimal for some breeding waders, and it would also be impractical at many sites. Where it is possible, though, it might still provide better habitat for breeding waders than the alternative – grassland rapidly becoming too dry during the breeding season.

### Floodplain forest

Floodplain forest is an important habitat for Night Herons and Golden Orioles in the more northerly parts of their European breeding range (Allsop & Mason 1993; Voskamp & Zoetebier 1999; Erhart & Kurst-

jens 2000; Mason & Allsop 2009). Floodplain forest is very rare in Britain, but occurs more widely in mainland Europe, including some major river floodplains in France, but with the largest stands on less regulated river floodplains in eastern Europe (Hughes *et al.* 2012). The most common trees in western European floodplain forests are a variety of willow species, Black Poplar *Populus nigra*, Alder, oaks *Quercus* and elms *Ulmus*. In Britain, most floodplain forest is thought to have been cleared in prehistoric and early historic times. The only substantial remaining stands are in the New Forest (Hampshire), and along the lower reaches of the River Spey in Highland (Peterken & Hughes 1995).

In Britain and the Netherlands, Golden Orioles breed mainly in poplar plantations and, in the Netherlands, also in stands of willow (Bijlsma 1995; Milwright 1998). Golden Orioles colonised eastern England in the late 1960s when there were large, contiguous blocks of suitable poplar plantation, and declined when this was removed, although the sum total of the remaining habitat (now in small blocks) is about the same. Golden Orioles have also bred in

small numbers in other types of deciduous woodland in Britain (Holloway 1996; Mason & Allsop 2009).

A striking feature of good floodplain forest in Europe is that it supports high densities of breeding songbirds, especially summer migrants. For example, floodplain oak–elm forest along the Rhine in northeast France has been found to support nearly twice the average densities of breeding songbirds in non-floodplain European oak forest, and an amazing 26 times the mean density of breeding warblers. These high densities are attributed to a high diversity of woody plants, structural diversity and vigorous plant growth (Dronneau 2007a & 2007b). Wetter woodlands are also favoured by Willow Tits *Poecile montana* and Lesser Spotted Woodpeckers *Dendrocopos minor* (both of which are of high conservation priority in Britain), the former favouring areas with abundant decaying wood (Siriwardena 2004; Lewis *et al.* 2007 & 2009).

The key to the development of structurally diverse, bird-rich floodplain forest is restoring more natural dynamics to floodplains. This allows the river channel to change its course and create a complex and ever-changing mosaic of different woodland types and open areas. Deposition of sediment and scouring are important, because they provide bare, damp ground on which the seedlings of willows and Black Poplar can establish. Variation in topography and flood levels also increases diversity in tree species composition and forest structure (van Splunder *et al.* 1995; Hughes *et al.* 2001).

Should it be a priority to re-create dynamic floodplain forest in Britain? Given the intrinsic interest of this ‘forgotten’ habitat, and the small extent of it remaining in Britain, we think that the answer should be yes. Another reason for re-creating floodplain forest is its potential for flood alleviation (Nisbet & Thomas 2008), an important issue given the possible increase in frequency of extreme rainfall events in Britain (Box 1). Restoration of mosaics of forest on river floodplain has already started in mainland Europe (Hughes *et al.* 2012). In Britain there are plans by the Parks Trust at Milton Keynes to create 48 ha of forest on floodplain in the Ouse Valley Park.

## Saline lagoons and associated habitats

Saline lagoons and associated habitats are important for four potential colonists: Spoonbill, Black-winged Stilt, Kentish Plover and White-spotted Bluethroat.

During the early part of the breeding season, Spoonbills feed mainly on small fish (especially Sticklebacks) and shrimps in shallow waterbodies, both fresh and brackish. As the season progresses, they tend to feed increasingly on small fish and shrimps in intertidal areas (Triplet *et al.* 2008). In the Netherlands, the highest densities of large Sticklebacks are typically found in freshwater/brackish pools with a connection to the sea, allowing the Sticklebacks to enter such pools from the sea in early spring (Kemper 1995). On Texel and in other areas of Noord-Holland, fish passes have been installed to increase densities of Sticklebacks for Spoonbills. Many saline lagoons in Britain are not connected to the sea, and allowing entry of fish to some currently fish-free saline lagoons could potentially conflict with existing invertebrate conservation interests (Bamber *et al.* 2001).

Black-winged Stilts prefer temporary, shallow brackish (and freshwater – see above) waterbodies. In western France, favoured breeding pools usually dry out sometime between June and late September, and reflood from rainfall usually in early December. These pools typically have a salinity of 2–5 parts per thousand (ppt) in winter, rising to about 15–20 ppt in spring. They are usually fairly well vegetated, typically containing Brackish Water-crowfoot *Ranunculus baudotii* and Sea Club-rush *Bolboschoenus maritimus*. Black-winged Stilts typically prefer slightly less saline and more vegetated waterbodies than Avocets. As with temporary freshwater waterbodies, in Britain it is probably important to reflood pools early enough the preceding autumn to enable them to be colonised by the winged adults of aquatic invertebrates before they become inactive in winter.

Another possible advantage of varying the water level of individual pools between years, including sometimes leaving a proportion of pools dry during the breeding season, is that it forces stilts and Avocets to nest at different sites in different years. This might help them

to avoid the worst impacts of predators that learn to target the same nesting area each year.

In northwest Europe, Kentish Plovers breed in a variety of bare and sparsely vegetated coastal habitats. These include extensive sandy beaches, stabilised shingle/pebbles, and bare or sparsely vegetated ground where vegetation is inhibited by flooding and high salt levels (Meininger & Arts 1997; Arts *et al.* 2000; Fojt *et al.* 2000; plate 382). On the near Continent, Kentish Plovers nesting on sandy beaches and coastal shingle usually suffer low breeding success, mainly due to disturbance by humans, and the impact of dogs and generalist predators. There are now very few beach-nesting Kentish Plovers in the Netherlands. In Britain, most potentially suitable coastal shingle and sandy beaches are also heavily disturbed.

Perhaps the only realistic option for providing good-quality breeding habitat for Kentish Plovers in Britain is to create suitable conditions on nature reserves, for example providing bare or sparsely vegetated ground through saline flooding, which is kept free of human disturbance and ground predators,

especially Foxes. Yet the likelihood of Kentish Plovers expanding their breeding range in northwest Europe appears to be low.

The small, dark *namnetum* race of White-spotted Bluethroat currently breeds only in western France. It is closely associated with brackish habitats, but now also breeds at the Lac de Grand-Lieu in reedbeds with scattered willows. In coastal habitats, the highest breeding densities of this race are found where management of salinas for salt production creates a mosaic of bushes (typically Shrubby Sea-blite *Suaeda vera*, used for song-posts), banks (used for nesting) and edges of saline pools (used for feeding; Geslin *et al.* 2002). Zitting Cisticolas are commonly found in similar areas. We are not aware of any coastal habitat in Britain which resembles that described.

The key issue with changing the management of saline lagoons to improve conditions for potential colonists is that these changes have the potential to conflict with existing conservation interests. In particular, guidance on management for specialist saline-lagoon invertebrates emphasises the importance of



**380.** Eurasian Spoonbills *Platalea leucorodia*, Cley Marshes, Norfolk, July 2009. A key requirement of Spoonbills during the early part of their breeding season is shallow freshwater or brackish waterbodies containing high densities of sticklebacks. In the Netherlands, fish passes have been installed to allow sticklebacks to migrate from the sea into freshwater and brackish waterbodies to increase prey for Spoonbills.

Christophe Perelle/Biosphoto/FLPA



**381.** Male Kentish Plover *Charadrius alexandrinus*, Calvados, Normandy, France, May 2009. Kentish Plovers ceased to regularly breed in Britain in the 1950s, but the climate in Britain is projected to become more suitable for them in the future. Recolonisation of Britain by breeding Kentish Plovers

seems unlikely, however, because their nearest breeding populations in mainland Europe (and most likely source of potential colonists) are declining, mainly due to disturbance by people and predation.

Malcolm Ausden



**382.** This photograph shows habitat used for breeding by Kentish Plovers at Le Hable d’Ault in northern France, in June 2013. At this site, Kentish Plovers breed on bare and sparsely vegetated shingle (similar to the habitat where they formerly bred at Dungeness, in Kent) and around the bare and sparsely vegetated margins of brackish pools.

maintaining permanent waterbodies with fairly stable salinities (Bamber *et al.* 2001) – although saline mud exposed by seasonal drawdowns in water levels can also support a diverse assemblage of rare and scarce beetles and flies (Gibbs 2005), as well as a small but characteristic suite of rare and scarce plants. Moreover, falling water levels provide good feeding conditions for waders and other waterbirds, although allowing lagoons to dry out completely in autumn will obviously mean that they are not available for passage waders and other waterbirds.

Given these potential conflicts, the best

option for providing more suitable habitat for Spoonbills and Black-winged Stilts would be to create more large complexes of saline lagoons, so that different lagoons can be managed to cater for different interests.

**Discussion and conclusions  
Implications for wetland  
re-creation and management**

There have been two significant themes in our assessment. First, the overriding importance of very large wetlands and/or clusters of large wetlands in close proximity. Second, the value of variations in the annual water regime and,

in particular, of periodic drying out and reflooding. The latter raises a number of issues which we discuss here. Lack of variation in water levels has also been identified as an important issue for waterbirds in the Netherlands (van Turnhout *et al.* 2010).

Changing the water-level regime at a wetland can risk damaging the important species and habitats that are already present. Since the primary consideration when managing a site for conservation should always be to look after its existing interest, this risk must be minimised.

Changes to hydrology, as with other management, should be undertaken only over a proportion of a site. At many wetlands, particularly smaller ones, even this might be impractical or undesirable. However, we contend that there is the potential to introduce more dynamic water management at some larger wetlands, and that the ability to maintain different water-level regimes within a site should be a fundamental design principle when re-creating wetland habitat. This helps to create a wider variety of conditions, which occur naturally in larger, more dynamic wetlands.

Greater variability in water-level management also requires a more flexible approach to visitors, for example by using mobile hides and temporary screening on the approach to them. Visitors must also accept that the same part of a reserve will not necessarily be good for birds every year. This approach also requires good co-operation, co-ordination and planning – a landscape-scale approach.

Most of the main measures that we think should benefit potential colonists are also expected to benefit a wide range of birds of current high conservation priority. These are: focusing on re-creating larger wetlands and/or wetland clusters; reducing eutrophication; managing human disturbance; effective control of Foxes where necessary; and periodically drying out and reflooding areas of reedbed, shallow pools and early successional swamps.

There are also a range of measures that might benefit some potential colonists, but will not provide suitable conditions for birds currently of high conservation priority in Britain. Examples of these include: providing damp and wet scrub in reedbeds (although

willow scrub can support very high densities of breeding songbirds; Wilson 1978); providing rank unflooded grassland to increase vole densities (although this should also benefit owls, harriers *Circus* and other raptors); creating the coastal habitats used by White-spotted Bluethroats; and providing largely/completely unvegetated saline areas suitable for Kentish Plovers. Increasing the abundance and accessibility of small fish in shallow, open waterbodies on lowland wet grassland is also unlikely to benefit current priority bird species.

### Predictions and future challenges

We think that several potential colonists are extremely unlikely to begin breeding regularly in Britain in the next few decades. We suspect that currently there are no sufficiently large complexes of shallow lakes and associated wetlands potentially suitable for breeding Whiskered Terns, or any coastal habitat in Britain that might be suitable for White-spotted Bluethroats. In the case of Short-toed Eagles, the New Forest and Dorset heaths appear to have large enough areas of superficially suitable breeding habitat, but we suspect that the New Forest in particular is unlikely to support sufficiently high densities of reptiles to sustain breeding Short-toed Eagles, even in a warmer climate. We also suspect that any potential future climatic benefits for Kentish Plovers in northwest Europe will be offset by the problems of disturbance and predation.

In contrast, there appears to be plenty of structurally suitable habitat in scrubby reedbeds in Britain for breeding White-spotted Bluethroats, although water-level management in many of these might not be ideal. And there is plenty of habitat in Britain that is likely to be suitable for breeding Cattle Egrets and Black Kites *Milvus migrans* in a warmer climate. We expect that Cattle Egrets will recommence breeding in southwest England when their nearest breeding populations in northwest France have recovered from recent declines caused by hard winters.

For many of the other species discussed here, we suspect that, even if the climate in Britain does become more suitable, our current wetlands in Britain are potentially capable of supporting only very small

breeding populations. In particular, there are few wetland areas with sufficient feeding habitat (especially shallow water with abundant and accessible small fish and other aquatic prey) to sustain reasonable-sized colonies of Night Herons, Purple Herons, Great White Egrets and Glossy Ibises. There are also very few wetlands managed in ways that provide the complex of temporary, shallow freshwater and brackish waterbodies favoured by breeding Black-winged Stilts, and the types of swamp used by Baillon's Crakes. There are very few shallow, saline lagoons for breeding Spoonbills, and no very large complexes of them, and virtually no floodplain forest.

There is presently no system in Britain for assessing what conservation priority to give to potential colonists. Conservation priorities for species that currently breed regularly are assessed using a range of criteria, but with a high priority afforded to the small number of Globally Threatened species, and to species which have experienced a medium-term (25-year) or historical (1800–1995) decline (Eaton *et al.* 2009). If we want to maximise the likelihood of Britain being able to support reasonable-sized populations of the full range of wetland birds for which it might soon become climatically suitable, then we need to increase the area of the previously described types of wetland. Most of the potential colonists that we have identified are migratory or listed under Annex I of the EU Birds Directive. For these species, there is a general responsibility under this Directive for governments and country administrations in the European Union to implement special conservation measures to protect, manage and, if necessary, restore their habitats. We have included Annex I potential wetland colonists as a priority in our 2013–18 strategy for RSPB reserves, and have been taking into account the requirements of species such as Great White Egret, Spoonbill and Black-winged Stilt when designing new wetland habitat.

