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'Northern Bullfinch' invasion

Population estimates

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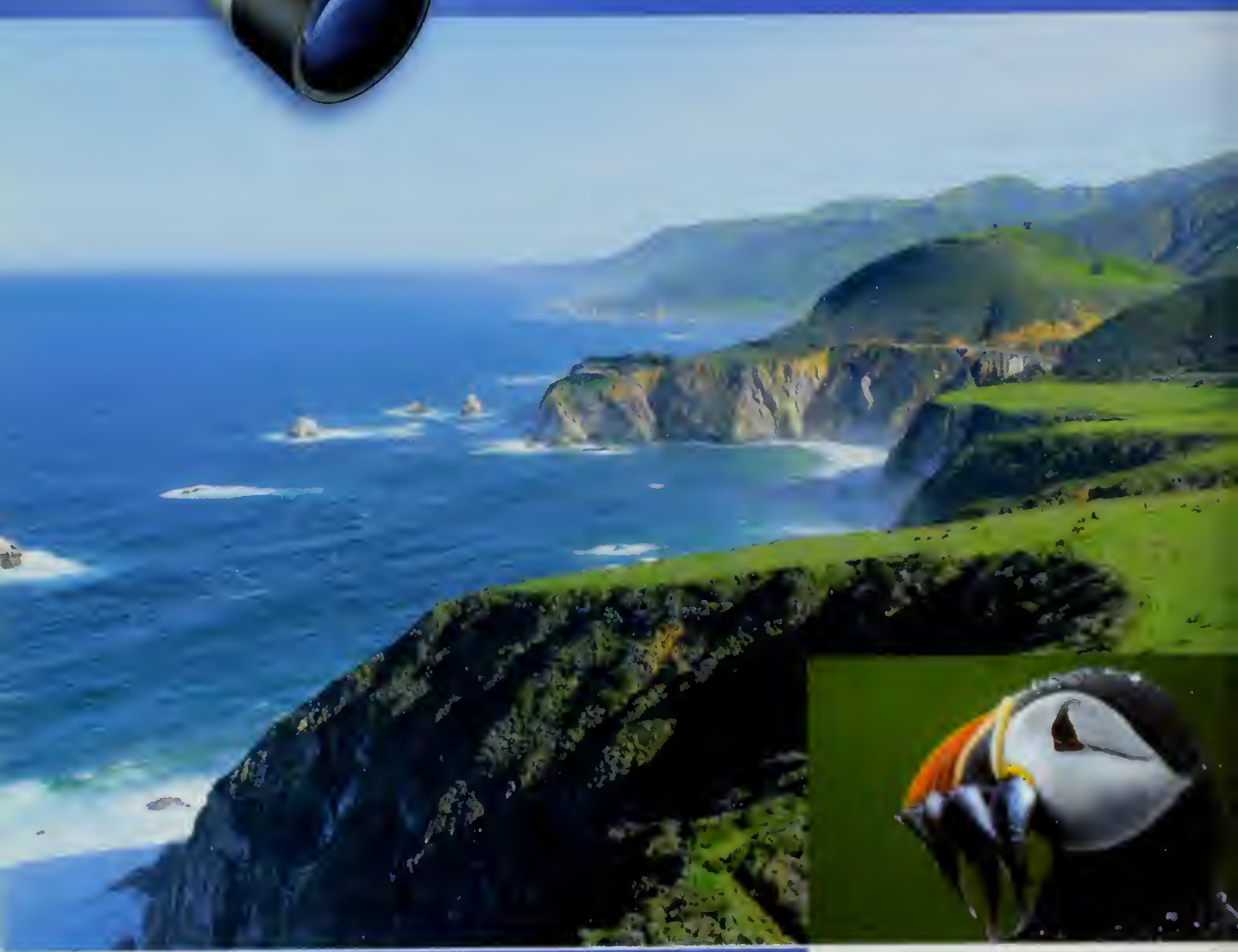

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The 'Northern Bullfinch' invasion of autumn 2004

Mike G. Pennington and Eric R. Meek

Alan Harris

ABSTRACT A record invasion of 'Northern Bullfinches' *Pyrrhula pyrrhula pyrrhula* occurred in Britain in autumn 2004. It also affected many other parts of Europe with birds being recorded as far afield as Iceland, Ireland, Italy and Bulgaria. As well as in Britain and Ireland, record numbers were seen in parts of Scandinavia and several countries in central and eastern Europe. Field identification of 'Northern Bullfinches' is difficult, as there is no single diagnostic feature. However, trapped birds are easily separable using biometrics (particularly wing length). Many, but not all, birds in the 2004 influx were giving a distinctive call, which became known as the 'trumpet call'. This call is not diagnostic of Northern Bullfinch, as birds over most of the range of this subspecies give a call hardly distinguishable from that of 'British Bullfinch' *P. p. pileata*. Although the 'trumpet call' was unfamiliar to most observers and attracted much attention, it was soon established that birds giving such a call had been recorded in northern and western Europe before. Speculation on the birds' origin was widespread, and research so far has suggested that European Russia is the most likely source (a recording from the Komi Republic matches the 'trumpet' call), although others, possibly lingering from previous influxes, have been heard farther west in the breeding season.

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In autumn 2004, large numbers of Bullfinches *Pyrrhula pyrrhula* began moving through northern Europe. Although the numbers were remarkable in themselves, it was the unusual and frequently given calls of these birds which aroused most interest. This call was soon dubbed the 'trumpet call' in many countries, and debates raged on message boards and mailing lists about its significance, and the origins of the birds themselves; some observers began to refer to them as 'Siberian' birds or suggested that they belonged to an 'eastern race'. It soon transpired that some of the claims being made were unfounded, but it also became clear that there were several intriguing aspects of the autumn movement, and that there are still many things to discover even about a common and familiar species such as the Bullfinch. It is worth remembering that, unlike the situation with other irruptive northern European species, the reasons for influxes of Bullfinches into western Europe are largely unknown (Clement *et al.* 1993; Cramp & Perrins 1994), although they are presumably related to failures of an important seed crop(s) used as a food source. Several correspondents suggested that Rowan *Sorbus aucuparia* berries were an important autumn food source in their area, so perhaps high population levels following a good breeding season in a poor Rowan-crop year may be the trigger for movements.

Information on the scale of the 2004 influx is presented here, showing it to be the largest on record in Britain and Ireland, as it was in several other parts of Europe. The identification of Bullfinch races is discussed, given the widespread debate on field characters, although the results are inconclusive. The debate on whether or not the 'trumpet' calls heard in 2004 were as unusual as was first suspected, and the presumed origins of these 'trumpet' callers are also discussed. Relevant background information is given to put the 2004 influx in context.

Another interesting aspect of this influx was the amount of information that was posted on websites within a day or two of the actual sightings. The public-access record system in Sweden (Artportalen) and BirdGuides in Britain provided much useful information, but several other sites were used. Appeals for information were also made in *British Birds* and on several internet mailing lists, the internal AERC (Association of European Rarities Committees) mailing list proving particularly useful. Other information came from contacts established during the research, an effort being made to check data with a local contact wherever possible. The extensive range of sources is indicated in the acknowledgments list.

Bullfinch distribution and taxonomy

Bullfinch is the only widespread species of the genus *Pyrrhula*, which includes five other, Asian, species. Sometimes known as Eurasian or Common Bullfinch, it breeds principally in woodland in the boreal zone of the Palearctic, although it may be found farther south in Europe, where it breeds to sea level in scrub and

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Fig. 1. Breeding range of Bullfinch *Pyrrhula pyrrhula* based on Clement *et al.* (1993). The exact range of the easternmost races is particularly uncertain.

Arie Ouwerkerk

Arie Ouwerkerk

1 & 2. 'Northern Bullfinches' *Pyrrhula p. pyrrhula*, Terschelling, Friesland, The Netherlands, December 2004. These birds, known to be 'trumpet-callers', were photographed during the autumn 2004 invasion; hopes that they might show distinctive plumage features as well as having the distinctive call have not been upheld by research to date.

woodland in temperate areas, as well as in mountains as far south as northern Iberia, Italy and the Balkans. There are also southerly populations in the Caucasus Mountains, southwest Asia and Japan.

Clement *et al.* (1993) recognised ten races (fig. 1), three of which are sometimes separated as distinct species: male 'Baikal' or 'Grey Bullfinch' *P. (p.) cineracea* has grey underparts and lacks pink on the cheeks; male 'Japanese Bullfinch' *P. (p.) griseiventris* (including '*rosacea*' and '*kurilensis*', usually considered synonymous with *griseiventris*) has pink cheeks, with the rest of the underparts grey or faintly tinged pink; while 'Azores Bullfinch' *P. (p.) murina* shows no sexual dimorphism, and both sexes have a buffish rump. The remaining seven races are extremely similar and variation is slight, involving mainly size and subtle tones of plumage. The nominate race breeds over the great majority of the species' range but there are three other races in western Europe: *iberiae* in northern Iberia, *pileata* in Britain and Ireland and *europoea* in western continental Europe. Two other races, '*coccinea*' and '*germanica*' are usually subsumed within *europoea* and *pyrrhula* respectively, but they are indicative of the fact that there is no clear division between *europoea* and the nominate race. In southwest Asia, *rossikowi* (including '*paphlagoniae*') breeds in northern Turkey and the Caucasus and *caspica* is found in northern Iran. The only pink-breasted eastern race is *cassinii*, which breeds in far-eastern Siberia.