For the reasons described above, the greatest population benefits for both current priority species and potential colonists are likely to be realised by targeting habitat re-creation so that it provides a small number of very large wetlands (or

complexes of large wetlands) rather than many small, isolated wetlands. Obvious areas in which to focus wetland re-creation would be in the vicinity of the Avalon Marshes (particularly to develop core breeding populations of Little Bitterns and Great White Egrets, and because of the potential of this area to support breeding Night Herons), in the Cambridgeshire/Norfolk/Suffolk Fens, and by increasing the area of saline lagoons and other wetland habitats on the Suffolk and north Norfolk coasts. There is also potential to create more complexes of good-quality freshwater and brackish wetlands in north Kent and along the Essex coast. Other areas which have the potential to support colonies of breeding Spoonbills include the Poole Harbour area, The Wash, and estuaries in northwest England and southwest Scotland.

Nature reserves and other protected areas are already playing a key role in the range expansion of species (Thomas *et al.* 2012). All six species of wetland birds which have established regular breeding populations in Britain since 1960 (excluding introduced species) first became established on nature reserves or other protected areas. Landscape-scale conservation initiatives, such as Nature Improvement Areas in England, the Wildlife Trust's Living Landscapes, and the RSPB's Futurescapes, are (in many cases) also well-suited in principle to benefiting wetland birds by increasing the quality, size and total area of wetlands. This might include creating areas that provide temporary or permanent feeding habitat for birds that nest elsewhere. But to be successful, they need to have clear objectives, strong partnerships and effective delivery mechanisms.

It is also important to take opportunities to create good wildlife habitat through changes in land use that are driven mainly by other factors. For example, recent extreme rainfall events (and the projected increase in their frequency and magnitude) provide an incentive to create new washlands for flood storage. These can also provide lush summer grazing fertilised by deposited sediment and, if suitably designed and managed, good habitat for wildlife (English Nature 2001; Morris *et al.* 2008). Reservoirs could be constructed to store water abstracted from rivers

when flows are high in winter, then used to irrigate farmland in spring and summer (when water is projected to be in increasingly short supply in some parts of Britain), and be designed to provide valuable habitat for wetland birds at the same time. In southern Europe, rice fields and commercial fish ponds provide important feeding habitat for wetland birds (Fasola & Ruiz 1996; Kloskowski *et al.* 2009; Toral & Figuerola 2010; Toral *et al.* 2012).

We also need to ensure that opportunities are taken to promote re-creation of intertidal habitat through managed re-alignment and regulated tidal exchange, and to create saline lagoons and other brackish habitats as part of these coastal wetland re-creation schemes. It is also important to make the most of any opportunities arising from unplanned breaches of coastal defences which do not threaten people's lives, livelihoods or property, such as occurred along some stretches of the coast during winter 2013/14.

In a rapidly changing world, where the future will become increasingly different from the past, bird conservation needs to be about deciding what we would like in the future, and managing inevitable change to achieve the best realistic outcome.

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**Appendix 1. Breeding densities of selected colonial waterbirds at large wetlands in France and the Netherlands. Figures are mean densities or maximum densities (shown in parentheses). Maximum densities are shown for species whose population is still increasing rapidly at the site during the period shown.**

Site	Area & type of wetland	Period	Breeding pairs per 100 ha of wetland				Source
			Night Heron	Great White Egret	Purple Heron	Glossy Ibis	
Camargue, France	60,600 ha (18,000 ha of rice fields, 33,800 ha of water with submerged macrophytes, 8,800 ha of reedbed)	2008–12	0.9	(0.3)	0.8	(0.9)	Habitat areas: Davranche et al. 2010 & Tour du Valat. Birds: Tour du Valat.
Lac de Grand-Lieu, France	6,300 ha (shallow water, reedbed, wet scrub & wet grassland)	2008–12	3.8	2.4	2.4	–	Habitat areas: Paillisson et al. 2006. Birds: Reeber 2013
Oostvaardersplassen, the Netherlands	5,600 ha (3,600 ha of mainly Reed-dominated marshes & shallow water, & 2,000 ha of drier grassland with pools)	Up to 2010	–	(2.9)	–	–	Voslamber 2010

# Important Bird Areas

## The Akrotiri Peninsula– Episkopi Cliffs IBA, Cyprus

Vasiliki Anastasi and Martin Hellicar

**Abstract** One of the most important sites for birds in Cyprus is the Akrotiri Peninsula–Episkopi Cliffs IBA, at the southern tip of the island and within the UK Overseas Territory. The diversity and extent of the wetland habitats support great congregations of waterbirds in winter and spring, the site is a bottleneck for migrating raptors in autumn and it supports important populations of many of the island’s key breeding species. The site is under significant threat from habitat loss or degradation, chiefly as a result of development pressures – both military and civilian – while the need of a water-management strategy is also critical.

### Introduction

Cyprus, a large island at the eastern end of the Mediterranean, is a special place for birds and biodiversity in general, at both a European and a global scale. Justifying its status as an Endemic Bird Area, the island is host to two endemic species: Cyprus Warbler *Sylvia melanothorax* and Cyprus Wheatear *Oenanthe cypriaca*. While some Cyprus Warblers winter in the Middle East (especially in Israel), many remain in Cyprus all year round. Cyprus

Wheatears return to the island to breed, from wintering grounds in southern Sudan and Ethiopia. Cyprus also has four endemic subspecies, three of them mostly confined to the forested valleys of the Troodos (the highest mountain range in Cyprus, in the west-central part of the island): the distinctively dark ‘Cyprus Coal Tit’ *Parus ater cypriotes*, the ‘Cyprus Short-toed Treecreeper’ *Certhia brachydactyla dorotheae* and the local form of the Eurasian Jay *Garrulus glandarius glazneri*.

The fourth is the ‘Cyprus Scops Owl’ *Otus scops cyprius*, whose distinctive double-note call can be heard across the island in spring and early summer.

Cyprus also supports an important proportion of the European breeding populations of several species, notably Chukar *Alectoris chukar*, Black Francolin *Francolinus francolinus*, Bonelli’s Eagle *Aquila fasciata*, European Roller *Coracias garrulus*, Masked Shrike



Albert Stoecker

383. Male Cyprus Warbler *Sylvia melanothorax*, March 2014.

*Lanius nubicus* and Cretzschmar's Bunting *Emberiza caesia*. But Cyprus is not just about important breeding birds. Lying along one of the major flyways between European breeding grounds and wintering areas in Africa and the Middle East, the island is significant for many species of migratory birds. Millions of birds use Cyprus as a stopover point during both spring and autumn migration, among them significant numbers of raptors and some species of global conservation concern, such as Pallid Harrier *Circus macrourus* and Red-footed Falcon *Falco vespertinus*. Over 390 species of birds have been recorded in Cyprus, about 200 of which occur regularly as passage migrants. Cyprus also has some key sites for wintering waterbirds, including important numbers of species such as Common Shelduck *Tadorna tadorna*, Greater Flamingo *Phoenicopterus roseus* and Eurasian Curlew *Numenius arquata*.

From the mountain peaks of the Troodos, clothed in Black Pines *Pinus nigra*, to the steep coastal cliffs of Cape Aspro on the south coast, and from the open valleys of the Paphos District in the far southwest, rich with almond, olive and carob trees and brimming with the scent of thyme and oregano, to the salt lagoons of Larnaca and Famagusta, the key sites for all the species and groups of birds described are recorded in the recent Important Bird Area Inventory (Hellicar *et al.* 2014). This inventory was compiled by BirdLife Cyprus, with sites identified on the basis of the three levels of BirdLife International IBA Criteria, i.e. Global, Regional and EU Criteria. Covering all of the 34 Cyprus IBAs, it is the most comprehensive and complete catalogue of sites for Cyprus, and prominent among those sites is the Akrotiri Peninsula–Episkopi Cliffs IBA.



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**384.** Juvenile Red-footed Falcon *Falco vespertinus*, Cyprus, October 2011. Important numbers of this species pass through Cyprus on migration and the Akrotiri–Episkopi IBA is a favoured resting and feeding area.

### The Akrotiri Peninsula–Episkopi Cliffs IBA

A few kilometres southwest of the city of Limassol, at the southernmost extremity of Cyprus, lies one of the most species-rich and important areas of the island for birds and other wildlife. This extensive site comprises the largest complex of wetlands on the island, as well as a mosaic of coastal scrub, dunes, agricultural areas and impressive coastal cliffs. Covering more than 7,800 ha, the 'Akrotiri Peninsula–Episkopi Cliffs' IBA is for the most part situated within the West Sovereign Base Area (WSBA), part of the area classified as a UK Overseas Territory. The Sovereign Base Areas of Akrotiri and Dhekelia (the latter is the Eastern Sovereign Base Area, northeast of Larnaca) are those parts of Cyprus that remained under British jurisdiction following the end of British colonial rule and the declaration of the



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**385.** Cyprus Wheatear *Oenanthe cypriaca*, April 2012.

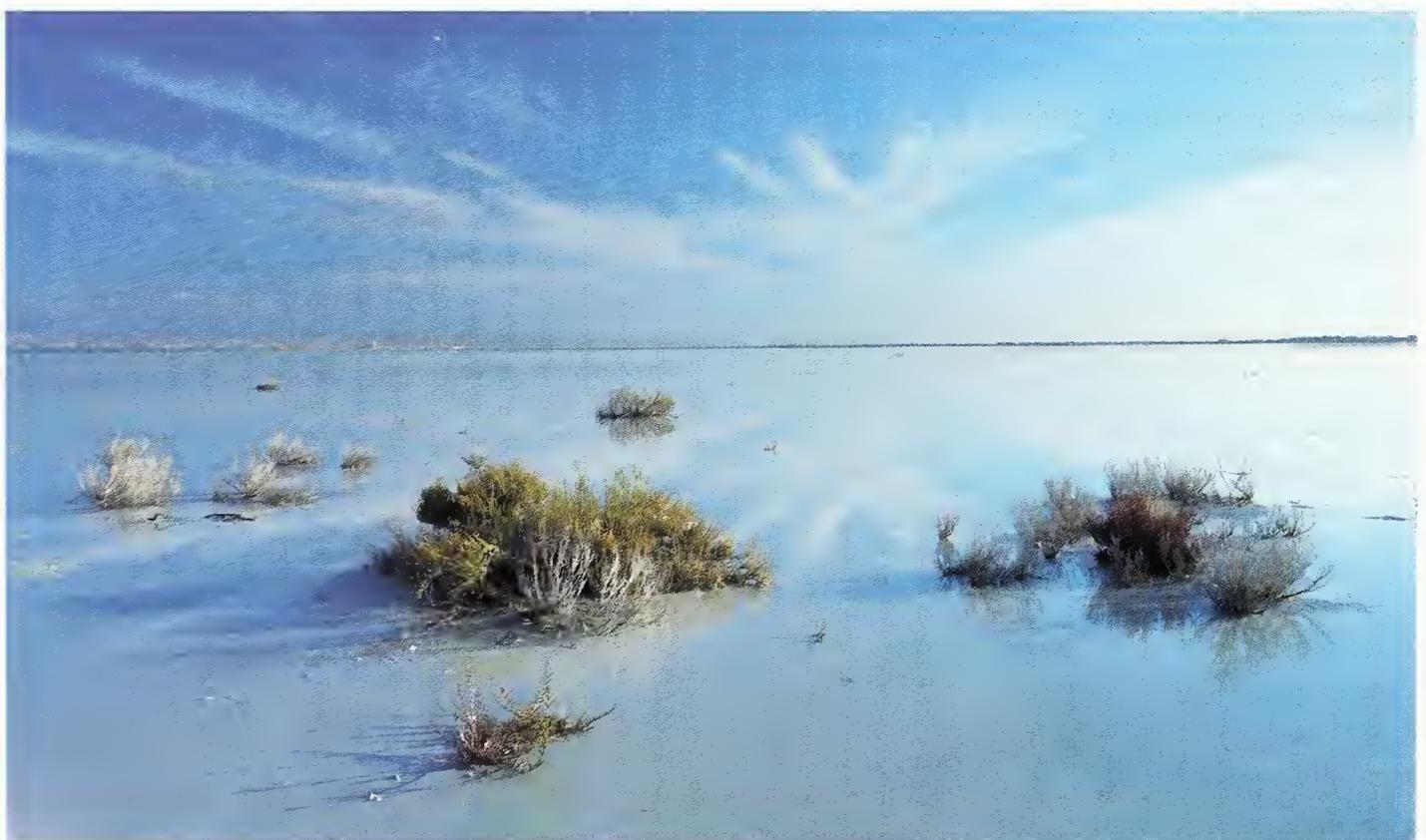
**Box 1: The Akrotiri Peninsula–Episkopi Cliffs IBA**

Akrotiri Peninsula–Episkopi Cliffs is an IBA identified for meeting many BirdLife International Criteria. The site satisfies the criteria A1 and C1 for holding Globally Threatened species; A4i for holding more than 1% of global populations of species of waterbirds; and A4ii for non-waterbird species as well as criteria A4iii/C4 for holding more than 20,000 waterbirds. The site also meets criteria B1i and B1iii for holding a flyway population of congregatory waterbird species and other non-waterbird species. B1iv/C5 are also criteria for this site, for being a raptor bottleneck where more than 3,000 raptors pass during migration. The site is one of the most important for species with unfavourable conservation status in Europe, meeting criterion B2, as well as for species with a favourable conservation status in Europe but with their global range concentrated in Europe, meeting criterion B3. This site holds more than 1% of flyway populations for some migratory species both considered to be threatened and not in the EU, satisfying the criteria C2 and C3 respectively. Criterion C6 is met for some of the species which are threatened in the EU and for which this site is one of the five most important breeding grounds in Cyprus. For details of the criteria, see [www.birdlife.org/ datazone/info/ibacriteria](http://www.birdlife.org/datazone/info/ibacriteria)

independent Republic of Cyprus, in 1960. Although part of Akrotiri is restricted to military use and antenna installations, the Cypriot village of Akrotiri lies within the WSBA and there is open access for the public to most of the peninsula (restricted areas are clearly signposted). The site has a long ornithological history. The British forces (chiefly RAFOS (Royal Air Force Army Ornithological Society) and AOS (Army Ornithological Society)), together with independent ornithologists, have studied the birdlife of the Akrotiri Peninsula for decades.

The Cyprus Bird Reports and newsletters (published annually by BirdLife Cyprus and before that the Cyprus Ornithological Society since 1957) are a rich source of older information, along with other key references (Bannerman & Bannerman 1958; Flint & Stewart 1983, 1992).

The southern part of the Akrotiri Peninsula forms a plateau, roughly 60 m above sea level, with habitats such as pseudo-steppe (with annuals and grasses as well as olive and carob tree thickets), while the northern part is low-lying, covered by alluvial



Silvio Rusmigo

**386.** The Akrotiri Salt Lake in January 2014. Conditions were wet at the time of this photo, which shows the lake close to its maximum extent.



Fig. 1. 'Akrotiri Peninsula–Episkopi Cliffs' IBA (BirdLife Cyprus).

deposits and with various lagoon habitats. A seasonal salt lake occupies the centre of the peninsula and is part of a wider aquatic system with a number of saline and freshwater habitats – for example *Salicornia* and other annuals colonising mud and sand, Mediterranean salt meadows and Mediterranean halophilous scrub. The extent of the wetlands is determined each year by the (unpredictable) annual rainfall. Water is usually present in most of the wetlands only in the winter months and early spring, although in wetter years most of these areas retain water throughout the year. A few retain at least some water even in drier years, notably Zakaki Marsh, Phassouri Reed-beds, Akrotiri Merras (the 'gravel pits' area) and Bishop's Pool. The last site is the only freshwater pool in the area during drought years as it is filled with treated wastewater from the neighbouring Akrotiri airbase. The southern and western boundaries of the IBA are formed by the coastal cliffs known as the Akrotiri and Episkopi (or Kensington) Cliffs respectively. The eastern part of the peninsula, known as Lady's Mile Beach, is sandy, with shifting dunes and

dune grasslands, whereas most of the western coast is covered in shingle and habitats such as perennial vegetation of stony banks. Juniper *Juniperus* and phrygana (garrigue) can be found in sometimes quite extensive patches throughout the peninsula.

### The avifauna

The Akrotiri Peninsula–Episkopi Cliffs IBA is the most important wetland IBA in Cyprus, with over 300 species recorded there. The diversity and extent of the wetland habitats allow great congregations of waterbirds in winter and spring, and the site forms a bottleneck for migrating raptors in autumn. Up to 20,000 birds may gather at Akrotiri Salt Lake at any one time, and can include globally important numbers of Greater Flamingos and Eurasian Curlews. Other notable migrants, which occur in regionally important numbers, include Common Shelduck, Little Egret *Egretta garzetta*, Glossy Ibis *Plegadis falcinellus* and Collared Pratincole *Glareola pratincola*. Both Common *Grus grus* and Demoiselle Cranes *G. virgo* appear on migration in late August – indeed, this is the best site to see Demoiselle Cranes in Europe.



Albert Stoecker

**387.** Ferruginous Duck *Aythya nyroca*, Cyprus, November 2012. The Akrotiri–Episkopi IBA is the only confirmed breeding site for the species on Cyprus.

The cranes are most easily watched at the main salt lake, where they occasionally roost overnight before leaving on the developing thermals early the next day. In autumn, migrating raptors are a great spectacle; typically, more than 3,000 raptors pass through the site at this season, with small but still globally important numbers of Egyptian Vulture *Neophron percnopterus*, Pallid Harrier and Saker Falcon *Falco cherrug*, plus larger congregations of Red-footed Falcon *Falco vespertinus*, which regularly occurs in 10s and reaches autumn maxima in the 100s (Hellicar *et al.* 2014).

The peninsula is equally important for breeding and resident species. This IBA is the most important breeding site in Cyprus for the Globally Threatened Ferruginous Duck *Aythya nyroca*, which bred for the first time in Cyprus at Phassouri Reed-beds in 2005, and has bred there or at nearby Zakaki pond ever since. The IBA is also one of the best breeding sites in Cyprus for Black-winged Stilt *Himantopus himantopus* and Kentish Plover *Charadrius alexandrinus*; other notable wetland breeders at the site are Spur-winged Lapwing *Vanellus spinosus* and Stone-curlew *Burhinus oedicephalus*.

Beyond the wetland areas, the site qualifies

as an IBA for the number of breeding pairs of Black Francolin, a species which is at the edge of its European range on the island (Hellicar *et al.* 2014). The Cyprus Wheatear breeds on the IBA, although this species prefers wooded country higher up in the Troodos, while the Cyprus Warbler is a regular breeding species, especially in the maquis above Episkopi Cliffs. The Episkopi and Akrotiri Cliffs also support breeding Eleonora's *F. eleonora* and Peregrine Falcons *F. peregrinus* as well as the most important breeding colony of Griffon Vulture *Gyps fulvus* on the island. The long-term decline of free-range grazing goats and the illegal use of poisoned baits (intended to target other species, such as foxes and feral dogs) have resulted in a dramatic decline of Griffon Vultures on the island, down to just 8–10 individuals in 2012. The Project 'GYPAS' (2011–13), in which BirdLife Cyprus was a partner, aimed to supplement this dangerously small population with Griffon Vultures from Crete. Shag *Phalacrocorax aristotelis desmarestii* and European Roller are two other species breeding on these cliffs, the latter in small numbers, while Blue Rock Thrush *Monticola solitarius* and Wallcreeper *Tichodroma muraria* occur in winter.

### Other important fauna and flora

The site's diversity of habitat types mesh together to form a unique and complex landscape. These include priority habitats such as the *Posidonia* beds – meadows formed by the seagrass *Posidonia oceanica* – which are a major food source for marine turtles. The western part of the peninsula provides important nesting grounds for two Endangered marine turtles: Loggerhead *Caretta caretta* and Green Turtles *Chelonia mydas*. Turtles have ceased to breed along the east coast of the peninsula in the last few decades, probably as a result of human disturbance, but the Episkopi and Akrotiri Bays are important feeding areas for the two species. Other reptiles for which the site is important include the Endangered Schreiber's Fringe-fingered Lizard *Acanthodactylus schreiberi*, which can be found in the coastal dune areas (the junipers of the coastal dunes and the grasses and annuals of the pseudo-steppes are some of the site's most important habitats). The partly submerged sea caves at Akrotiri Cliffs provide one of the last remaining breeding refuges of the Critically Endangered Mediterranean Monk Seal

*Monachus monachus* on the island as well as important roosts of two bat species, the Near Threatened Common Bentwing Bat *Miniopterus schreibersii* and the Egyptian Fruit-bat *Rousettus aegyptiacus*. The Mediterranean Tree Frog *Hyla savingyi* breeds at Phassouri Reed-beds and is an important food source for many wetland birds at the site.

In terms of flora, the IBA supports one of the largest, most pristine and ecologically complex coastal ecosystems in Cyprus as well as the largest and most diverse wetland complex on the island. The site is pre-eminent in Cyprus for threatened plants and more than 800 indigenous plant taxa occur on the peninsula, around 40% of the species in the island as a whole. Among them are specialities like the endemic Cyprus Bee Orchid *Ophrys kotschyi* (Akrotiri Peninsula Environmental Management Plan 2012).

### Threats to species/populations

Like many other wetlands throughout the world, this rich and complex ecosystem is vulnerable to human pressures. The greatest threats to the site's birds are habitat loss,



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388. A key breeding species on Cyprus is the Black Francolin *Francolinus francolinus*, which is at the southwestern edge of its breeding range on the island; September 2013.

degradation and fragmentation, as a result of development pressures from a variety of sources, both military and civilian, and including tourism, roads, renewable energy and many others. A landmark agreement between the Republic of Cyprus and the UK Government was signed in January 2014, concerning changes in the planning regulations within the Sovereign Base Areas. This agreement will make development easier within most of the WSBA, though implementation details are unclear at the time of writing.

Disturbance by visitors, linked with the ease of access to many parts of the wetland, is a major problem. During the breeding season, ground-nesting waders such as Black-winged Stilts and Kentish Plovers are particularly vulnerable to disturbance from hikers, dog walkers and vehicles all around the site. Off-road driving is another great concern since it takes place in most of the areas considered important for feeding and breeding birds, often in the form of impromptu racing. Another serious problem for ground-nesting waders in particular is a lack of water management (which could potentially be much more sensitive to the requirements of the IBA qualifying species), while predation by feral cats, domestic dogs and other feral animals is a threat to ground-nesting birds in

general. The wetland complex is sensitive to pollution, including that from agriculture and storm sewers, while spraying of insecticides in the wetland is another potential threat (Hellicar *et al.* 2014).

Other threats include the dumping of rubbish and illegal shooting and bird trapping (with mist-nets and lime sticks). Illegal shooting, especially of European Bee-eaters *Merops apiaster* but also in some instances of migrant raptors, has become a major issue at Akrotiri in recent years, notably in the autumn. The trapping problem is a chronic one for much of Cyprus, and the WSBA is no exception, although it is at the ESBA and more specifically Cape Pyla that the problem has sadly peaked in recent years. Cape Pyla has become notorious for bird trapping, with the trappers making use of extensive patches of *Acacia saligna* – an invasive and alien species planted and nurtured by the trappers with the specific aim of creating good conditions for illegal mist-netting. With the estimated trapping toll in the hundreds of thousands of birds every year, campaigning against this disgraceful and unacceptable slaughter is one of BirdLife Cyprus's main tasks, with the support of the RSPB and other BirdLife partners, notably NABU in Germany.

Silvio Rusmigo



**389.** Lady's Mile, on the eastern side of the peninsula, and the encroaching port development, April 2013. The loss of important wildlife habitats to development is one of the key threats to the Akrotiri/Episkopi IBA.

## Conservation measures

The site was first identified as an IBA in 1989 (Grimmett & Jones 1989). In 2003 the Akrotiri Salt Lake and the Phassouri Reed-beds were designated as wetlands of international importance under the Ramsar Convention. Then, in 2010, parts of the IBA (some 60% of the 2012 IBA, the area shown in fig. 1) were design-

ated as a Special Protection Area (SPA)-equivalent for the protection of wild birds, under the Sovereign Base Areas' Game and Wild Birds Ordinance (21/2008), which broadly replicates the Republic of Cyprus's Protection and Management of Game and Wild Birds Law (152(I)/2003) implementing the provisions of the European Directive 2009/147/EC on the conservation of wild birds. SPAs form part of the Natura 2000 network, an EU network of protected sites. The designation of Akrotiri as a Natura 2000 Special Area of Conservation (SAC) for the protection of specific habitats, plants and non-bird species is still pending. SPAs are subject to the Appropriate Assessment process, for any plans or projects that may affect the site or the species for which it was designated, and special management measures. The Akrotiri Peninsula Environmental Management Plan was published in 2012 and forms a good base for the development of a full management plan for the site.

Thus far, and even though more than half the site has gained protection status, no adequate conservation measures have been implemented. The one conservation measure required most urgently is the implementation of a water-management plan, which would take the needs of the qualifying species into consideration. In addition, bearing in mind the development threat looming over this important area and some of its most



**390.** Greater Flamingos *Phoenicopterus roseus* at the Akrotiri Salt Lake, November 2011. A water-management plan is perhaps the single most urgent conservation requirement for the IBA; properly implemented, it could have a major effect on populations of many breeding, wintering and migratory species.

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sensitive parts, there is a great need for implementation of the Appropriate Assessment procedure, as enshrined in the EU Habitats Directive, especially in the case of those proposed developments that will have the most significant impact on the site and key species. Parts of the IBA are in dire need of immediate action, simple measures such as fencing and controlling access to rough tracks and informal parking lots. Coupled with controlling the access, the site requires continuous wardening, to clamp down on some of the illegal activities highlighted above and which put some key species at risk.

At the time of writing, this incredibly rich and important site for birds has to rank as one of the most threatened in Europe. The proposed changes in planning regulations pose an additional and very real threat to a site already suffering from disturbance, poaching and water-management threats. The presence of the British Base since 1960 has prevented the type of development that has swallowed up many coastal sites elsewhere in Cyprus, but the proposed changes threaten the status quo, with implications not just for wildlife but for the landscape generally and the wealth of archaeological sites dotted throughout the peninsula. The hope has to be that a management plan for this site comes into effect and is implemented effectively in the very near future, to preserve existing biodiversity value and enhance and

support key species and habitats. For this to happen, the British authorities must work hand in hand with the Cyprus Government. Both parties need to bite the proverbial bullet, and to accept the short-term political cost of a negative reaction from local interests intent on development and accustomed to an 'access all areas' policy (not to mention the committed poachers). It is a short-term cost worth bearing for the sake of the long-term protective management of such a key site. All the relevant stakeholders must invest in this process to ensure that Akrotiri's key habitats and species are protected, and the site becomes the 'go to' wildlife destination, both for locals and for visitors.

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Vasiliki Anastasi is currently the Natura 2000 Officer at BirdLife Cyprus, where she has worked since 2011, focusing on site protection and management. She studied Environmental Sciences at Reading University and Nature Conservation at University College London. Martin Hellicar is currently Research Coordinator at BirdLife Cyprus, where he has worked, in various roles, since the organisation was set up in 2003. He is a long-time birder and life-long conservationist, with a particular interest in the farmland birds of Cyprus, the country where he has lived from the age of two.

### Box 2: Visiting Cyprus

Most visitors to Cyprus arrive by air, either at Larnaca in the east or at Paphos in the west. Public transport on the island is limited, being restricted to buses, and most visitors find that car-hire is the most convenient way to explore the island.