Hugh Harrop

3. Male 'Northern Bullfinch' *Pyrrhula p. pyrrhula*, Lerwick, Shetland, October 2004.

Movements of Bullfinches

Bullfinches may be found in breeding areas in western Europe throughout the year, but several races are migratory. In the eastern Palearctic, *cineracea*, *cassinii* and *griseiventris* are all migrants and, for example, *cassinii* has been recorded in Japan and Alaska, while *cineracea* has wandered as far as Korea (Clement *et al.* 1993). In western Europe, there are two fairly sedentary races: *iberiae* in northern Iberia is believed to undertake mainly altitudinal movements, and *pileata* in Britain and Ireland is thought to be highly sedentary as most British-ringed birds have been recovered within 20 km of where they were ringed (Summers 1979; Wernham *et al.* 2002). There have been some longer-distance recoveries of *pileata*, however, nearly all in the 1960s when the population level was high. These included five movements to or from the Continent, some of which could have involved the western European race *europoea* (which is not officially on the British List) and which is thought to be largely sedentary but may undertake movements of up to 500 km (Cramp & Perrins 1994).

The most migratory subspecies is the nominate, colloquially known as 'Northern Bullfinch' in Britain. The northernmost breeding areas of this race are abandoned in winter, when the range expands southwards, especially in central Asia. Northern Bullfinches are also eruptive and invasions are recorded regularly in Scandinavia, although whether these involve birds from within Fennoscandia or beyond is not always clear. Ringing data suggest that relatively few leave Fennoscandia and most long-distance movements established from ringing have been to/from central Europe (Cramp & Perrins 1994; Niklas Lindberg pers. comm.). There was only one ringing recovery linking Britain and Scandinavia prior to 2004: a bird ringed in Scotland in 1994 and recovered in Sweden in 1997 (Wernham *et al.* 2002). In Denmark, generally regarded as being on the boundary of the breeding range of Northern Bullfinch, sporadic irruptions occur fairly regularly, the most recent being in 1977, 1980, 1981, 1986, 1990, 1994 and 1996 (Lausten & Lyngs in Bønlokke-Pedersen *et al.* in prep.).

Irruptions of Northern Bullfinches have been recorded in western Europe since the nineteenth century: on Helgoland, Germany, from 1847 (Gätke 1895), in Orkney since 1809 (Booth *et al.* 1984) and Shetland since 1863 (Pennington *et al.* 2004). Although these early British irruptions were not confirmed as involving the nominate race, subsequent observations would suggest that this was highly likely. The first British specimens of Northern Bullfinch were obtained from Lothian in 1884 (Baxter & Rintoul 1953) and Yorkshire in 1894

(Saunders & Clarke 1927). In recent years, Northern Bullfinches have been recorded in Britain almost annually, but the great majority have been in Shetland or Orkney. In Shetland, for example, records have been annual since the 1960s with the largest influxes including a 'remarkable visitation' in 1910, 'flocks' in 1934, a large influx in 1968, and invasions of between 80 and 150 individuals in 1988, 1999 and 2001 (Pennington *et al.* 2004). The largest numbers recorded in Britain prior to 2004 were in 1994, when there were about 1,000 in Britain, almost half of which were in Shetland (Riddington & Ward 1998). It is interesting to note that the 1994 invasion was the only one to coincide with those recorded recently in Denmark (see above). However, in areas of Britain where the race *pileata* breeds, there is still considerable caution about identifying Northern Bullfinches, and several counties accept only biometric evidence. A bird trapped near Oxford in January 1964 is one of the few accepted records from inland England before the 2004 invasion (Newton 1972) and some recent assessments of its status have been extremely cautious (e.g. Wernham *et al.* 2002).

Occasionally, Bullfinches may be seen well outside their range and there are records from Iceland, Gibraltar, Morocco, Tunisia, Malta and Sicily (Clement *et al.* 1993). It might be assumed that these involve Northern Bullfinches, but Wardlaw-Ramsay (1923) referred the African records to the race *europoea*, while there were records of apparent *iberiae* on the move in 2004 (see below).

Identification of Northern Bullfinch

Northern Bullfinches may seem distinctively 'large and bright' when encountered on a remote offshore island, but it is not always easy to be confident about such subjective features. This has led to a whole suite of characters being suggested but, unfortunately, none seems to be diagnostic. The following section discusses identification in comparison with British *pileata*, but similar conclusions have been drawn in The Netherlands in comparison with *europoea* (Neijts 2005). As *europoea* is intermediate between nominate *pyrrhula* and *pileata*, it follows that separating *europoea* from British birds would be even more difficult.

Ageing and sexing

Once moulted out of juvenile plumage, all European races of Bullfinch can be sexed on breast colour. First-winters of all races closely resemble adults and can be aged only by retained juvenile feathers, usually the carpal covert and alula coverts, but occasionally by other feathers, including the greater coverts. These have ill-defined greyish-brown tips, compared with the greyish-white tips and outer edges of adult feathers (Svensson 1992). Retained juvenile greater coverts are relatively easy to see in the field but are not present on all first-winters.

Size

There is marked geographical variation in size in Bullfinches in Europe. For both sexes there is virtually no overlap in measurements between nominate *pyrrhula* and the smaller races, and

Martin Garner © NHM, Tring

4. Males of two 'Northern Bullfinches' *Pyrrhula p. pyrrhula* (top) and two British Bullfinches *P. p. pileata* (below). The larger size, 'cleaner' plumage and more extensive white areas on Northern Bullfinch are all good pointers, but these features (especially plumage characters) can be rather subjective when used in the field.

Martin Garner © NHM, Tring

5. Females of two British Bullfinches *Pyrrhula p. pileata* (top) and two 'Northern Bullfinches' *P. p. pyrrhula* (below). Size is the clearest differentiating feature, but although the northern birds are slightly greyer, the camera flash has probably made the colour differences less noticeable, a reminder of how light conditions can affect colour perception.

wing length is diagnostic (Cramp & Perrins 1994). On average, Northern Bullfinch is 25–40% heavier and about 10–12% longer in wing and tail compared with *pileata*. Northern Bullfinch is clearly a big bird and, while the difficulty of establishing this in the field should not be underestimated, size is often the first thing that strikes an observer; several of those who reported Northern Bullfinches in Britain in this influx compared their size with Hawfinch *Coccothraustes coccothraustes* or Waxwing *Bombycilla garrulus*! While these camparisons may be exaggerated, Northern Bullfinch does have 'presence'.

Bill size is often said to be distinctive, with the bigger bill of Northern Bullfinch 'set into' the head, rather than 'stuck on' as on British birds; furthermore, the bill is wide, covering two-thirds of the breadth of the head. These differences seem subtle, however, and measurements overlap (Cramp & Perrins 1994).

Colour of males

Geographical variation in colour is less obvious and subject to individual variation, while the vagaries of describing subtle differences in colour tone, the variation in light conditions, and the different methods of taking, processing and publishing photographs all add to the difficulties. Male Northern Bullfinches are typically described as being brighter, purer pink on the breast: a bright candy- or 'Andrex toilet roll'-pink. The mantle is a pure, slightly bluish grey, the boundary between the pink cheeks and grey mantle is sharply defined, and the pink cheeks may be more extensive (although this seems to vary according to posture). In 2004, some observers believed that at least some males were a slightly brighter, sharper red than those seen in previous irruptions but others trapped in Shetland had a more salmony-orange colour (caused by buffish edges to some breast feathers). In comparison, British birds are often slightly discoloured on the breast, with an orange tone to the pink, while the back is brownish-grey and the boundary between the grey back and pink cheek is frequently less well defined. None of these differences seem to be consistent, however, and British birds become brighter and cleaner in spring owing to wear. That Northern Bullfinches do have different coloration from *pileata* is confirmed by the experiences of two colour-blind observers (one of these being ERM), who stated that they were often unable to sex British Bullfinches, but who had no problems with sexing Northern Bullfinches in the 2004 invasion.

Colour of females

Female Northerns are much more distinctive in their coloration than males. Whereas British birds are rather grubby, muddy-brown above and tan-brown below, Northern females are more delicate shades of brownish-grey, often with a lavender wash to the underparts, but

Arnoud B. van den Berg

6. Male 'Northern Bullfinch' *Pyrrhula p. pyrrhula* (left) and male Central European Bullfinch *P. p. europoea* (right), The Netherlands, November 2004. This photograph emphasises the marked difference in size. The large white primary patch of Northern Bullfinch looks distinctive here but the feature is variable and white can be seen in the primaries of the other bird, even though it is in shadow. In Europe, *pyrrhula* and *europoea* grade into each other, although in the west they are closer in appearance to British birds.

with little contrast between the upperparts and underparts. On both races, the nape may be greyish, but this seems to be more distinct on Northern birds. Some female Northerns are almost ghostly grey and, while it has been suggested that this may be age-related, this seems unlikely given what is known about moult of other finches.

Extent of white vent and belly

Many observers comment on the extensive white belly of Northern Bullfinch, but comparing the extent of the white with the position of the legs does not seem to show any measurable difference between the races. The illusion is, perhaps, due to the large size of the bird, which means that the area of white is physically larger, or the fact that the white is slightly cleaner and so contrasts more noticeably with the rest of the plumage.

Extent of white rump

Northern Bullfinches are also said to have a larger white rump than British birds (e.g. Hayman & Hume 2002). Northern Bullfinches do have the habit of fluffing up their feathers at rest, which can make the white rump seem very extensive. In other postures, however, comparing the extent of white against the tertials does not produce any consistent difference.