Cyprus has a great variety of sites worth visiting, each with a range of different species and each being important at different times of the year, with the summer months generally providing the least birdwatching interest. The variety of the Cypriot landscape, from the coast to the plains to the highest peaks of Troodos, allows plenty of scope for a birdwatcher on holiday. However, spring is generally regarded as the best time to visit, and it is at this season when the Akrotiri Peninsula–Episkopi Cliffs IBA is at its best, when most of the waterbirds are still around and many spring migrants have arrived.

#### How to contribute

Visitors can support bird conservation by adding their sightings on the Cyprus chapter of the WorldBirds database *Cypriaca* ([www.worldbirds.org/v3/cyprus.php](http://www.worldbirds.org/v3/cyprus.php)). To check for the recent reports of notable sightings on the island, visit the BirdLife Cyprus website ([http://birdlifecyprus.org/en/html-51-Recent\\_Sightings.html](http://birdlifecyprus.org/en/html-51-Recent_Sightings.html)).

Birders can contribute to the conservation of the Akrotiri Peninsula–Episkopi Cliffs IBA even without visiting by:

- Writing a letter to your local Member of Parliament, urging them to raise with the Ministry of Defence the issue of the desperate need for protection of the site and to stop illegal bird-trapping in the Sovereign Base Areas in Cyprus.
- Subscribing to the electronic monthly newsletter of BirdLife Cyprus and/or becoming a member of that organisation, to support their efforts in protecting the habitats and sites of the island.

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# Short paper

## The Bass Rock – now the world’s largest Northern Gannet colony

**Abstract** An aerial survey of the Northern Gannet *Morus bassanus* colony on the Bass Rock in 2014 found 75,259 Apparently Occupied Sites, a 24% increase since 2009. The Bass Rock has now overtaken St Kilda and Bonaventure Island to become the world’s largest Northern Gannet colony. However, recent planning consent for four large offshore windfarms could pose a threat to this remarkable population.

The Northern Gannet *Morus bassanus* is the largest seabird in the North Atlantic and a visit to a breeding colony is undoubtedly a top-rate wildlife experience. Throughout the twentieth century, St Kilda, in the Outer Hebrides, was the world’s largest gannetry and an aerial survey in 2013 found a total of 60,290 Apparently Occupied Sites (AOS) (Murray *et al.* 2014). Yet while there appears to be plenty of room for numbers on St Kilda

to increase further, the colony has remained at 50,000–60,000 AOS for the last 50 years. The biggest gannetry in the West Atlantic is Bonaventure Island, in the Gulf of St Lawrence. Numbers there have been increasing rapidly since the 1960s and, with a count of 59,586 AOS in 2009, it seemed likely that Bonaventure Island would soon overtake St Kilda (Chardine *et al.* 2013). However, a survey in 2011 found that numbers had



391. Bass Rock, seen from the north on 23rd June 2014.

Stuart Murray

declined by 20%, probably due to poor breeding (Chapdelaine & Rail 2014). Although numbers have started to recover, breeding success is still low, thus it is unlikely that it will soon aspire again to be the largest colony (Jean-François Rail *in litt.*).

The third contender for 'the world's largest colony' is the Bass Rock, in the Firth of Forth. The Bass Rock's Gannet population has increased relentlessly throughout most of the twentieth century (Nelson 2005) and a count in 2009 indicated that, if the increase was maintained for just a few more years, the Bass Rock would overtake St Kilda in the size of its breeding colony (Murray 2011). By 2013, most of the Bass Rock was covered by Northern Gannets and in June 2014 we carried out an aerial survey of this colony to see if it had indeed become the world's largest.

### Methods

The colony was photographed from the air at 09.30 hrs BST on 23rd June 2014. Conditions were excellent, with no wind and a high cover of thick cloud obscuring the sun, thus reducing the glare from the sea and the mass of close-packed Gannets (plate 391). An initial circuit of the rock was made at 750 m

above sea level, to accustom the birds to the presence of the Cessna 172 aircraft, before gradually descending in the final circuit to 300 m. Fifteen of the 120 digital photographs (images of 7360 × 4912 pixels, taken with a Nikon D800E camera and Nikkor 50 mm standard lens) were selected for counting. These gave 100% coverage of the colony, and the boundaries of previously designated counting areas were marked on them to facilitate comparison with previous counts (fig. 1). The boundary between sections 8 and 9 was difficult to define accurately so these two areas were counted as one.

The unit for counting Gannets is the AOS, defined as one or two Gannets present at a site, irrespective of whether nest material can be seen. To prevent subconsciously counting high or low because of prior information, counts by two experienced counters were made independently without reference to the most recent count. Counts were made on a computer screen using either Photoshop or Paint Shop Pro 7 software, which enabled images to be viewed at different magnifications and each AOS to be blocked out as it was counted. This method differed from that used in 2009, when counts were made manually by blocking out AOS on A4 prints.



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**392.** Bass Rock: the garden (top centre), chapel, lighthouse and castle with remaining uncolonised ground around them on 29th May 2009.

However, digital images were also available for the 2009 survey so the AOS were recounted using the same method as in 2014 to ensure that observed changes in numbers were not due to differences in methodology.

### The 2014 count

There was excellent agreement between the two independent estimates (75,829 and 74,690 AOS, respectively) reflecting the high quality of the images and giving a mean total of 75,259 AOS. The recount of the 2009 images gave a revised colony total of 60,853 AOS for 2009, 5,371 AOS higher than the total reported by Murray (2011). Comparison of totals for the count sections indicated that most of the discrepancy occurred in section 9, the central part of the colony, where the density of AOS is very high.

Comparing the 2014 count with the revised 2009 total indicated an overall increase of 24%, equivalent to 4.3% per annum over the five years. Increases were apparent throughout most of the colony with higher counts in all but one of the sections (table 1). In sections 1, 8 & 9, 10, 11 and 13, the observed increase was associated with an expansion into previously unoccupied areas (examples can be seen by comparing plates

**Table 1.** Counts of Northern Gannet *Morus bassanus* AOS on the Bass Rock in 2009 and 2014. Sections are shown in fig. 1.

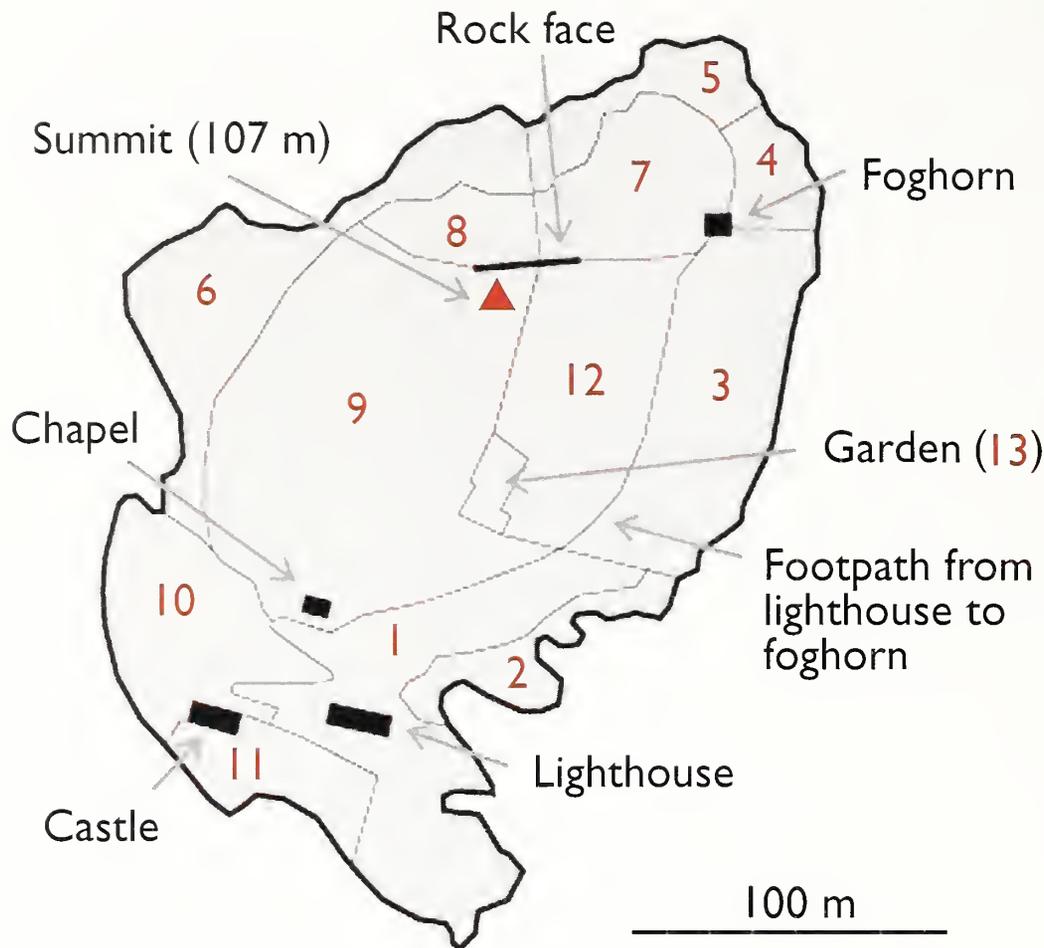
Section	2009	2014	% change
1	4,685	5,149	+10
2	403	294	-27
3	7,238	8,134	+12
4	393	612	+56
5	474	567	+20
6	1,206	1,433	+19
7	8,073	9,013	+12
8 & 9	28,342	33,321	+18
10	3,259	4,714	+45
11	331	1,643	+396
12	6,449	9,932	+54
13	0	447	++
Total	60,853	75,259	24

392 & 393). The most spectacular increase in recent years has occurred in section 12, between the old garden and the summit of the rock. Empty in 1994, it held c. 1,000 AOS at a very low density in 2004, 6,449 AOS in 2009 and almost 10,000 AOS in 2014. Sections 7–9 on the slopes in the central part of the colony were considered to be full or nearly full in 2009. However, further increases were recorded in 2014, indicating



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**393.** Bass Rock on 23rd June 2014 showing areas colonised around the chapel and below the castle since 2009.



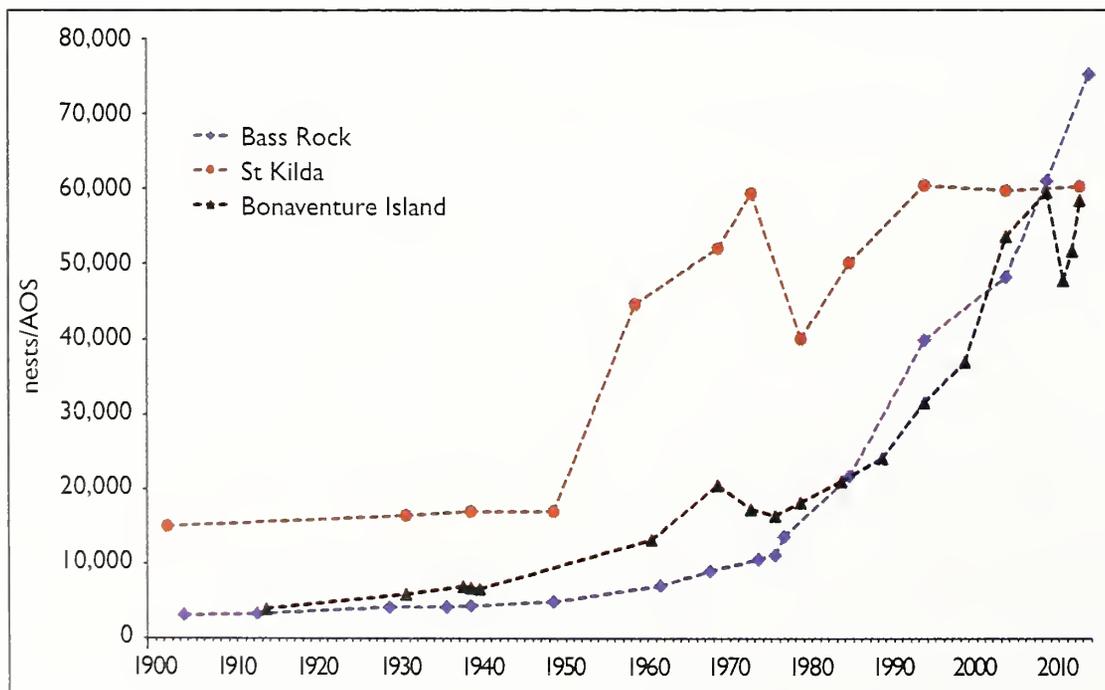
**Fig. 1.** Areas used for counting Northern Gannets *Morus bassanus* on the Bass Rock. Courtesy of the Scottish Ornithologists' Club.

that the density of AOS must have increased. The remaining count sections are on steep cliffs with no obvious space for expansion. Despite this, all except section 2 showed small increases, again indicating that densities were higher.

**Discussion**

The 2014 count provides clear evidence that the Bass Rock has overtaken St Kilda and

Bonaventure Island and is now the biggest colony of Northern Gannets in the world (fig. 2). However, the colony seems to have only limited capacity for further increase since, apart from around the lighthouse and castle, there is no space for further expansion (plate 393) and subjectively densities of AOS seem at a maximum. The situation on the Bass Rock is reflected throughout Scotland, where the Northern Gannet continues to prosper, with the most recent colony surveys showing increases at almost all the 14 colonies and a new colony founded on Barra Head in the Outer Hebrides in 2007 (Murray *et al.* 2014). That situation contrasts with the declines shown by many other seabird species in Britain & Ireland and indicates that conditions on land and at sea have favoured Northern Gannets in recent decades. However, to anyone



**Fig. 2.** Numbers of Northern Gannets *Morus bassanus* at the three largest Gannet colonies, 1902–2014. Details of counts can be found in the publications in the reference list.

watching skeins of Northern Gannets flying purposefully to and from their colonies, it is obvious that they are potentially at risk of collision with wind turbines (Furness *et al.* 2013). The recent consent for the construction of four wind-farms off the Fife and Angus coasts could therefore pose a threat to

Bass Rock's Northern Gannets since these could effectively block two-thirds of their access to the open sea. Although the majority of Northern Gannets observed in a study area off the Dutch coast avoided a windfarm constructed 15 km offshore, a number of them entered and even fed within the windfarm (Krijgsveld *et al.* 2011). Most Northern Gannets fly fairly close to the surface of the sea but c. 10% have been estimated to be at a height which places them at risk of collision with turbine blades (Cook *et al.* 2012). Another major uncertainty is whether such a massive development would deter prospecting birds from recruiting to the colony.