White in primaries

There are obvious white edges to the primaries of Northern Bullfinches but, while it seems that this feature may be apparently absent on some individuals of the races *pileata* and *europoea*, others can show as much white as Northern Bullfinches, even as juveniles. Numbering primaries ascendantly (from the outside), the leading edge of P2 is white, although this is often hard to see as it is the outer edge of the wing (since P1 is vestigial). Examination of a small sample of Northern Bullfinches on Fair Isle, Shetland, showed that white or off-white was also present around the top of the emargination on at least P4–5, but also on P3 on most males and some females, and on P6 on some males (Deryk Shaw pers. comm.).

White in tail

Several observers noted that some Northern Bullfinches seen in 2004 had white areas in the tail. This added to speculation that they were from a 'different population', because Svensson (1992) referred to it as a feature of 'eastern races'. The white or pale area is usually an oval on the inner web of the outermost tail feather, occasionally on the outer web as well, and most obvious from below. In fact, it is already established that white in the tail is within the known variation of Northern Bullfinches; a study found that 18% of males and 26% of females in Sweden and Finland showed some white in the tail (Cramp & Perrins 1994). In another study, north of Lillehammer, central Norway, 17–20% of a sample of over 1,100 Bullfinches ringed between 1995 and 2003 had some white or pale brown in the tail, and this proportion did not

Deryk Shaw

7. Primary feathers of first-year female 'Northern Bullfinch' *Pyrrhula p. pyrrhula*, Fair Isle, Shetland, October 2004. Note the white leading edge to the outermost feather and the clear white extending to the sixth outermost primary (the first primary is minute and not visible in the photograph). Although often more distinct in Northern Bullfinch, this feature may be shown by all races, in Europe at least.

David Tipling/Windrush

8. 'Northern Bullfinch' *Pyrrhula p. pyrrhula*, Oulu, Finland, February 2004. Even some observers in Scandinavia were surprised to see white in the tail of some Bullfinches, but this is within the known variation of the species.

Micky Maher

9. Male 'Northern Bullfinch' *Pyrrhula p. pyrrhula*, Unst, Shetland, November 2004. Although Northern Bullfinches typically have a markedly broad white wing-bar, this individual demonstrates just how variable the feature can be.

vary according to age or sex, or from year to year (Dag Fjelstad pers. comm.). Examination of specimens in the NHM, Tring, showed that the feature was also present in British *pileata*, although in just two out of 30 specimens (Martin Garner pers. comm.).

Wing-bars

Northern Bullfinches usually have highly conspicuous white wing-bars on the tips of the greater coverts, up to 1 cm in width (Cramp & Perrins 1994). Although these are usually broader and whiter than on British birds, the colour and width of the greater-covert tips may vary individually (Svensson 1992). Some British Bullfinches may have very broad wing-bars and, conversely, Northern Bullfinches may have narrow wing-bars: one male on Unst, Shetland, in 2004 had wing-bars no more than 2 mm wide. Both races may also show a greyish wash to the wing-bar. Another feature that initially seemed useful in identifying Northern Bullfinches is the shape of the white on the greater-covert tips. Whereas most British Bullfinches show a more or less straight boundary between the (inner edge of the) white and the rest of the feather, on many Northern Bullfinches it is more 'U'-shaped, extending up the edges of the feather. This tends to give the upper edge of the wing-bar a 'saw-toothed' shape. An examination of specimens in the National Museums of Scotland found that this

Deryk Shaw

10. Female 'Northern Bullfinch' *Pyrrhula p. pyrrhula*, Fair Isle, Shetland, October 2004. As well as showing the typically clean, greyish tones of the female, this bird also demonstrates the 'fluffed-up' posture often adopted by Northern Bullfinch, which can make the white rump seem unusually extensive.

feature was reasonably consistent and the only specimen with this feature that was not labelled as nominate *pyrrhula* was a specimen of '*coccinea*', which is currently subsumed under *europoea*. In the NHM collection, however, many nominate *pyrrhula* did *not* show the saw-toothed shape; and this character was most marked in eastern Siberian specimens (Martin

Garner pers. comm.). An apparent British juvenile is depicted in Newton (1972) with a 'saw-tooth' wing-bar. Although this feature may deserve further investigation, the preliminary findings are not promising.

Behaviour

In mainland Britain, observers have often noted that Northern Bullfinches encountered at coastal stations are remarkably tame and approachable, unlike native birds, and were often observed feeding on berries, such as those of Rowan, whitebeam *Sorbus* or Elder *Sambucus nigra*, or on seeds of Sycamore *Acer pseudoplatanus* or birch *Betula*. These are typical food sources in Scandinavia, but unusual in Britain, where seeds of tall herbs are preferred in autumn (Newton 1972). The tameness may be due simply to being in a strange habitat. At Whitburn, Durham, for example, it was noted that Northern Bullfinches in 2004 were difficult to find in areas with plenty of cover (Brian Unwin pers. comm.), while the paucity of inland sightings, even in 2004, suggests that Northern Bullfinches are no tamer than British birds in woodland.

Calls

It is important to stress that the unfamiliar 'trumpet' call heard from many Northern Bullfinches in 2004 is not a definitive identification feature, and is not typical of all Northern Bullfinches. The typical call given by Scandinavian birds is similar to the soft, pure, whistled 'peeu' or 'phew' given by British birds; but slightly louder, more insistent, slightly deeper-pitched and more clipped (Catley 1994; Garner 2004), and usually transcribed as 'dyuh' (Jonsson 1992, 2004) or, by one British observer, as 'phoep' (Newsome 1995). Northern Bullfinches recorded in Britain in the past have usually given this call. To most ears the differences between these calls and those of British birds are extremely subtle and they are most likely to be noticed by observers familiar with calls of both races.

In describing the 'trumpet' call heard in 2004 as a 'toot' rather than a 'peeu', birders naturally sought for comparisons with other species, Trumpeter Finch *Bucanetes githagineus*, Two-barred Crossbill *Loxia leucoptera* and even Red-breasted Nuthatch *Sitta canadensis* being those usually mentioned. Comparisons were also made with man-made sounds such as a 'toy trumpet', a 'phone ringtone', a 'far-away train horn' or a 'rather electronic version of a car horn'. In The Netherlands, observers began referring to the two calls as 'flute' and 'trumpet'. The unfamiliar call was probably best described as a short and discordant 'toot', rather like the sound produced by a cheap, plastic toy harmonica, with a distinct timbre, variously

Richard Brooks/Windrush

11. Male British Bullfinch *Pyrrhula p. pileata*, Norfolk, December 1996. The slightly less 'pure' pink breast, fairly indistinct boundary between the pink and grey at the rear of the cheeks, small 'stuck-on' bill and straight upper edge to the greater-covert bar are the best pointers to the racial identity of this individual, but none of these features are diagnostic.

Alan Petty/Windrush

12. Female British Bullfinch *Pyrrhula p. pileata*, Kent, April. This individual shows characteristic contrast between the greyish-brown upperparts and pinkish-brown underparts, which can be even more obvious in some British individuals. Note, also, that this British bird does show an obvious white patch in the primaries.

described as 'nasal', 'reedy' or 'tinny', but the wide range of descriptions and comparisons used by observers only served to emphasise the variations in human perception. John Furse, a birder who is also a musician, described the call as being 'sadder' than the normal call, its unusual quality being due to the fact that 'it consists of two notes, roughly a major 3rd apart'. One Finnish recording was transcribed by John Furse as A flat/C while two Finnish, three Dutch and a British were A/C sharp. The discordancy audible to humans occurs because the notes are not exactly a third apart, with the lower note often slightly sharp, giving an interval which is not a true major third.

Northern Bullfinches in Shetland in 2004 were also heard giving two other calls. One was a continuous soft piping given by feeding flocks. When such a flock was disturbed and they gave flight, this call rose to a crescendo, when it sounded uncannily like the call of male Eurasian Teal *Anas crecca*! This call is so loud that it was suggested as diagnostic of Northern Bullfinch, but it is clearly a slightly louder and more insistent version of the 'bit' short call (no. 2 in the voice section in Cramp & Perrins 1994), which would seem to be part of the repertoire of all races. The other call heard in 2004 was a short, harsh 'kyaah' when reacting to other Bullfinches; this is one of the interactive and aggressive calls given in Cramp & Perrins (1994).

Summary of the 2004 influx in Europe

Fennoscandia and the Baltic States

The earliest signs of Bullfinches on the move were in mid September, when small numbers began to appear around the shores of the Gulf of Bothnia, in both Finland and Sweden. The first large movements were reported from the Finnish coast and, on 23rd September, there were already impressive numbers reported from sites south of Oulu, in northern Finland, with 2,840 passing Pyhajoki and 2,500 at Kalajoki (Jyrki Normaja pers. comm.).

In southwest Finland, record numbers began

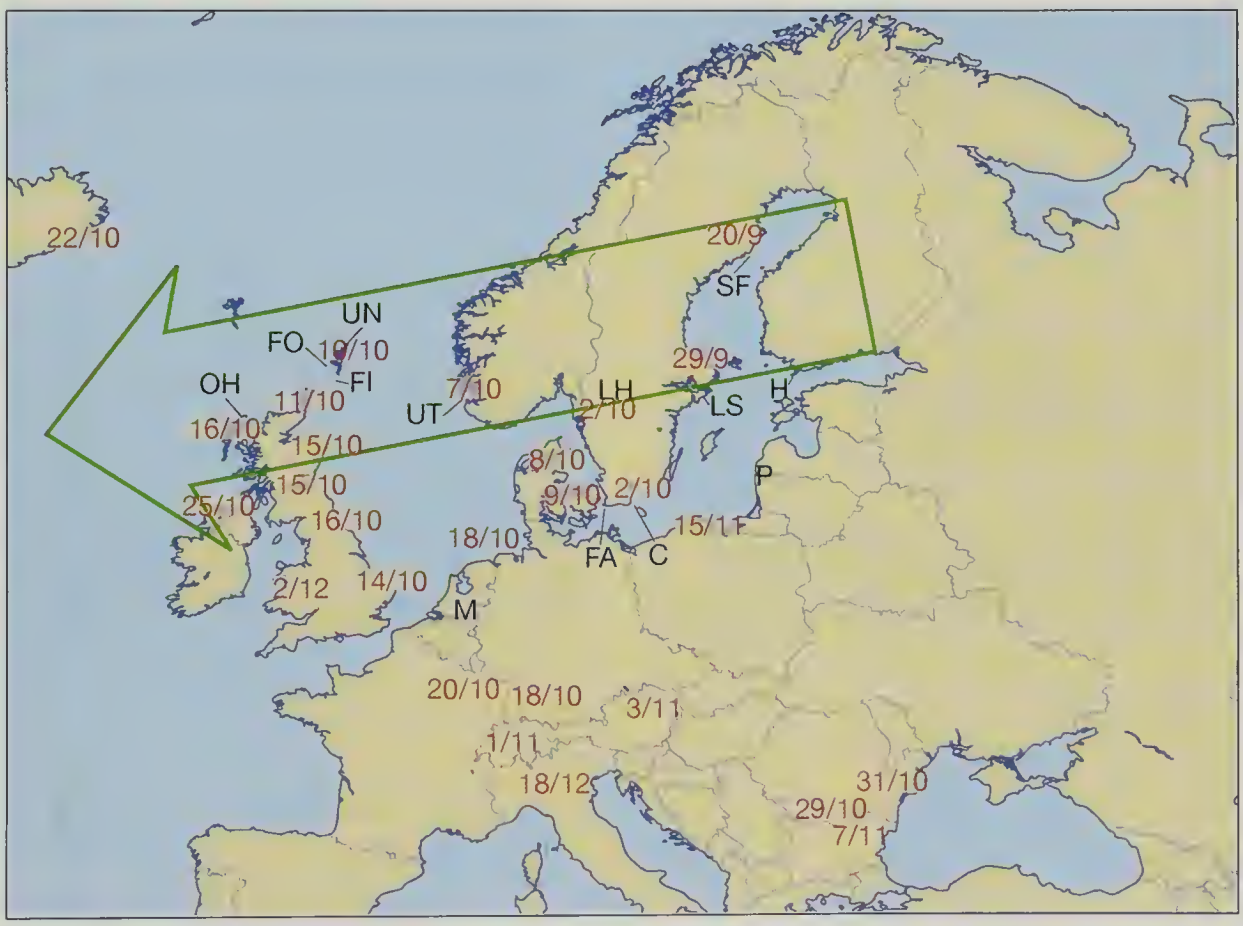

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Fig. 2. Map of Europe showing main sites mentioned in text. Red figures give dates of first sightings of Northern Bullfinches *Pyrrhula p. pyrrhula* at selected sites. The green arrow shows the direction of the initial movements in October, and most sites within this arrow recorded record totals. A later movement seems to have gone through southern Scandinavia and then south or even southeast. The main sites mentioned in the text and figs. 3–15 are marked; H = Hanko (Finland), SF = Stora Fjäderägg, LS = Landsort, LH = Ladholmen, FA = Falsterbo (all Sweden), C = Christiansø (Denmark), UT = Utsira (Norway), P = Pape (Latvia), M = Mulderskop (The Netherlands), UN = Unst, FI = Fair Isle, FO = Foula (all Shetland), OH = Outer Hebrides.

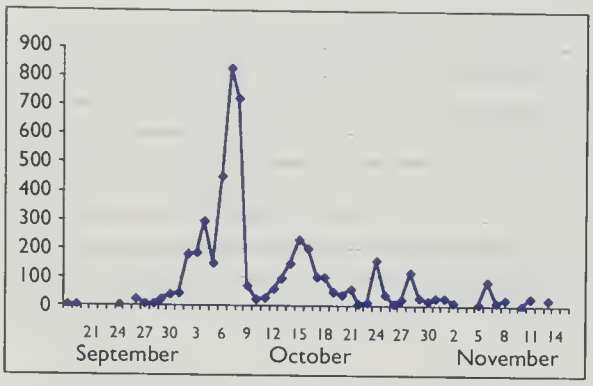

Fig. 3. Daily counts of Northern Bullfinches *Pyrrhula p. pyrrhula* at Hanko Bird Observatory, Finland, in autumn 2004. Data courtesy of Hanko Bird Observatory.

to arrive in late September and built up to a peak around about 7th–9th October. At Hanko Bird Observatory, situated on the peninsula which forms the southernmost part of Finland, peak passage was on 7th October when 827 birds were recorded (fig. 3). Several other migration watchpoints recorded between 400 and 1,200 birds per day and there was a record count of 2,250 birds at Uusikaupunki on 9th October, with a record inland total of 766 recorded at one site in just over three hours (Jyrki Normaja pers. comm.). In comparison, in previous years in southwest Finland, the highest daily counts have only rarely exceeded 300 and the previous one-day record was of 2,000 in 1995 (Lehikoinen *et al.* 2003). The migration in southwest Finland was much earlier than usual as, in most years, only a few stragglers have arrived at the bird observatories at Jurmo and Hanko by the end of September, and the main passage rarely starts before the second week of October.

In Sweden, the web-based record system (http://www.artportalen.se) showed that large numbers had already begun to reach the east coast by the end of September. At Stora Fjäderägg Bird Observatory, an island offshore from Umeå, in northern Sweden, the first birds had arrived by 20th September (fig. 4); 200 were seen and no fewer than 70 were ringed on 27th. Stora Fjäderägg was one of several northern and central Swedish sites which accumulated record totals during the autumn; the annual ringing total of 919 there was nine times the average since 1984 and compared with a previous record of 248 in 1993 (Niklas Lindberg pers. comm.). In late September, several observers on the east coast were reporting birds arriving from the east; 1,000 flew SW and 173 were ringed on the island of Svenska Högarna, just

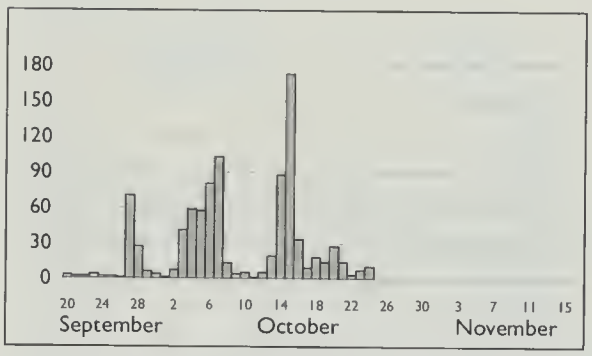

Fig. 4. Ringing totals of Northern Bullfinches *Pyrrhula p. pyrrhula* at Stora Fjäderägg Bird Observatory, Sweden, in autumn 2004. The site was unmanned from late October. Data courtesy of Stora Fjäderägg Bird Observatory.

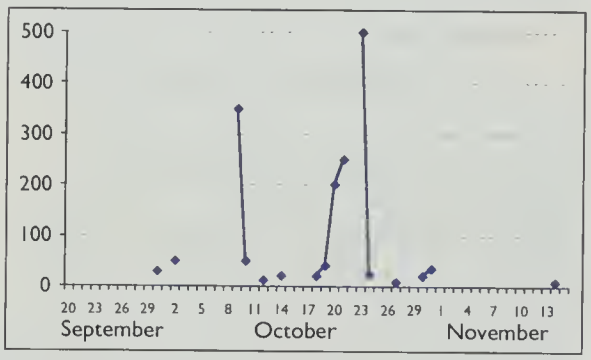

Fig. 5. Daily counts of Northern Bullfinches *Pyrrhula p. pyrrhula* at Landsort Bird Observatory, Sweden, in autumn 2004. The site was largely unmanned from late October. Data from http://www.artportalen.se

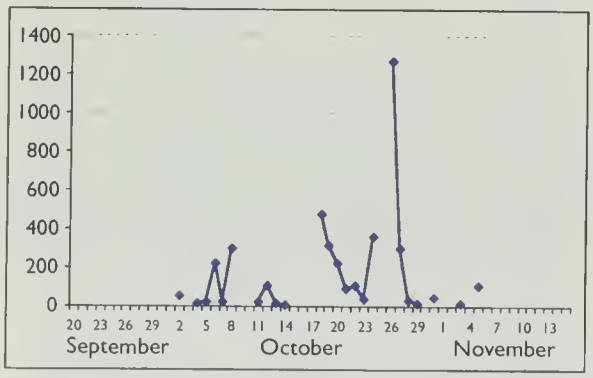

Fig. 6. Daily counts of Northern Bullfinches *Pyrrhula p. pyrrhula* at Ladholmen, Sweden, in autumn 2004. Data from http://www.artportalen.se

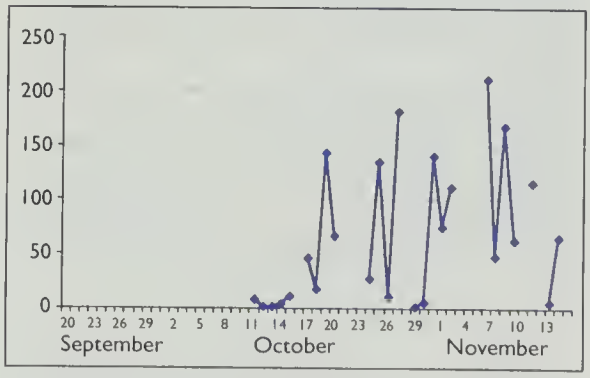

Fig. 7. Daily counts of Northern Bullfinches *Pyrrhula p. pyrrhula* at Falsterbo, Sweden, in autumn 2004. Data from http://www.artportalen.se

northeast of Stockholm, on 30th September.