Climate change appears to pose a serious threat to many UK seabird populations (Russell *et al.* 2014). Consequently, reducing carbon emissions by generating electricity from renewable energy is generally welcomed by those who value seabirds. However, it will be a major irony if the future of the world's biggest Northern Gannet colony is jeopardised by one of the biggest windfarms in the North Sea.

#### Acknowledgments

We thank Dave Cowley of RCAHMS and pilot Ronnie Cowan for inviting SM to take part in an aerial survey of the outer Firth of Forth, including the Bass Rock; and Maggie Sheddan whose knowledge of the Bass Rock gave us valuable insights into the dispersion of breeding and non-breeding birds.

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## Letters

### Spotted Crakes during flood years

In Holling *et al.* (2014), Sabine Schmitt, commenting on the second UK-wide survey of Spotted Crakes *Porzana porzana*, drew attention to the inundation of many monitored sites, but suggested that not many birds were missed, and that the lower numbers in rela-

tion to the previous census did not appear to be caused by the water conditions. We would like to draw attention to the strong dependence of the numbers of this species on water conditions, based on examples in the species' main breeding range in central Europe.

The Spotted Crake is sensitive to changes in water levels, avoiding both very deep water and dry areas. Its numbers vary greatly in line with changes in water levels, not only between different years, but also between consecutive counts in the same season. In areas flooded for a long time, singing males may not appear until July, by which time water levels are favourable. These are probably birds that have moved to the area from other breeding grounds, where they nested or attempted to do so. It is often difficult to estimate numbers of this species over large areas, and to draw inferences about trends between consecutive censuses. The significance of the variations is illustrated by a few examples from Poland and Germany.

During a survey in 2011, on a 11.4 km<sup>2</sup> plot in the Rozwarowo Marshes (River Odra Estuary – northwest Poland), Spotted Crakes were censused six times between early April and late June, when 0–12 males were recorded. But the highest number (41 males) was recorded on 4th/5th July. During 2011, water levels were low at the other breeding grounds in the Odra Estuary; only on the Rozwarowo Marshes was the water (artificially) maintained at a high level – by reed growers – which caused Spotted Crakes to concentrate there for their second brood (Marchowski 2013). A similar sudden increase in numbers was recorded in early July 2010 in the Note valley (western Poland), where 145 males were counted (9.8 males per km<sup>2</sup>) on a 14.8 km<sup>2</sup> plot of wetlands and flooded meadows. For comparison, up to 34 males were recorded in this area during normal years, and 10 males in dry seasons (Wylegała & Rosin 2010). These

observations reflect this species' ability to react rapidly to the availability of suitable habitat, especially when water levels are high. Very high annual fluctuations (between 0 and 80 males) were noted during more than 40 years of monitoring (1966–2009) of the Spotted Crake population in the Lower Odra National Park (eastern Germany). Spotted Crake numbers were higher in years with long-term flooding. In years with a spring or summer flood, there were marked fluctuations in numbers until the end of July (Dittberner 2010).

Large variations in Spotted Crake numbers during flood seasons are characteristic of this species in river valleys and marshy habitats in central Europe. Since the onset of breeding in Spotted Crakes is dependent on appropriate water levels, the peak of calling activity associated with pair formation can occur at markedly different times. Drawing conclusions about trends between nest censuses should always take into account the water conditions prevailing during the individual surveys.

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**Editorial comment** Sabine Schmitt, who led the 2012 survey for the RSPB, has commented: 'We do not contest the assertion that water levels can have a substantial impact on Spotted Crake numbers; indeed, a forthcoming *BB* paper will show that numbers reported annually in the UK are positively correlated with spring rainfall, presumably through a beneficial impact on site conditions. However, we remain confident that the inundation of *some* (rather than many) sites was not responsible for the decline between national surveys, particularly as numbers reported annually to the RBBP also suggest a substantial decline over the same period. Furthermore, we believe that the survey methods, requiring at least four visits and up to 11 at key sites, were adequate to detect birds despite any movements and fluctuations due to water levels. It is distinctly possible that population dynamics for the UK breeding birds – a small, relatively isolated and edge-of-range population – are different from those in central Europe.'

# Obituary

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## Philip Arthur Dominic Hollom (1912–2014)

Born on 9th June 1912 in Bickley, Kent, the second of five brothers, Phil Hollom lived through 102 eventful years. In 94 of them he found compelling interest in his perception of the natural world. Within his main hobby of (purposeful) birdwatching, few of his peers found as much freedom or as much joy. Very few committed as early as he did to what we now call citizen science.

Always quiet, modest and above all gentle, Phil did not command attention in the more extrovert manner of his close peers Max Nicholson and Guy Mountfort. Yet to those of us in succeeding generations, who learnt how his initially diffident exchanges became passionate exhortations to ever more adventurous observation, he gave both generous friendship and exemplary inspiration. The energy and reach of his mostly private peregrinations became truly the stuff of living legend. His public contributions to the lore of both bird identification and distribution – and their intelligent use – began before the advent of the BTO, let alone any field guide. So what made Phil Hollom such an exceptional field ornithologist?

As a child, Phil's 'perhaps inbuilt interest' in birds was first crystallised by 'the lovely blue eggs of a Song Thrush... [on] the uniform grey mud lining [of the nest]'. Lifted up to see that nest at the age of four, he maintained that its shining clutch was his longest-held avian recollection. His first primer was *A Sketchbook of British Birds* (Bowdler-Sharpe, 1898). That and a butterfly book were 'bedside companions', although Phil neither pinned insects nor collected eggs. Instead, his desire for 'brief examination in the hand' led him at age eight to begin catching birds. His first diary, from 1922, has an entry for 6th March: 'I caught a Blue Tit in a trap (actually a garden sieve propped up on a window sill by a stick and dropped by a string pulled from inside).' And then: 'I saw a Rook breaking twigs for a nest' [29 years before the earliest *BWP* reference for such behaviour].

Phil's general education came from two

boarding schools. At the first (Heddon Court, Cockfosters), in 1925, two important prompts to his later strands of expertise occurred. First, he was 'surprised and impressed' when a games master instantly named a singing Common Chiffchaff. Second, he quickly became heir to his elder brother Richard's science prize, T. A. Coward's *The Birds of the British Isles and their Eggs* (1920). Regular monthly 'patch' lists followed immediately. From 1926 to 1929, at King's School, Bruton (Somerset), Phil's birdwatching was developed by a sympathetic house master, who drove him to new delights such as churring European Nightjars. Importantly, his mentor also saw to the school library receiving *British Birds*, as well as another early bible, *How Birds Live* (Max Nicholson, 1927): 'I remember reading it in bed... in the early hours of light summer mornings... it turned my thoughts to bird numbers... [at the same time] my incompetence at cricket was ornithologically a definite asset, enabling me to roam/cycle round the local countryside during the summer term.'

In 1928 Phil became a ringer. Eager to boost his ringing totals, he targeted Barn Swallows and House Martins since they 'produced the most nestlings per hour of searching'. Hence also his first-ever census of the same hirundines, which was documented in one of his earliest contributions to *BB*, in 1930, and repeated 'very intermittently up to 2009'.

Also by 1928, Phil had discovered in his village of Addlestone (Surrey) a fellow teenage bird enthusiast, Tom Harrison. Together they decided to follow the trail being blazed by Max Nicholson's Census of Heronries. 'We chose [as our subject] the Great Crested Grebe... large, conspicuous, readily identifiable, pretty sedentary in the breeding season, [with] a history of decline [but] currently expanding, with the vast majority of sites clearly marked on the one-inch Ordnance Survey maps.' So 1929 was the first of three hectic years for Phil. He left school as the Victor Ludorum for athletics,

declined university 'as a bit of a con', started work in the City of London for the family firm of export merchants and continued to develop plans for the grebe census.

In June 1930, ornithological fate gripped him. Having persuaded his mother to drive him to a week's holiday in Pembrokeshire, Phil found himself 'one evening in a small hotel at dinner with a couple of strangers who turned out to be Mr and Mrs H. F. Witherby'. Five months later, and with support from Max Nicholson, his and Tom Harrisson's grebe enquiry got Witherby's approval and the medium of *BB* for its launch and results. Promoted by their amazingly energetic publicity, which featured no fewer than 5,000 personal letters, the enquiry demonstrated not only the status of its subject but also (in Phil's strong suspicion) the much greater latent appreciation of birds in all sorts of people than had previously been assumed: 'During the 1931 Great Crested Grebe Enquiry I made a visit to Gatton Park and found myself taking tea

with Sir Jeremiah and Lady Colman [of mustard fame] on the lawn overlooking the lake... the refreshment was brought down from the house by their butler.' The results of the grebe enquiry featured in the 1932 August to October issues of *BB*. Its exemplary construction and practice was not ignored by the Oxford-based founders of the BTO in 1933.

In spite of an age difference of 39 years, Phil formed a bond with Harry Witherby, partying with his daughters and benefiting from the 'wonderful experience' that regular access to the main conductor of committed amateur observations conferred. After a first visit to north Norfolk, and 'an embryonic bird observatory' at Salthouse, in 1929, he began regular visits to Staines Reservoir (using a long-draw telescope for the first time), Dungeness and the Midrips (meeting Mr Tart, the RSPB's original 'watcher' there), and even got to Fair Isle on two occasions. He noted, however, that 'communications were too uncertain and accommodation too



**394.** The members of the 1957 expedition to the Coto Doñana. Phil Hollom stands at the far right of the back row, back in the region that he first explored in 1938. His companions are (front row, L-R) Max Nicholson, Guy Mountfort, Lady Huxley, Lord and Lady Alanbrooke, Sir Julian Huxley, Eric Hosking; (back row, L-R): George Shannon, Tono Valverde, James Ferguson-Lees, Don Mauricio Gonzalez, Tony Miller.

personal and difficult to arrange for the pilgrim trail to blaze brightly or regularly.' Yet in September 1938 Phil persuaded HFW to accompany him to the island. His diary for the 28th indicates that both of them were conscious of more pressing issues than rare birds. On the day before the signing of the Munich Agreement, he wrote: 'political situation very bad, Czech-German war almost inevitable, so HFW decided to return home as soon as possible.'

Phil's first foreign trip had come in June and July 1935. He, Max Nicholson, Bernard Tucker, W. B. Alexander and 25 other Oxford Ornithological Society members went to the Netherlands. On Texel they experienced a foretaste of wetland conservation and ecotourism. In 1938, after an earlier visit to the Camargue, he added 'quite an adventure in another alluring wilderness'. This was the Coto Doñana, reached from Huelva where he was working for Rio Tinto.

Although continuing to contribute to the few ornithological media of the pre-war period, organising a survey of Black-headed Gull colonies (1938) and editing the BTO's first ringing manual *Trapping Methods for Bird Ringers* (1940), Phil's personal imperative increasingly became that of serving his country. Finding Army recruiting offices unresponsive, he joined the Auxiliary Fire Service in March 1939. He performed so well during the Blitz that he was appointed a Retained Fireman but eventually, in 1940, his wish for more active service was granted by the Royal Air Force.

In July 1941 Phil was sent to Canada and the USA to train as a pilot. He qualified to fly planes with both wheels and floats and, of course, lost no opportunity to sample the Nearctic avifauna or to converse with American ornithologists as an apostle of early BTO practice. As ever, his hunts involved the occasional hazard: '10th September 1942, 105°F; birding walk in the morning, got picked up by police and FBI.' Let go, the next day he co-piloted a Catalina flying boat back to Britain and World War II.

Phil's experiences as a RAF pilot were both hectic and heroic. By exceptional performance and luck, he survived many sorties, among them the crash of an entire flight of Wellingtons (on torpedo-dropping practice),

hits on his Dakota from Royal Navy flak (during Operation Overlord), as well as the crippling of his glider tug by German ack-ack over Arnhem and hence a forced landing near Brussels (during Operation Market Garden). In his logbook, never shown to anyone during his lifetime, his son Peter discovered the following: '24th March 1945. From Gosfield, Essex, to seven miles east of the Rhine at Wesel. Glider tow op.' Asked if he had really been in Operation Varsity – still the largest one-day airborne operation in history – Phil simply smiled modestly and said, 'Oh, well yes, I suppose I was.'

Phil's rating as an exceptionally good all-weather pilot and his deft touch with people was reflected in his continuing RAF service to March 1946. Becoming a Mission Pilot, he ferried Allied experts to newly uncovered German aeronautical facilities and the Anglo-American Commission of Inquiry on Palestine around eastern Europe and the Middle East. Along his flight paths he squeezed in every chance for birds, bartered coffee and cigarettes for a pair of good German 10 × 50 binoculars and even performed expert quartermaster procurements. Phil's crafty imports varied from Pol Roger champagne to choice dates and rare cheeses. The last two were ordered by no less a consumer than Richard Meinertzhagen, then still a hero but in retrospect less so than PADH himself.