Large numbers arrived in eastern Sweden in early October, at the same time as numbers peaked in southern Finland. Over 1,000, possibly as many as 2,000, passed SW over the tiny island of Bjorn, northeast of Uppsala, on 6th October (Ulrik Lotberg pers. comm.), on which date 500 were also recorded at Eggegrund Bird Observatory; 1,500 were counted over Norrköping, southwest of Stockholm, on 7th October, while data from Stora Fjäderägg and Landsort Bird Observatories show a clear peak between 7th and 9th (figs. 4 & 5). Birds moved inland quickly and there were 300 at Ladholmen, a peninsula on Lake Vänern in central Sweden, on 8th (fig. 6). This distinctly westerly movement, through central Sweden, was noted by several observers, who often remarked that birds were moving in a more westerly or southwesterly direction than usual.

Another wave moved through Sweden from mid October, as can be seen from figs. 4–7, although data from Hanko Observatory in Finland shows only a slight peak at this time (fig. 3). In eastern Sweden, there was another distinct peak at Stora Fjäderägg on 14th–15th, although the peak at Landsort was a week later and at inland sites, such at Ladholmen, the peak was a few days later again, with 1,300 counted there on 27th October.

In southern Sweden there was a different pattern of occurrence. Bullfinches in the vanguard arrived there in late September with strange-calling birds reported from the islands of Gotland and Öland by the end of the month, but the numbers reported subsequently, including those at Ottenby Bird Observatory, were unexceptional. In Skåne, the southernmost province of Sweden, there was an arrival from 9th October but, again, numbers were unexceptional and it was the calls that drew most attention. At Falsterbo, the first wave which moved through Sweden was barely registered, but there was a series of further waves from late October, with the highest numbers of the autumn not until early November; the final total for the autumn was below average, however (fig. 7).

At Christiansø Bird Observatory, on an island between Bornholm and southern Sweden (but actually part of Denmark), the pattern of occurrence was similar to that at Falsterbo, although the total there was the highest ever, beating the previous record, in 1994. Few were recorded before a large wave on 18th–19th October, with another large passage observed on 1st November, but the observatory was closed by the time the next wave passed through nearby Falsterbo (fig. 8).

Birds arrived in Norway in early October. They reached the island of Utsira, northwest of Stavanger, on 7th October and were seen in high numbers there from 10th. The largest wave passed through on 15th, when there were 500 on the island, while no less than 130 were ringed on 19th October alone. These large numbers soon moved on, however, and although there were a few small peaks before the end of the month, there was no obvious further immigration and the last was seen on 22nd November (fig. 9). Utsira Bird Observatory ringed a record total of 463 Bullfinches in 2004, compared with a previous best of just 24. In the rest of southern Norway, the pattern of occurrence was similar, with numbers peaking in mid October (almost 800 were reported at Jomfruland, in eastern Norway, on 18th October; Vegard Bunes pers. comm.), but numbers declined quickly and most had left by late November. The movement through Norway was restricted to the south of the country with,

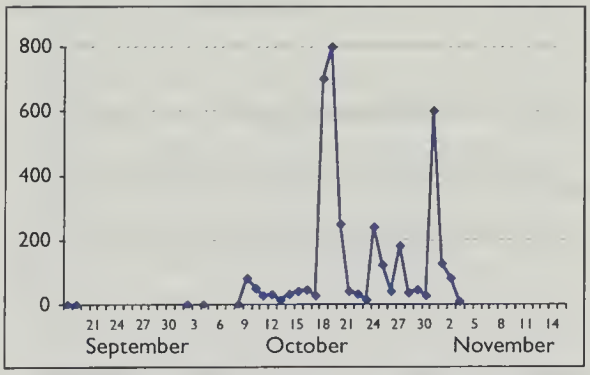

Fig. 8. Daily counts of Northern Bullfinches *Pyrrhula p. pyrrhula* at Christiansø Bird Observatory, Denmark, in autumn 2004. The site was unmanned from early November. Data from http://www.chnf.dk

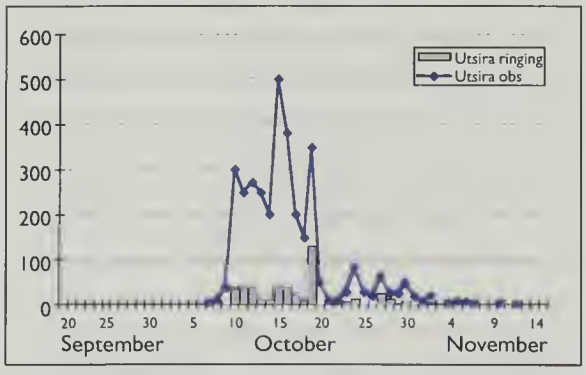

Fig. 9. Daily counts and ringing totals of Northern Bullfinches *Pyrrhula p. pyrrhula* at Utsira Bird Observatory, Norway, in autumn 2004. Data courtesy of Utsira Bird Observatory.

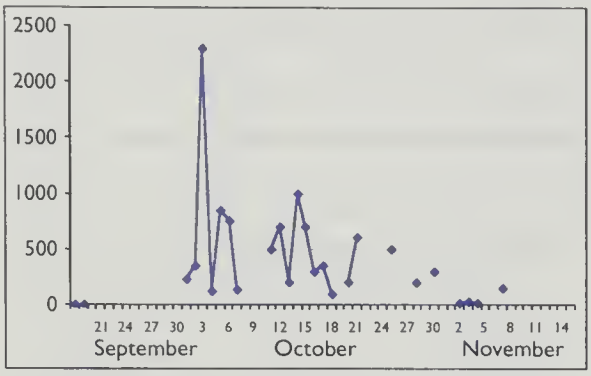

Fig. 10. Daily counts of 'Northern Bullfinches' *Pyrrhula p. pyrrhula* at Pape Bird Observatory, Latvia, in autumn 2004. Data courtesy of Pape Bird Observatory.

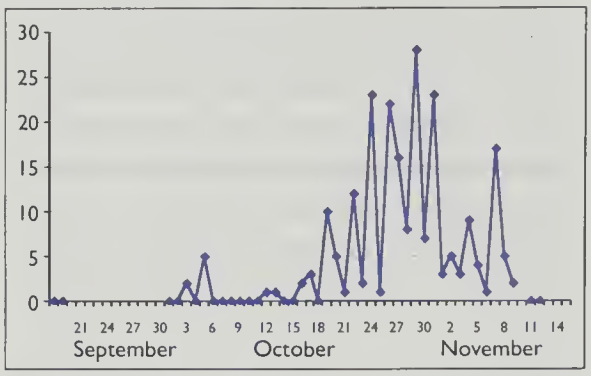

Fig. 11. Daily counts of Bullfinches *Pyrrhula pyrrhula* (all races) migrating over Mulderskop, The Netherlands, in autumn 2004. Data from www.trektellen.nl

for example, none recorded at Tromsø in the far north (Wim Vader pers. comm.).

The situation in the Baltic States is a little unclear. Several observers agreed that passage was earlier than normal, beginning in mid to late September whereas early October would be more normal, but numbers were not exceptional. For example, at Pape Bird Observatory in Latvia, although thousands moved through during the autumn, with a peak of 2,300 on 3rd October (fig. 10), these numbers were not exceptional; the total of just over 10,000 compares with totals of over 33,000 at the same site in 2000 and 43,000 in 1998 (Janis Baumanis pers. comm.).

In Iceland, the first Northern Bullfinches, which were giving 'trumpet' calls, were seen on 22nd October and a total of about 26 was recorded during the autumn, the second-largest influx on record but still much lower than the c. 100 recorded in the winter of 1994/95 (Yann Kolbeinsson pers. comm.).

In Fennoscandia, several sites reported that 'trumpeter' birds predominated in the first arrivals, but the proportion decreased as the autumn progressed, possibly because local populations from within Fennoscandia began moving as the autumn progressed. The pattern was complex, however, and at one site at Lake Vänern in central Sweden observers reported that only 50% of birds were 'trumpeters' in early October but that the proportion increased to 75% at the end of the month. Many 'trumpeter' birds remained in at least southern and central Sweden during the winter, leading to speculation that they might stay and breed, but they nearly all moved on in early spring. In one area northeast of Stockholm they were reported to have disappeared almost overnight on 4th April 2005 but a presumed family party was found in August (Hans-Georg Wallentinus pers. comm.).

Continental Europe

The first few Northern Bullfinches reached mainland Denmark on 8th October (although some were recorded earlier on islands, e.g. Christiansø as discussed above) and birds were widespread and common in Denmark for the rest of the month. In Poland, the first noticeable arrivals on the Baltic coast were not until 16th–18th October when about 25 were recorded at Jastarnia on the Hel peninsula, and a few others were recorded near the Belorussian border at about the same time, suggesting that they had arrived via the Baltic States. Some observers in Poland commented on the atypical calls (Tadeusz Stawarczyk pers. comm.).

None was recorded from Helgoland, Germany, until 18th October when there was an arrival of 37, but over the next three weeks migrating Bullfinches were widely recorded from coastal areas of the southern North Sea, from Denmark to Belgium. Several groups of up to 100 were recorded from coastal sites in Belgium and The Netherlands and many of these were 'trumpeters', although birds giving more normal calls were also heard (these possibly including birds of the local race *europoea*). There were also inland movements, as can be seen from the data from Mulderskop, a Dutch inland migration site near Nijmegen (fig. 11), where calls of both types, normal and trumpet, were heard from birds flying over. Although some birds were moving along the coast in Belgium, this westward movement largely ceased in France, where the first arrivals were in Alsace on 20th October and none was recorded farther west than Pas-de-Calais (Crouzier 2005).

In November and December, groups of 'trumpeter' Bullfinches began to be recorded widely inland in the Low Countries and eastern France. In Belgium, it was noted that larger numbers seemed to be in the east of the country (Xavier Vandevyvre pers. comm.). In France, all reports came from the east of the country, peaking in mid December (Crouzier 2005).

In southern Germany, birds had reached Stuttgart by 18th October and trumpet calls were heard during the last few days of the month as birds passed over Forschungsstation Randecker Maar, an observatory on the northern slopes of the Swabian Alp; others were seen at the Bodensee and at other localities on the Germany/Switzerland border in late October and the first few days of November; and a flock of at least 16 was at the Altmühlsee in Bayern on 24th November. The first 'trumpeters' reached Switzerland on 1st November and a survey by the Swiss Ornithological Institute collated more than 200 records, in groups of up to 20 or more, which peaked in December (Bernard Volet pers. comm.). Swiss records were concentrated north of the Alps and very few penetrated the Alps themselves, although some had reached the Vicenza area of northeast Italy by 18th December (Giancarlo Fracasso pers. comm.).

Farther east, flocks of Bullfinches with 'strange' calls were watched moving south over the River March in the easternmost part of Austria on 3rd November. Also in early November, observers in Hungary reported their biggest-ever irruption, with thousands of birds 'calling differently from the well-known call' being found not only in the mountains and hills but also in the Carpathian lowlands, for example in the Hortobágy. A big invasion was also noted in Slovakia. In Romania, the unusual calls first attracted attention as five or six flocks totalling 70 birds moved south over the Black Sea coast near Constanta on 31st October; 25 were also seen here the following day. Most other records were in Transylvania from late October, with ten at Odorheiu Secuiesc on 5th November, but two had already reached Dragasani, to the south of the Carpathians, by 29th October. Even farther south, in Bulgaria, a 'trumpeter' was seen on 7th November near the town of Shumen in the northeast, the first Bullfinch ever recorded in that area, while two were also seen near Nevsha, to the east, on 16th November and three were seen on 22nd, again at Shumen. The dates of these sightings suggest that many of the birds in central and eastern Europe were part of the final wave of immigrants which passed southwards through southern Scandinavia, as noted at Falsterbo (see above), and after the initial westerly movements earlier in the autumn.

Many 'trumpeter' Bullfinches remained in Continental Europe over the winter, although many of those in northern Germany and The Netherlands moved on once the weather became colder. Interestingly, peak numbers were recorded in both France and Switzerland, at the southwestern limits of the invasion, in December, but where they moved after this is unknown. Many areas reported Bullfinches lingering into March 2005, with, for example, the last in France on 29th March 2005 (Crouzier 2005), but a few others stayed much later. For example, one trumpet-caller was reported in Slovakia, at Prakovce, as late as 17th April 2005 (Phil Palmer pers. comm.).

Summary of the 2004 influx in Britain and Ireland

Records for this section were compiled from as many sources as possible. This may mean that some unauthenticated records are included, and also that some records may have been missed; however, we believe that the broad patterns of occurrence as described in the paper are accurate. It is also worth emphasising that although the first arrivals were nearly all trumpet-callers, not all Northern Bullfinches recorded in Britain gave these calls, although in Shetland it was about two weeks into the influx before any birds giving the normal call were heard.

Autumn (October–November)

The first Northern Bullfinch in Britain was seen on Shetland Mainland on 10th October, on the same day that Utsira received its first large influx. The pattern of occurrence in Shetland is shown quite well by the data from north Unst (fig. 12), with numbers building up from 15th October to a peak on 18th–20th before tailing off. There were at least 125 in north Unst on 20th October and similarly impressive numbers elsewhere in Shetland, including about 100 around Cunningsburgh, south Mainland, on 19th October. The Fair Isle data show a similar pattern, except that the first wave there was followed by another, even larger, wave during 25th–29th October, peaking at 140 on 27th (fig.

13). Although this arrival was noted elsewhere in Shetland (see fig. 12), the short day-length in late October contributed to more limited observer coverage during this midweek period, so counts were relatively low. One bird caught on Fair Isle on 18th October had been ringed at Stora Fjäderägg on 22nd September, one of the first wave of migrants recorded there and the first Swedish-ringed Bullfinch to be recovered in Britain. On Foula, there was a different pattern of observations, with only a small peak in mid month and the highest total being 70 on 24th, just ahead of the next arrival on Fair Isle (fig. 14). It seems likely that this peak marked an exodus of birds from the Shetland Mainland.

In Orkney, the first birds appeared on 11th October, when one was on North Ronaldsay and four were on Eday. A few more appeared on 15th–16th then, on 17th, a total of 43 was recorded, including 25 trapped on North Ronaldsay. Numbers remained high, with 170 bird-days recorded between 18th and 20th, and some suggestion of new influxes on 26th and 30th, tying in closely with observations in Shetland. Eight were present on North Ronaldsay on 3rd November, from which five new birds were trapped, but thereafter there was no arrival of more than one or two at that locality. Elsewhere in Orkney, however, and especially on the Mainland, numbers remained high, probably reflecting better feeding conditions here compared with Shetland or North Ronaldsay, and up to 22 per day were still being recorded throughout November.

Apart from the Northern Isles, the other area to receive large numbers of Northern Bullfinches was the Outer Hebrides. The first arrivals there were on 16th October, with at least 85 in flocks of up to 12-strong the following day, mainly on Lewis, the northernmost island. Good numbers were seen in the Outer Hebrides through October (fig. 15), but the birds gradually filtered southwards through the islands, and by 23rd October there were 35 on Barra, at the southern end of the archipelago. A few other birds also reached western Scotland, where there were records from Coll, Tiree and Islay (all Argyll) and on the Ardnamurchan peninsula, on the west coast of Highland, in late October and early November, with up to eight seen on Coll.

In the rest of Britain, there was an early arrival in Norfolk, on 14th October, then singles in Aberdeen and on the Isle of May, Fife, on 15th October, the same day as the main arrival in Shetland. These were followed by up to 20 at

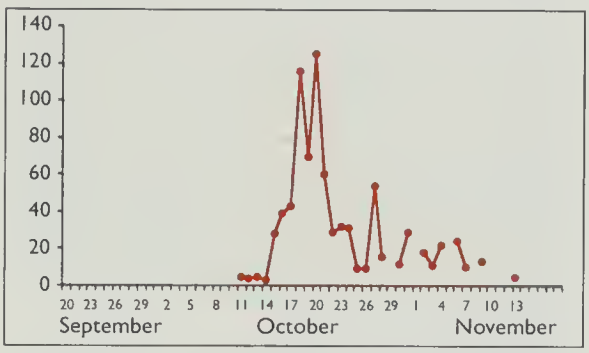

Fig. 12. Daily counts of Northern Bullfinches *Pyrrhula p. pyrrhula* in north Unst, Shetland, in autumn 2004. Data from Unst observers.

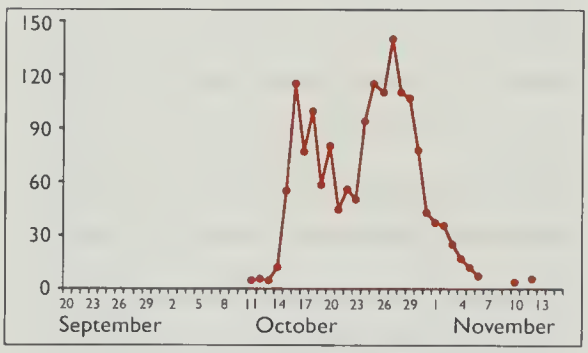

Fig. 13. Daily counts of Northern Bullfinches *Pyrrhula p. pyrrhula* on Fair Isle, Shetland, in autumn 2004. Data courtesy of Fair Isle Bird Observatory.

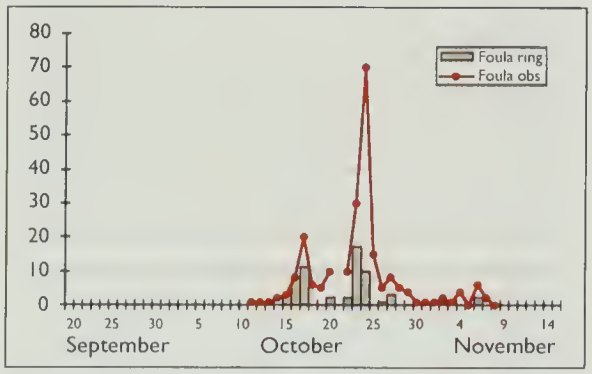

Fig. 14. Daily counts and ringing totals of Northern Bullfinches *Pyrrhula p. pyrrhula* on Foula, Shetland, in autumn 2004. Data courtesy of Tony Mainwood.