After his demobilisation, Phil returned to the family firm and to his own ornithological projects and friendships. After he married his (also gentle) wife Jenefer in October 1947, Woking became his new patch and soon home to daughter 'Dizzy' and sons Mark and Peter. During the next three decades, Phil's weekdays were devoted to hard work in the city, where he ascended via an ACCA qualification to be Company Secretary at the finance house Bowmaker. He also played a crucial role in the defence of the Surrey countryside around Hydestile (his last redoubt) – just one of many unselfish acts on behalf of others.

It is time, however, to return to Phil during his evenings and weekends, which with far-flung holidays and expeditions to an amazing total of 56 countries – 'no guided tours!' – provided his ornithological continuum. Although in private correspondence



395. Fellow editors of *British Birds*, Phil Hollom and (right) James Ferguson-Lees, in a Bulgarian punt, 1960.

always direct and even lyrical, Phil's post-war contributions to published ornithology, apart from repeated samples of Great Crested Grebes (1946–55), were mostly those of knowledgeable editor and sparing scribe. With Bernard Tucker he conceived the idea of expanding the readership of Witherby's five-volume *Handbook of British Birds* (1938–41). After Tucker's death, it was Phil who edited and produced the two pithy digests of those five volumes: *The Popular Handbook of British Birds* (1952, extensively revised and re-illustrated in 1962) and the *Popular Handbook of Rarer British Birds* (1960). For the former, his innovations included the use of drawings to illustrate specific differences in both structure and appearance. Effectively, Phil launched Peter Hayman into his halcyon period of producing accurately scaled illustrations of raptors, seabirds and shorebirds.

In the 'Rarer Handbook', Phil dropped a bombshell by trailing the wholesale removal of what became known as 'the Hastings Rarities' from the British List. The book's list of 150 species with fewer than 12 records was still gripping but it was 16 shorter than many had expected. There were growls and some abuse, which largely subsided when, in

August 1962, Max Nicholson and James Ferguson-Lees (with statistical analysis by John Nelder) set the record straight in *BB*. Phil never doubted the validity of the excisions but in 1972, at the end of his 14 years as (the first) Chairman of BBRC, he surprised me by returning to the still simmering issues. As he dumped the (then few) BBRC files in my lap, he added four still-audible sentences: 'You'll find in these Norman Ticehurst's comments on some of the Hastings records. Better read them. The debate may rumble on... [pause] And finally, one thing on the Committee: it's not good at re-opening its mind!' I cannot help wondering what he made of the recent on-off saga of the Slender-billed Curlew!

While Phil was 'dead keen on seeing new species for new knowledge' (Richard Fitter pers. comm.), no-one can remember his ever touting any length of personal list. His approach to rarities did, however, feature marvellous examples of unpretentious but determined Hollom style. For example: 'I heard of the appearance at Rosyth naval dockyard of a Wilson's Phalarope, perhaps the first for Britain. I took the night train to Edinburgh, reached Rosyth in mid morning

and asked if I could see the Admiral. He proved to be out but his wife kindly gave me coffee in their sitting room and I was able to spend the next few hours entirely undisturbed watching the bird on a lagoon in a secluded corner of Admiralty land. I might mention that I have not pursued all that many reported rarities since then, and have no personal experience of present-day twitches.'

Phil's total familiarity with handbooks as old as H. E. Dresser's *Birds of Europe* (1871–81, 1895–96) and his ever-widening grasp of bird distribution made him a natural third creator of the ground-breaking *A Field Guide to the Birds of Britain and Europe* (1954), alias 'Peterson' in deference to its famous transatlantic artist. For 38 years, Phil assisted in its regular refreshment, notably (after debating revised field characters with James Ferguson-Lees and me) persuading Guy Mountfort to make extensive changes to the text of the 1974 edition. He was ever more satisfied with the book's international influence but claimed little credit for it.

Turning Phil's clock back to the 1960s, his interest in the birds of North Africa and the Middle East was rejuvenated by collabora-

tions with other field ornithologists drawn to those regions. He revelled in the new explorations being led by younger observers such as Richard Porter and Lindon Cornwallis. Phil joined up again with Guy Mountfort in 1963, when his prior experience of the Levant got the 'Azraq expeditions' off to a flying start. Teaming up with Richard Porter and Mark Beaman, Phil played an important role in forming the Ornithological Society of Turkey in 1969 and its expansion into the Ornithological Society of the Middle East in 1976.

Phil's habit of spreading the ornithological word showed again in 1967. At the request of its authors, R. D. Etchüecopar and Francois Hüe, he translated their *Les Oiseaux du Nord de l'Afrique* (1964) into its much welcomed English edition *Birds of North Africa*. Twenty-one years later, together with Richard Porter, Steen Christensen and Ian Willis, he achieved his long-cherished ambition of giving observers south and east of the Mediterranean a concise guide to their birds: *Birds of the Middle East and North Africa* (1988).

Phil's last personal contributions were to the fifth edition of the *Popular Handbook* (1988) and the fifth full revision of 'Peterson' (1993). As the latter's scribe, I saw much of



Eric Hosking Charitable Trust

**396.** The three creators of *A Field Guide to the Birds of Britain and Europe*: (from left) Phil Hollom, Roger Tory Peterson and Guy Mountfort, with new plates for the guide, in 1983.

D. I. M. Wallace



**Fig. 1.** Mandarin Duck *Aix galericulata*, Tawny Owl *Strix aluco* and Stock Dove *Columba oenas*, three species that used the same nestbox in Phil Hollom's garden in Surrey in the same season! This painting by DIMW featured in *BB*'s 100th birthday card to Phil.

him in 1991–92. Hence another delicious memory, of our becoming a bit bored with rejigging the text and, still sprightly, Phil suggesting a turn around his garden (which amounted to a large wood). The injunction was irresistible: 'Come on Ian, I'll show you my triple-tenanted nestbox... Oh and have you seen a Stinkhorn [*Phallus impudicus*]?!' I preferred the former (see fig. 1) but envied yet again Phil's grasp of all nature. In 2008, aware of the loyalty of its users, HarperCollins asked Phil to consider a complete revision. With little regret (and at a combined age of 171 years), he and I agreed that, outgunned in illustrative quality by the *Collins Bird Guide* (Svensson *et al.*, 1999), 'Peterson' should leave the field after 54 years of honourable service.

As a contributor from 1929 (a note on Pink-footed Geese, with Tom Harrison), and as an Editor and then Senior Editor from 1951 to 1971, Phil was a stalwart of *BB* for almost half a century. Characteristically it was he who identified the need for a fresher editorial pulse in the journal's crisis in the early 1970s. When its bridge between amateur and professional allegiance to birds survived an even worse trial in 2000, his relief was huge. By the time of his passing, on 20th

June 2014, he had enjoyed *BB* for 86 of its 107 years.

In his second-longest ornithological duty, Phil served *BWP* from its conception in the 1960s, through its gestation in the 1970s to the last volume's delivery in 1994. One particular personal bequest was the supply of hundreds of bird recordings. In his preface to the final volume, William Wilkinson summed up Phil's service as editor and board member as 'ever helpful, always astute in his judgements, and, of course, profound in his ornithological knowledge and experience'. Notably, Max Nicholson and Phil were the only significant

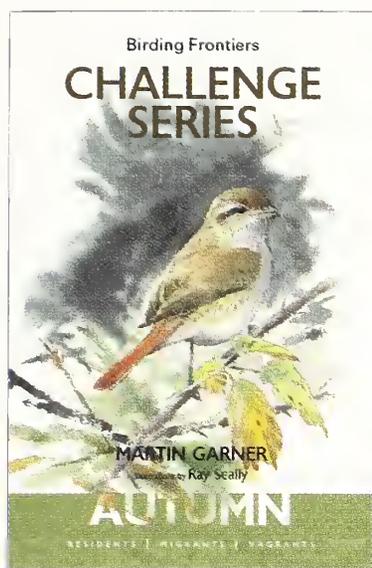
contributors to both the *Handbook* and *BWP*.

Phil Hollom's contributions to our hobby/science – never for him a sport – were properly saluted three times in his lifetime. I do not remember that he did more than smile shyly at their arrival but he fully earned the BTO's Tucker Medal in 1954, the BOU's Union Medal in 1967 and the RSPB's Silver Medal in 1980.

To his family, Phil was 'the greatest father, always such good company... a magnet to every generation's members, whatever their age'. To all birdwatchers privileged to know him, he epitomised the mind, heart, touch and reach of caring field ornithology. His was an example impossible not to follow. He was, indeed, a rare man.

*Ian Wallace*

With grateful thanks to Phil's daughter Dizzy Summers, sons Peter and Mark Hollom, close colleague James Ferguson-Lees and apostles Keith Betton and Richard Porter. Where quotes are given, they are mostly of Phil's own words, taken from his ornithological memories as related to DIMW and KB in 1999 and 2009 respectively.



## Birding Frontiers Challenge Series: Autumn

By Martin Garner

Birding Frontiers, 2014

Paperback, 132pp; many colour photographs and illustrations

ISBN 978-0-9929757-0-8 Subbuteo code M24349

£14.99 **BB Bookshop price £13.50**

Positioning itself at the cutting edge of bird identification, this book tackles 18 problem pairs and groups. The species and

subspecies covered have been chosen from a British-based birder's perspective; most of the challenges are, however, also relevant elsewhere in Europe. The 'Challenge' in the title conveys not only the difficulty involved in separating certain taxa, but also the author's plea for readers to go out into the field, really study birds and thereby test the more tentative of the book's identification criteria and make their own discoveries. And the 'Series: Autumn' in the title signals an intent to produce further seasonal volumes.

The book begins with a short introduction and ends with acknowledgments and references. The remaining 122 pages are devoted to the 18 identification chapters. Each chapter starts with a two-page spread containing its title and a full-page photo on the left and, on the right, an introduction to the challenge, a list of the taxa covered, a QR code, sections on fieldcraft and ageing and sexing and a list of everyone who contributed significantly to the chapter. Usually, each taxon has been given a two-page spread with, on the left, a brief introduction, notes on vagrancy potential, occurrence patterns and taxonomy, a main section concentrating largely on structure, autumn plumages and, where relevant, calls and a distribution map. On the right are four or more photos covering the main plumage types encountered in autumn, annotated artwork by Ray Scally illustrating the key features and, where appropriate, a sonogram. Through a smartphone or tablet, the QR code leads the reader to a web-space for further text and photos plus videos and sound recordings.

The chapter headings (Harriers, Sparrowhawks, Buzzards, Snipes, Skuas, Terns, Swifts,

Woodpeckers, Shrikes, Asian Leaf Warblers, Chiffchaffs, Lesser Whitethroats, Subalpine Warblers, Asian Tree Warblers, Reed Warblers, Treecreepers, Flycatchers and Stonechats) are mostly general, rather than particular, even in a British context. For example, 'Harriers' includes only Hen Harrier *Circus cyaneus cyaneus* and 'Northern Harrier' *C. c. hudsonius*; 'Skuas' refers to just Great *Stercorarius skua* and South Polar Skuas *S. maccormicki*; and 'Flycatchers' covers merely Taiga *Ficedula albicilla* and Red-breasted Flycatchers *F. parva*. Only two chapters deal in depth with more than three taxa: 'Reed Warblers', with four taxa, and 'Stonechats', with six.

Martin Garner is clearly enthusiastic about birds in general and identification in particular; he urges everyone to cultivate more of an enquiring mind, watch birds extra closely in the field, make discoveries, share knowledge and ideas and increase learning through such co-operation. This passion is evident throughout the book, from the main introduction to the acknowledgments and references.

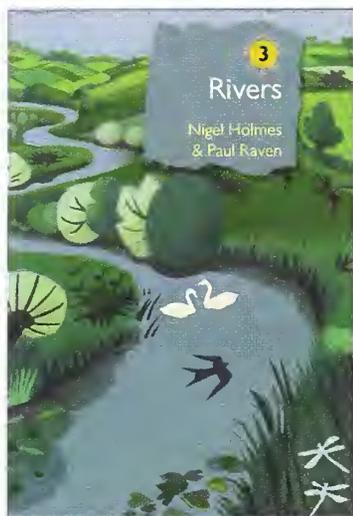
*Birding Frontiers Challenge Series: Autumn* is nicely designed and produced, extremely informative and inexpensive. Its drawback is its limited scope, although we are given to understand that further volumes will follow. The 'frontiers' concept is far from new in birding and its application to pairs and groups of confusion species has been evident in books and journals, including *BB*, for a long time. It is, nevertheless, a tried and tested formula that remains popular. With continually improving optics and photographic equipment, and the increasing use of cameras and the internet by birders, coupled with taxonomic evolution and the insatiable appetite for rolling back identification boundaries, there will always be a market for an up-to-date publication such as this.

*Peter Lansdown*

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## Rivers

By Nigel Holmes and Paul Raven

British Wildlife Publishing, 2014

Hbk, 432pp; over 300 colour photographs, many tables and figures

ISBN 978-0-95649-025-4 Subbuteo code M24190

£35.00 **BB Bookshop price £31.50**

This is a handsome book – heavy, but well laid out, complete with lots of explanatory tables and positively fecund

with colour photographs. Nigel Holmes (who sadly passed away in October this year) and Paul Raven are not only leading experts in river ecology but also wear their expertise lightly. They are not afraid to broaden their scope as they wander into history and folklore, for example, or occasionally reveal a sense of humour. Once you have read it, and gone back to check and re-read parts of it, you realise that it must stand as a classic of its kind. It bodes well for the future of the new *British Wildlife* series, of which it is just the third volume so far.

Having read the whole book, you realise just what the authors meant when, in the introduction, they warned of the enormous complexity of their subject. Given the great advances in our knowledge of rivers in the last quarter century, they emphasise how much river conservation has changed over that same short period. Inevitably, they have had to summarise and to be selective, and in doing so they have done a remarkably fine job.

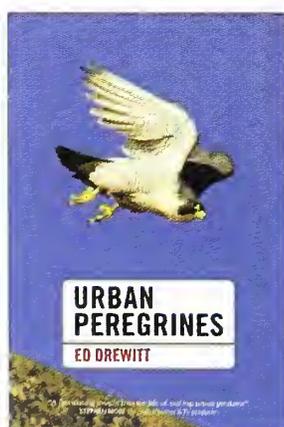
The first two chapters set the scene, with a fascinating look at the history (and pre-history) of our rivers, their tributaries and associated wetland systems. I enjoyed these immensely, but struggled just a little with the next chapter, on the scientific and administrative assessment of the health of rivers, mainly because it was so heavy with acronyms! Then come the detailed chapters on the plants, invertebrates, fish, amphibians, reptiles, mammals and birds of rivers and their banks, floodplains and valley sides

– a necessary expansion as we are shown the reality that there is a lot more to river wildlife than just the core habitat. The invertebrate chapter is particularly intriguing; I really had little idea of the vast and hugely diverse array of species involved. There are a great many highly specialised creatures – in contrast to the bird situation, where the only true river specialist is the Dipper *Cinclus cinclus*.

A long chapter then compares and contrasts three different and well-studied rivers: the Meon in Hampshire, the Dee in North Wales and Cheshire, and the Endrick in central Scotland. Finally, there is an assessment of how river conservation stands today, what has been achieved in the recent past and what should be done next. This final upbeat and optimistic chapter, entitled ‘Caring for our rivers once again’, is set against what the core of this book reveals – how rivers and everything to do with them owe their present form and status to how humans have lived alongside them, exploited them and abused them. Much has been lost, and much has been lost forever, but a lot can still be done. There are some good examples of how even small-scale alterations can make a huge difference.

Inevitably, reviewers look for errors. This is such a wonderful book (and one which I unhesitatingly recommend) that it seems a pity to mention any at all, but I have to say that there is really no excuse for misnaming the important 1954 Protection of Birds Act as the ‘Wild Birds Act’. And given their present distribution following the very recent colonisation of Scotland, the absence of Reed Warblers *Acrocephalus scirpaceus* from the Endrick is hardly an ‘unusual finding’.

*Mike Everett*



## Urban Peregrines

By Ed Drewitt

Pelagic Publishing, 2014

Hbk, 224pp; many colour photographs

ISBN 978-1-907807-81-7 Subbuteo code M24176

£24.99 **BB Bookshop price £22.50**

Another book on Peregrine Falcons *Falco peregrinus*? Well yes, but one

with a difference, and surely there can't be *too* many books about ‘the ultimate bird’. This is a fascinating volume, written with an infectious

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enthusiasm that will appeal to experienced watchers and beginners alike. Following a foreword by Chris Packham, the book is split into 11 chapters, covering areas such as 'How to study Peregrines', 'People and Peregrines' and 'Myths about Peregrines', as well as such thorny issues as 'Peregrines and Pigeons'. Throughout, the focus is on studying Peregrines in urban environments, on ringing, prey species and how to collect and identify prey items.

The closer relationship with humans brought about through their use of towns and cities has, in part, allowed us to study urban Peregrines in greater detail, and this comes across well in this book. Facts about the Peregrine are presented in an informative and interesting way that appeals to a wide audience: for example, Peregrines in a stoop fly in a curve rather than straight at their prey, and the G-force they experience is considerably more than a fighter pilot experiences! Each of the very readable chapters is brimming with facts and complemented by photographs of a high standard that beautifully illustrate its pages and complement the adjacent text.

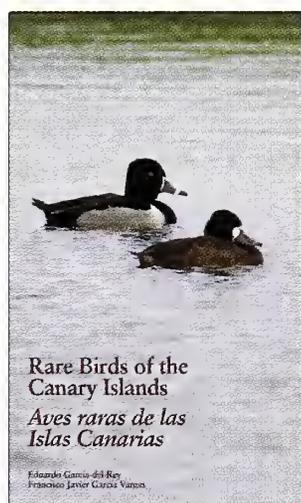
I found few mistakes, although the maps on pp. 136–137 would have been better with only one

arrow illustrating the direction of migration. I personally would not have included the ghoulish photo of the Common Gull *Larus canus* on p. 78, and occasionally I found that similar information was reused in different parts of the book.

This book provides sound recommendations for those who want to set up Peregrine projects in towns and to study both the birds and their prey. I have personally been involved with urban Peregrines for seven years but still learnt much from the wealth of knowledge contained in this book, and have already returned to read some chapters a second time. With the Peregrine population increasing in southern England, and many birds adapting to an urban setting, what better opportunity can there be to get young people involved in wildlife than by introducing them to the fastest bird in the world? Here it is, right on their doorstep; and this book certainly helps the process.

Anyone with an interest in Peregrines will want to buy this book, but especially those who want to be involved in an urban Peregrine project, and I can highly recommend it.

Mike Wallen



## Rare Birds of the Canary Islands

By Eduardo Garcia-del-Rey and Francisco Javier García Vargas  
Lynx Edicions, 2013

Hbk, 328pp; many colour photographs, illustrations and distribution maps

ISBN 978-84-96553-91-0 Subbuteo code M23764

£23.95 **BB Bookshop price £22.50**

The Canary Islands archipelago has long been popular with birders from all over

Europe owing to the number of endemic species found there. In comparison, relatively little attention has been paid to the rarities that have occurred – which is surprising given that the Canary Islands have added at least six species to the Western Palearctic list (Dwarf Bittern *Ixobrychus sturmii*, Tricolored Heron *Egretta tricolor*, Swallow-tailed Kite *Elanoides forficatus*, African Crake *Crex egregia*, Glaucous-winged Gull *Larus glaucescens* and Louisiana Waterthrush *Parkesia motacilla*), as well as an impressive 29 to the Spanish List. This thoroughly researched and well-presented book attempts to remedy this oversight. The authors, both highly experienced Canary Islands birders, have produced an inventory of all rarity records for the archipelago, which includes

all records accepted by the Spanish Rarities Committee (CR-SEO), as well as some records that have not been accepted or submitted but which the authors believe to be credible.

Introductory sections address the 'study area' and 'species covered', plus a most interesting analysis of the vagrancy patterns for birds reaching the archipelago. In the main section of the book, some 172 species accounts describe individual records extending back more than 30 years. These accounts provide a brief overview of taxonomy and range, and a summary panel describing all records (with dates and observers' names), a map showing the location of the records, and charts showing monthly and, in some cases, annual occurrence patterns. The text within the individual accounts is clear and concise, although a more detailed analysis, comparing Canary Islands records with those elsewhere in the Western Palearctic, would have been welcome, especially for the rarer species.

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It is encouraging that the authors have produced the accounts in both English and Spanish, enabling the book to reach a much wider target audience. A high proportion of the species included have photos to support the records, and those by local birder Juan Sagardia are outstanding. The book concludes with two appendices, then an extensive reference section. The first appendix covers scarcer species not considered as ‘rarities’ by the Spanish Rarities Committee, while the second appendix presents a list of unofficial records (not submitted but published in the literature).

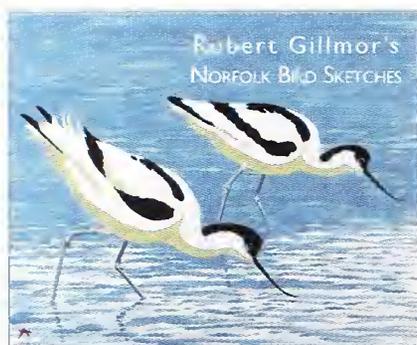
My main criticism is the way in which the records have been selected for inclusion. Some ‘Spanish rarity’ records which have not been submitted to or reviewed by the CR-SEO are included and appear in the main species accounts, while others (perhaps of equal value) do so only in the unofficial list in the final appendix. And, regrettably, this might call into question the authority of the book. Given that a number of records will never be submitted, the authors concluded that they would lose valuable information if they dismissed them all. Personally, I would have included only officially accepted records in the main section, and grouped all of the remaining sightings

in the appendices.

There are a few other aspects that could perhaps have been improved. For example, the ageing terminology used in the photo captions is inconsistent, while some identification errors occur within the species accounts. A photograph labelled as Western Orphean Warbler *Sylvia hortensis*, for example, depicts a Lesser Whitethroat *S. curruca*. And the inclusion of Louisiana Waterthrush with two supporting photographs may open up some old wounds. It remains the only record from the Western Palearctic and has always been a controversial bird, and subject to conflicting opinions of North American experts. Given the importance of the sighting, a re-assessment of the record is perhaps required to settle the debate.

Notwithstanding the above comments, this book has filled an important gap in coverage of both Spanish and Western Palearctic rarities. For anyone with an interest in Western Palearctic vagrants or who plans to go to the Canary Islands and wants to know in advance the status of any rare migrant encountered, this is the book for you.

*Daniel Lopez-Velasco*



## Robert Gillmor's Norfolk Bird Sketches

By Robert Gillmor

Red Hare Publishing, 2014

Pbk, 64pp; numerous colour and black-and-white images by the author

ISBN 978-1-910001-03-5 Subbuteo code M24370

£15.95 **BB Bookshop price £14.30**

In 1998, Robert moved from Reading to the Norfolk countryside and Cley in order to semi-retire and take up a little print making again. Boy, did that theory unravel quickly. His ‘little bit of print making’ turned into a near full-time occupation, providing beautiful cover images for the ever-green ‘New Naturalist’ series, bird designs for postage stamps, poster images for the Birdfair and prints for exhibition. So much for a quiet life on the coast, but the art world is so much the richer for him still being a major part of it.

Like all serious wildlife artists, his ideas for prints comes from a first-hand connection with his subjects and over the years he has accumulated numerous sketchbooks filled with his field drawings and paintings. Unfortunately, little of their contents have appeared in the public domain, apart from an article in the then RSPB *Birds*

magazine in spring 1992. That is until now with the publication of *Norfolk Bird Sketches*.

It is an A4-ish sized, landscape-format book with pages graced by pencil sketches, ink drawings and watercolours of birds made during visits to nature reserves along the north Norfolk coast. Most of the spreads are given to one species; the sketches are beautifully reproduced, looking as they did from the moment he trudged off the marsh after a day's work in the field. The images are lovely in their own right, but some can also be found appearing again in his aforementioned linocuts, giving us a refreshing look into the most important part of his creative process.

*Norfolk Bird Sketches* – a long time in the creation, but certainly worth the wait.

*Dan Powell*



# Recent reports

Compiled by Barry Nightingale and Harry Hussey

This summary of unchecked reports covers early October to early November 2014.

**Headlines** In what was a very exciting period, rarities arrived from all points of the compass. The tail-end of Hurricane Gonzalo brought stormy conditions on 21st October, and some exciting seabirds, including single Bridled and Forster's Terns and a strong passage of Balearic Shearwaters in southwest England. They were followed in quick succession by single Yellow-billed and Black-billed Cuckoos, a Chimney Swift and a Hermit Thrush and then more gradually by five Grey-cheeked Thrushes and a Blackpoll Warbler. From other directions, highlights included Eastern Crowned Warbler in Cleveland, Eastern Bonelli's Warbler and Siberian Thrush in Shetland and Audouin's Gull in Kent. A Steller's Eider flew past Spurn, while other eye-catching wildfowl included a Black Scoter in Angus & Dundee and a Bufflehead in Orkney. There were also three Pallid Harriers, a Solitary Sandpiper, a Franklin's Gull, two Red-eyed Vireos, four Isabelline and an inland Lesser Grey Shrike, as well as eight Red-flanked Bluetails and a Blyth's Pipit.

**Cackling Goose** *Branta hutchinsii* Barra (Outer Hebrides), 15th October; Islay (Argyll), 21st October to 5th November; Lissadell (Co. Sligo), 30th October to 8th November.

**American Wigeon** *Anas americana* A long-stayer in Orkney, with new arrivals at Culdaff Estuary (Co. Donegal), Loch Ryan (Dumfries & Galloway), Udale Bay (Highland), Tulaghan (Co. Leitrim), North Ronaldsay (Orkney), North Uist and South Uist (both Outer Hebrides), two on Tresco (Scilly), and Sandness (Shetland).

**Lesser Scaup** *Aythya affinis* Cardiff Bay Wetlands (East Glamorgan), long-stayer to 9th November; Llangorse Lake (Breconshire), 7th October to 9th November; Tiree (Argyll), 11th–30th October; Rahasane Turlough (Co. Galway), 12th October; Lough Gill (Co. Kerry), 22nd October; Islay, 23rd October; Wraysbury GP (Berkshire), 29th October to 6th November. **King Eider** *Somateria spectabilis* Long-stayers in Moray & Nairn and Shetland, plus Nairn (Moray & Nairn), 22nd–23rd October and North Blyth (Northumberland), 6th November. **Steller's Eider** *Polysticta stelleri* Spurn (Yorkshire), 2nd November. **Black Scoter** *Melanitta americana* Lunan Bay (Angus & Dundee), 20th–31st October. **Surf Scoter** *Melanitta perspicillata* A widespread influx, with records from Angus & Dundee (up to two), Denbighshire (up to six), Dorset, Co. Durham, Essex, Fife, Highland, Lothian, Co. Louth, Moray & Nairn,

Norfolk (up to two), Orkney, Suffolk and Yorkshire. **Bufflehead** *Bucephala albeola* Holm (Orkney), 31st October to 2nd November.

**White-billed Diver** *Gavia adamsii* Bluemull Sound, 16th October, South Nesting Bay (both Shetland), 10th November.

**Zino's/Fea's Petrel** *Pterodroma madeiralfeae* 20 km SSE of Galley Head (Co. Cork), 10th October. **Wilson's Storm-petrel** *Oceanites oceanicus* 30 km SSE of Galley Head, 10th October; Gigha (Argyll), 24th October.