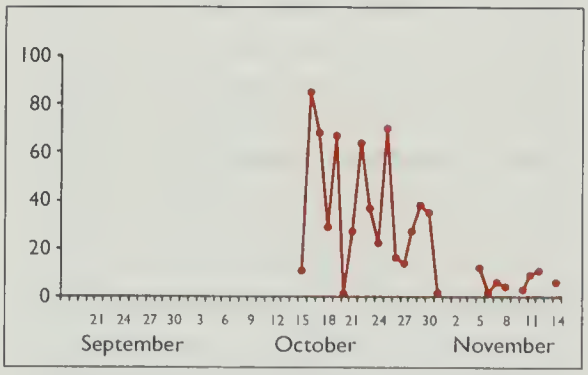

Fig. 15. Daily counts of Northern Bullfinches *Pyrrhula p. pyrrhula* in the Outer Hebrides in autumn 2004. Data courtesy of Andrew Stevenson.

Wick, Caithness, on 16th–18th, the first records in Northumberland and Co. Durham on 16th October and a wider arrival on 17th, which included 22 at Flamborough Head, Yorkshire, and birds as far south as Norfolk (although an unidentified migrant Bullfinch was also seen flying over the Isle of Grain, Kent). The largest numbers on the British mainland were recorded from northeast England, especially Northumberland where most records came from the Farne Islands and Holy Island, there being at least ten at the latter site on 21st October. Nearly all these initial records were on the coast.

In Ireland, the first record came from Tory Island, Co. Donegal, on 25th October, two days after the peak on Barra in the Outer Hebrides, and another 14 were recorded from islands or headlands in the northwest over the following two weeks, many of them being 'trumpeters'. Elsewhere, there were few, with three silent birds in Belfast on 26th October and two trumpeters at Tacumshin, Co. Wexford, on 31st. There has been just one previously accepted Northern Bullfinch from Ireland, a male trapped in Co. Galway in February 1964 (Hutchinson 1989).

Winter (December–February)

Autumn records came mainly from regions with no local-breeding Bullfinches, making their identification relatively straightforward, but many winter records came from inland areas. We are aware that some records included here have, unfortunately, not been submitted to local committees, while others will not be acceptable without biometric data, and that the identity of some individuals was disputed, but we have included all records as possible indicators of the extent of the influx.

There were actually few signs of arrivals after the middle of November. In the Scottish islands, only small numbers remained; in December, about 40 individuals were reported in Shetland, up to nine per day were seen in Orkney, and a few were seen in the Outer Hebrides, including up to 18 in Stornoway woods. In all three areas numbers gradually declined during the winter but a few successfully overwintered.

It would appear that fairly large numbers wintered in mainland Scotland, as suggested by the occasional and often fortuitous location of several flocks in both native woodland and plantations. Some of the largest groups reported included 20 at Kingussie and 15 at Balvraid (both Highland) in December; 12 at Montreath (Angus & Dundee) and 20 at Marybank (Highland) in January; and up to 25 at Aberlour (Moray & Nairn) in January and February. There were also 19 at Roseisle (Moray & Nairn) in November and 11 at Ordhill Forest (Highland) in March. These flocks were probably present throughout the winter period.

In England, there were three main areas where birds seemed to be wintering, with flocks of up to 12 reported at five sites in Cumbria, several flocks of up to 17 reported in the Home Counties (mainly Buckinghamshire and Essex), while in February up to 10 were reported from the Suffolk coastal heaths. Nevertheless, despite the distinctive calls, which surprised almost everyone who heard them and which might have been expected to draw attention, there were remarkably few inland records. There were, eventually, records from most of the counties on or east of a line from the Mersey to the Thames, most notably from Staffordshire where there were 14 records of up to three between late October and late March, many of these heard calling. It was noticeable that very few reached the west coast, with none at all in

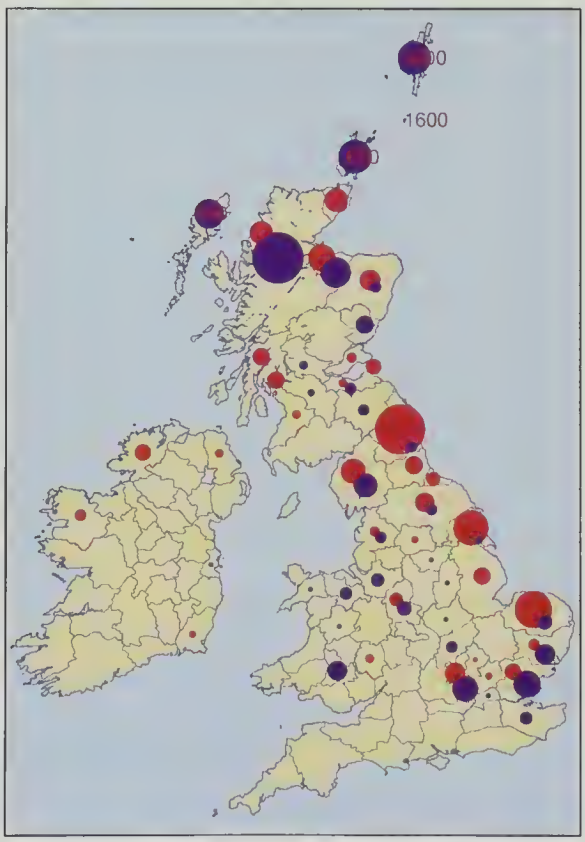

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Fig. 16. Distribution of Northern Bullfinches *Pyrrhula p. pyrrhula* reported in Britain and Ireland during October–November 2004 (red) and from December 2004 to February 2005 (blue). Figures are bird-day totals, circles show estimates of number of individuals.

Mike Pennington

13. Male 'Northern Bullfinch' *Pyrrhula p. pyrrhula*, Unst, Shetland, October 2004. The record influx brought spectacular numbers to Shetland in autumn 2004; this male was part of a flock of at least 70 feeding on a sacrificial oat crop.

southwest England. The most westerly British records came from Wales, where the first were two at Ruthin (Clwyd) on 2nd December and there were up to six at another site in Clwyd in late December, up to seven at three sites in Brecon in December and January, one on Bardsey (Caernarfonshire) on 19th December and one in Montgomeryshire in February. In Ireland, the only winter report was of one in Dublin on 4th December.

Spring (March–May)

Most wintering birds seemed to move on in March 2005, as they did in Continental Europe, and very few appeared on the coast as they left. In Shetland, for example, only about 15 individuals were seen between late March and early May. One unusually late record came from Bardsey on 14th May 2005.

Number of individuals involved

It is difficult to come up with a total of birds recorded in Britain in the 2004 irruption. Summing day-counts for the areas with most records gives bird-day totals of about 3,000 for Shetland, 1,600 for Fair Isle, 850 for Orkney and 700 for the Outer Hebrides. Clearly, some individuals will be included in these totals many times over as some flocks remained for several days, although ringing data from Fair Isle and Foula suggest that turnover was high, as there were just three individuals retrapped out of 240 birds ringed at these two sites. Many others will have gone unrecorded, however, as almost every householder in Shetland reported birds in their garden if questioned. Over 700 individuals were seen in the rest of Britain and, in most cases, the county totals broke existing records. If the bird-day totals are halved, which may well be conservative, then it would suggest that about 4,000 individuals arrived in autumn 2004, four times the size of the previous largest influx, in 1994 (Riddington & Ward 1998).

Age, sex and biometrics of birds in Britain

Age and biometric data were taken only from trapped birds, but sex was calculated from trapped birds and all specific sightings. The only large samples of trapped birds were from sites in Shetland, Orkney and the Outer Hebrides.

The majority of birds were aged as first-winters, but the overall proportion of 83% is heavily biased by the largest sample, from Fair Isle (table 1). It would appear that adults travelled farther, as the proportion of adults recorded increased farther west.

Females were more frequent than males with a very consistent proportion of 60% (table 2). There were few data from outside Shetland but, in Orkney and the Outer Hebrides, the overall sex ratio was closely similar to the overall figure from Shetland. Comparative data were available for Utsira. Most birds there were unaged but

Table 1. Ages of 'Northern Bullfinches' *Pyrrhula p. pyrrhula* trapped at four sites in Britain in 2004.

	n	unaged	first-winter	adult	% adult
Shetland	85	2	75	8	9.4
Fair Isle	177	5	145	27	15.3
Orkney	126	5	95	26	20.6
Outer Hebrides	39	0	29	10	25.6
Total	427				16.6

Table 2. Sexes of 'Northern Bullfinches' *Pyrrhula p. pyrrhula* sighted or trapped in three areas of Britain in 2004.

	n	male (%)	female (%)
Shetland	776	40	60
Orkney	241	44	56
Outer Hebrides	118	41	59

57% were sexed as females, a similar proportion to that found in Britain. Although some observers were of the opinion that females were more frequent earlier in the influx rather than later, this was not borne out by the data. In Shetland (including Fair Isle), where there were enough data to examine the variation in the sex ratio over three time periods (11th–20th October, 21st–31st October and 1st–10th November), the proportion of females declined only slightly, from 63% to 58%.

In 1994, the proportion of first-winters was lower, at 68% (Riddington & Ward 1998). Although the overall sex ratio in 1994 was similar, with 55% sexed as female, there was large variation among areas as females seemed to travel further. In 1994, almost 80% of those seen on mainland Shetland were males, with this proportion dropping to just 33% on the Orkney Mainland (Riddington & Ward 1998).