**Cattle Egret** *Bubulcus ibis* Long-stayers in Cheshire & Wirral and Kent (with two 3rd–8th November), and others seen at Braunton Marsh (Devon), on Westray (Orkney), at Pett Level (Sussex) and Newcastle (Co. Wicklow). **Purple Heron** *Ardea purpurea* North Warren, 4th and 9th November, Minsmere (both Suffolk), 8th November. **Glossy Ibis** *Plegadis falcinellus* Records from Anglesey, Cambridgeshire, Essex, Kent, Lincolnshire, Co. Louth, Nottinghamshire, Co. Waterford, Co. Wexford and Yorkshire.

**Black Kite** *Milvus migrans* Nanquidno (Cornwall), 13th October. **White-tailed Eagle** *Haliaeetus albicilla* Holy Island (Northumberland), 12th October. **Pallid Harrier** *Circus macrourus* Fetlar, 7th October; Loch of Strathbeg (North-east Scotland), 8th October; Steart (Somerset), 22nd October to 7th November. **Rough-legged Buzzard** *Buteo*

Michael McKee



**397.** Yellow-billed Cuckoo *Coccyzus americanus*, Porthgwarra, Cornwall, October 2014.

*lagopus* Widespread influx during October, mainly along east-facing coasts, but inland records in Berkshire, Buckinghamshire, Derbyshire, Greater Manchester, Hertfordshire, Somerset and Yorkshire.

Little Crane *Porzana parva* Minsmere, long-stayer to 13th October. American Coot *Fulica americana* Lough Gill (Co. Kerry), 5th–8th November.

American Golden Plover *Pluvialis dominica* Records from Tiree, Maidens (Ayrshire), Davidstow (Cornwall), Slyne Head (Co. Galway), Skye (Highland) and Scotney Court (Sussex). Kentish Plover *Charadrius alexandrinus* Crymlyn Burrows (Gower), 18th–20th

Richard Brooks



**398.** Southern Grey Shrike *Lanius meridionalis*, Burnham Norton, Norfolk, October 2014.

October. White-rumped Sandpiper *Calidris fuscicollis* A long-stayer on South Uist, with new arrivals on Tresco and Lewis (Outer Hebrides). Buff-breasted Sandpiper *Calidris subruficollis* Records from Marloes Mere (Pembrokeshire) and Tacumshin (Co. Wexford). Spotted Sandpiper *Actitis macularius* Inverallochy (North-east Scotland), 19th October to 9th November. Solitary Sandpiper *Tringa solitaria* Duncormick (Co. Wexford), 7th–14th October. Lesser Yellowlegs *Tringa flavipes* A long-stayer in Co. Dublin, plus: Hayle

Estuary (Cornwall), 21st October to 9th November; Moyasta (Co. Clare), 27th–31st October. Great Snipe *Gallinago media* Llan-drindod Wells (Breconshire), 9th October.

Little Auk *Alle alle* Strong northerly passage along east-facing coasts on 5th November, including 2,921 off the Farne Islands and four-figure counts from at least four other sites. Brünnich's Guillemot *Uria lomvia* Flamborough Head (Yorkshire), 13th October.

Bridled Tern *Onychoprion anaethetus* Pendeen, 21st October. White-winged Black Tern *Chlidonias leucopterus* Records from Radipole Lake (Dorset) and Rye Harbour (Sussex). Forster's Tern *Sterna forsteri* Rogerstown (Co.

Dublin), 15th October to 4th November; Cape Cornwall (Cornwall), 22nd October. Bonaparte's Gull *Chroicocephalus philadelphia* Whitburn (Co. Durham), 13th October; Teignmouth, 19th October, then Dawlish Warren (both Devon), 22nd October and 9th November; Tramore (Co. Waterford), 2nd November. Laughing Gull *Larus atricilla* Long-stayer Ballycotton (Co. Cork). Franklin's Gull *Larus pipixcan* Blashford Lakes

(Hampshire), 19th October intermittently to 9th November. Audouin's Gull *Larus audouinii* Dungeness (Kent), 12th October.

Black-billed Cuckoo *Coccyzus erythrophthalmus* North Ronaldsay, 23rd October. Yellow-billed Cuckoo *Coccyzus americanus* Porthgwarra, 23rd–24th October.

Snowy Owl *Bubo scandi-  
acus* Long-stayer, Ben Macdui (Moray & Nairn); Camster (Highland), between 15th October and 6th November.

Chimney Swift *Chaetura pelagica* Lewis, 23rd–25th October. Alpine Swift *Apus melba* Dinton Pastures (Berkshire), 15th October. Pallid Swift *Apus pallidus* Kilnsea (Yorkshire), 16th October; Flamborough Head, 20th October.

Red-eyed Vireo *Vireo olivaceus* Low Newton-by-the-Sea (Northumberland), 7th October; Walney Island (Cumbria), 4th November.

Isabelline Shrike *Lanius isabellinus* Warham Greens (Norfolk), 14th–17th October; Kilnsea, 15th–17th October; Worth Marsh (Kent), 16th October; Pendeen, 9th November. Lesser Grey Shrike *Lanius minor* Biggleswade Common (Bedfordshire), 10th October. Great Grey Shrike *Lanius excubitor* Widespread influx from mid October, particularly 14th–16th with at least 15 Yorkshire, 11 Norfolk and records from six Welsh, five Scottish and 24 English recording areas. Southern Grey Shrike *Lanius meridionalis* Burnham Norton (Norfolk), long-stayer to 16th October.

Penduline Tit *Remiz pendulinus* Strumpshaw Fen (Norfolk), 11th–12th October; St Mary's (Scilly), 14th October; Titchwell (Norfolk), 18th–19th October; Snape, 25th October; Minsmere (both Suffolk), two, 25th October; Frampton-on-Severn (Gloucestershire), 7th November.



Simon Knight

**399.** Eastern Crowned Warbler *Phylloscopus coronatus*, Brotton, Cleveland, November 2014.

Short-toed Lark *Calandrella brachydactyla* Records from Cemlyn Bay (Anglesey), Oronsay (Argyll), Sancreed (Cornwall), North Ronaldsay, Scilly (one on St Agnes and three on St Mary's), Shetland (two at Hillwell and one at Sumburgh) and Flamborough Head.

Red-rumped Swallow *Cecropis daurica* Dungeness, 6th November.

Eastern Crowned Warbler *Phylloscopus coronatus* Brotton (Cleveland), 30th October to 1st November. Arctic Warbler *Phylloscopus borealis* Donna Nook (Lincolnshire), 11th–14th October. Hume's Warbler *Phylloscopus humei* Voe (Shetland), 19th–23rd October. Radde's Warbler *Phylloscopus schwarzi* About 15 in the period, of which 11 arrived during 11th–17th October; records from Cornwall, Lincolnshire (two), Norfolk (five), North-east Scotland, Shetland (two) and Yorkshire (four). Dusky Warbler *Phylloscopus fuscatus* Reculver (Kent), 15th October; East Hills (Norfolk), 15th October; Farne Islands, 30th October to 1st November; Voe, 9th November; Holkham (Norfolk), 9th November. Eastern Bonelli's Warbler *Phylloscopus orientalis* Scalloway (Shetland), 10th–13th October. Subalpine Warbler *Sylvia cantillans* Porthgwarra, 10th–17th October; Foula (Shetland), 13th–15th October; St Mary's, 1st–4th November. Lanceolated Warbler *Locustella lanceolata* Quendale

John Kemp



**400.** Hermit Thrush *Catharus guttatus*, North Uist, Outer Hebrides, October 2014.

(Shetland), 7th–8th October. **Booted Warbler** *Iduna caligata* Torness (Lothian), 11th–23rd October. **Melodious Warbler** *Hippolais polyglotta* Out Skerries (Shetland), 6th October; Skomer (Pembrokeshire), 10th October.

**Rose-coloured Starling** *Pastor roseus* In addition to long-stayers in Co. Cork, Cornwall, Dorset, Highland and Scilly, there were further records from Argyll, Co. Cork (another), Cornwall (another two), Fife, Co. Galway, Orkney, Lincolnshire, Scilly (another), Shetland (two) and Yorkshire.

**Hermit Thrush** *Catharus guttatus* North Uist, 22nd–23rd October. **Grey-cheeked Thrush** *Catharus minimus* Barra, 23rd October; North Ronaldsay, 23rd October; Fair Isle, 24th–25th October; Fetlar, 29th October; Rerwick (Shetland), 8th–10th November. **Siberian Thrush** *Geokichla sibirica* Scousburgh (Shetland), 15th October.

**Siberian Rubythroat** *Calliope calliope* Levenwick (Shetland), long-stayer to 8th October. **Red-flanked Bluetail** *Tarsiger cyanurus* Dale of Walls (Shetland), 12th October; Fair Isle, 13th–16th October; Warham Greens, 13th October; Stiffkey (both Norfolk), 14th October; Tarmon, the Mullet (Co. Mayo), 28th–30th October; Geosetter (Shetland), 3rd–10th November; Hastings (Sussex), 4th November; Voe, 8th–9th November. **Siberian**

**Stonechat** *Saxicola maurus* Nine in the period, with records from Porthgwarra; Fair Isle; Titchfield Haven (Hampshire); Seaview (Isle of Wight); Torness; Spital Point (Northumberland); Whalsay, Fetlar and Hoswick (all Shetland). **Desert Wheatear** *Oenanthe deserti* Skomer, 28th October; Reculver, 6th–9th November; Lowestoft (Suffolk), 6th–9th November; Gorleston-on-Sea, 7th–9th November; Great Yarmouth

(both Norfolk), 8th November. **Pied Wheatear** *Oenanthe pleschanka* Unst (Shetland), 1st–9th November.

**Citrine Wagtail** *Motacilla citreola* Flamborough Head, 5th–9th November. **Blyth's Pipit** *Anthus godlewskii* St Mary's, 6th–9th October. **Tawny Pipit** *Anthus campestris* Newhaven Tide Mills (Sussex), 7th–11th October. **Olive-backed Pipit** *Anthus hodgsoni* About 32 in the period, with 27 arriving during 6th–15th October. Records mostly from the Northern Isles – Shetland (18), Fair Isle (three) and Orkney (five) – with others in Devon, Co. Durham, Norfolk, Northumberland and Scilly (two). **Pechora Pipit** *Anthus gustavi* North Ronaldsay, 8th October; Kergord (Shetland), 11th October. **Red-throated Pipit** *Anthus cervinus* Fair Isle, 13th–20th October; Foula, 13th October; Norby (both Shetland), 16th October; St Osyth (Essex), 26th October; St Mary's, 26th–29th October and 5th November; St Agnes, 29th–31st October; Sennen (Cornwall), 9th November.

**Scarlet Tanager** *Piranga olivacea* Barra, 6th–9th October.

**Rustic Bunting** *Emberiza rustica* Long-stayer in Unst, to 14th October; St Agnes, 9th October.

**Blackpoll Warbler** *Setophaga striata* Easington (Yorkshire), 2nd November.



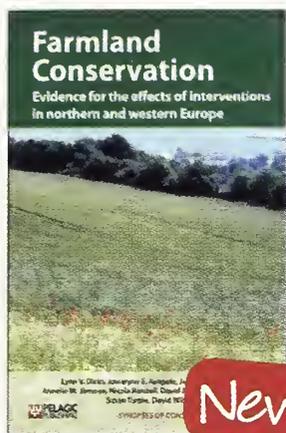
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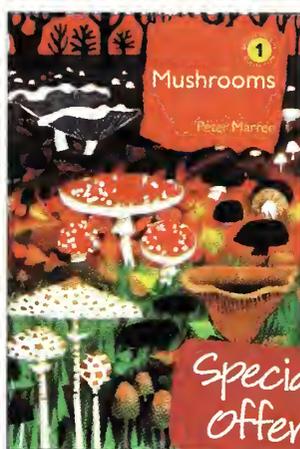
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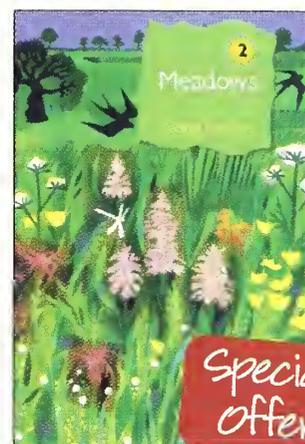
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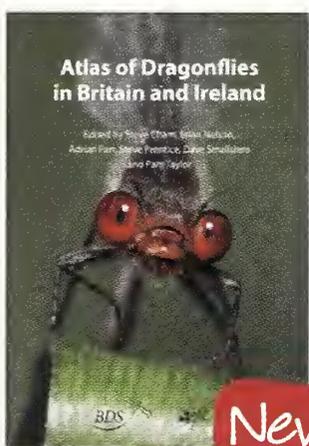
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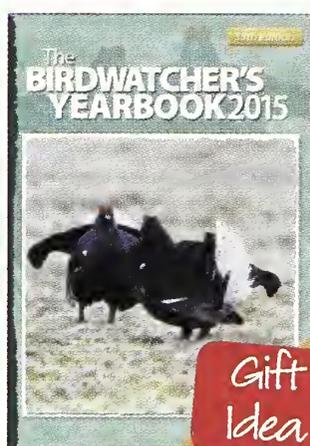
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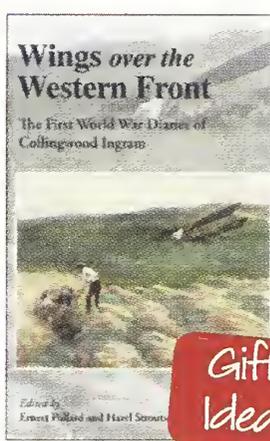
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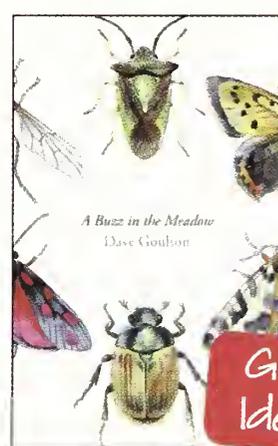
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