Biometric data collected in 2004 are consistent with published information for Northern Bullfinches from Fennoscandia and with the biometrics of birds in previous influxes in Britain (table 3), and refute suggestions that those birds in the 2004 arrival were larger than usual (and thus perhaps of different origin). In addition, data from Fair Isle and Foula were plotted against date, to see whether there was any variation in wing length and weight over time. There was no evidence of any variation in wing length at either site but weight increased slightly during the sample period, suggesting that later arrivals were in better condition than the earlier arrivals.

Movements of other races of Bullfinches in autumn 2004

Although we did not request data on other races, some interesting observations were received. In Britain, there were some early signs of Bullfinches on the move well ahead of the arrival of Northern Bullfinches, all presumably relating to the British race *pileata*. In the Outer Hebrides, a male was seen on South Uist on 15th September and there were three on North Uist on 9th October, a week ahead of the arrivals of the nominate race (Brian Rabbits pers. comm.); presumed *pileata* have occasionally strayed to the Outer Hebrides before. At Flamborough Head, up to three *pileata* were seen in October and there were peak counts of eight on 14th November and six on 20th. Birds

Table 3. Biometrics of 'Northern Bullfinches' *Pyrrhula p. pyrrhula* trapped at four sites in Britain in 2004. Although there are likely to be differences between first-winters and adults, these data are not separated in the table, partly because of the small sample of adults. Data for 1994 from Riddington & Ward (1998).

	wing (mm)				*weight (g)*			
	male		*female*		*male*		*female*	
	n	mean	n	mean	n	mean	n	mean
Foula	25	95.2	37	92.8	25	29.9	37	28.4
Fair Isle	64	94.8	97	92.7	51	30.5	84	30.1
Orkney	53	94.2	65	92.3	53	31.3	65	30.5
Outer Hebrides	9	94.4	30	92.6	9	28.8	26	29.0
Total	151	94.6	229	92.6	138	30.6	212	29.8
Orkney & Shetland 1994	61	94.9	76	92.4	61	29.7	76	28.9
Norway & Sweden (*BWP*)	21	93.8	13	91.8				
Fennoscandia (*BWP*)	36	92.5	14	90.5				
Norway (Nov–Mar) (*BWP*)					61	33.1	38	33.2

of the British race were also reported on the move at sites in coastal Suffolk in October and November (Colin Carter, James Cracknell pers. comm.). At Steps Hill, at the southern end of the Chilterns, in Buckinghamshire, regular observations of visible migration by Mike Wallen included 20 Bullfinches on 1st October and 15 on 9th October, while on the latter date one also flew west at Baitings Reservoir in West Yorkshire (Alastair Forsyth pers. comm.), still over a week before arrivals of Northern Bullfinches on the east coast; both these sites also recorded Northern Bullfinches later in the month. At Heysham, Lancashire, where regular visible migration observations over the last two decades have never recorded Bullfinches, one was seen on 18th October and four dropped out of the sky to spend a few minutes resting before continuing south on 20th October (Pete Marsh pers. comm.); these could have been Northern Bullfinches but they were ahead of the main wave. Two Bullfinches also appeared on Bardsey on 23rd October.

Observations from The Netherlands and Belgium suggest that small numbers of the Continental race *europoea* were also on the move ahead of the arrival of Northern Bullfinches in 2004, while birds giving the normal call, which presumably included *europoea*, were moving through along with the northern birds.

In Portugal, over 20 Bullfinches passed over Sagres in the southwest Algarve on 26th October, with reports of flocks near Lagos, Lisboa, on the same day, while two were at Cape Espichel on 8th November (Gonçalo Elias pers. comm.). The species is rather uncommon on the coast in Portugal and the dates were fairly early. Also on 8th November, eight were trapped at Gibraltar, where there are only six previous records (*Birding World* 17: 464). Descriptions and measurements suggest that they were of the race *iberiae*, as presumably were the Portuguese records.

Discussion

Perhaps the most fascinating aspect of the 2004 Northern Bullfinch irruption has been the debate engendered by their trumpet call, a call that many observers considered they had never heard before. Not only was it different from the calls of *europoea* and *pileata*, the races familiar to birders in western Europe, it was also unfamiliar to many birders in Fennoscandia and eastern Europe, where the nominate subspecies breeds. Here, respected observers such as Tommy Eriksson, Eric Hirschfeld and Dan Zetterström all commented on the peculiar call. Others, however, were of the opinion that birds with this call had occurred in previous years, especially during irruptions. Christian Cederroth noted that he had first heard it in Sweden

Richard Porter

14. Female 'Northern Bullfinch' *Pyrrhula p. pyrrhula*, Blakeney Point, Norfolk, October 2004. Female Northern Bullfinches are more distinctive than males in coloration, with hardly any contrast between the upperparts and underparts, although there is usually a greyer 'shawl'. This female Northern, seen on 17th October 2004, was the first record of Bullfinch, of any race, for Blakeney Point; it was joined by a second bird, a male, the following day.

in the 1970s and in some years in the 1980s. Since moving to the Baltic island of Öland in 1994, he had heard it three times but not in the seven years prior to 2004. At Falsterbo, Matthias Ullman opined that trumpet calls were heard frequently, at least in invasion years. In Finland, Jyrki Normaja stated that 'trumpeting' Bullfinches are heard in most autumns, but never as frequently as in 2004. In the Baltic States, several observers were of the opinion that trumpet calls were not unusual, at least during invasions.

Arnoud van den Berg and Magnus Robb both commented that they had heard the call on previous occasions in The Netherlands, for example in 2001, when it was sound-recorded. In Britain, no observer in Orkney and Shetland had heard the trumpet call before, despite the fact that Northern Bullfinches are recorded annually in the Northern Isles and many observers have been resident for decades. Some other British observers claimed to have heard trumpet calls during influxes in 1988 and 1994. As Northern Bullfinches do have a slightly different call from British breeding birds, however, this may be what was being recorded as a different call; but, for example, when Graham Catley heard trumpet-callers in Scotland in early 2005, he was amazed by how different they sounded. Nonetheless, David Jardine, who heard trumpet calls in the winter of 2004/05, had heard the call occasionally in woodland in Scotland following previous influxes.

Some comments were made on the reactions of trumpeting Bullfinches to the calls or recordings of the local Bullfinches among which they found themselves. At the Randecker Maar bird migration station, southeast of Stuttgart, the resident *europoea* showed no reaction to the trumpeting calls (Michael Fischer pers. comm.) while, in Belgium, ringers found the visitors difficult to catch as they did not respond to tapes of the resident race. Ringers in The Netherlands disagreed, however, and caught trumpet birds using their normal tape lures.

Some observers considered that individual Bullfinches were able to make both 'normal' and 'trumpet' calls, but in most, if not all, cases observers could not prove that it was the same individual making both calls, merely that birds giving both calls were in the same flock. Given that the 'trumpet' call is clearly a variation of the main contact call, it is perhaps surprising that birds should give both calls; a study in eastern Germany showed that although contact calls varied slightly, individually the differences were believed to be consistent, probably to allow individual recognition (Schubert 1976). It has also been suggested that both calls are part of the song repertoire of some birds (Hans-Georg Wallentinus pers. comm.). Further investigations are required as, in 2004, several observers, in Germany in particular, were sure that some birds gave both calls, although this did not concur with observations in Orkney and Shetland, where no birds were ever confirmed to give both calls.

Theories abounded on the significance of the trumpet call and why some observers were familiar with the call while others were not. It has been suggested that the trumpet call is part of the normal repertoire of all Northern Bullfinches, but the evidence seems to suggest otherwise, especially as so many Scandinavian observers were unfamiliar with the call. Maarten Lantsheer from The Netherlands suggested that *pyrrhula* may not, in fact, be the dominant subspecies in southern Scandinavia where most birders in that region are based, and that the 'trumpet' call may well be characteristic of truly 'northern' Bullfinches and thus really not familiar to most Scandinavian observers. Biometric data do not support this theory as they uphold the existing boundary between Northern Bullfinches and the smaller races. Some observers have suggested that there might be a cline in the calls, with Finnish birds sounding unfamiliar to many British observers, although this does not really explain why Finnish observers were so unfamiliar with the 'trumpet' call. Arnoud van den Berg suggested that either trumpeters recorded in The Netherlands in the past had not passed through Scandinavia, or they had occurred regularly in Scandinavia in the past but the call had somehow gone unnoticed until 2004. It is clear, however, that observers, at least around the Baltic, had heard the call before, especially during invasions. Some observers in Sweden believed that the 'trumpet' call was a flight call given only on migration, as they heard it from flying birds during visible migration counts at coastal sites. Others suggested that the call had been widely confused with the calls of Two-barred Crossbill in the past. Observations in 2004 proved that the call is not merely a flight call, but is a contact call; however, 'trumpet' callers do appear to have moved quickly

through Scandinavia in many years, which might explain why so many observers were unfamiliar with the call.

There was also a lot of speculation that trumpet-callers might be of an 'eastern' race, although the only candidate is *cassinii*, which almost certainly breeds too far east. One suggestion discussed on the internet, and which even got into print in some countries, was that birds originated from the Caucasus and were of the race *rossikowi*. Apparently, recordings of this race, which we have not heard, sound very like the trumpet call. The likelihood of such huge numbers of any species moving from the Caucasus region to northern Europe is extremely remote and the recorded movements just do not fit the theory. The westerly vector in the initial movements is extremely clear. Record totals came from southwest Finland, central Sweden, southern Norway, Shetland, Orkney, the Outer Hebrides and Ireland but outside these areas, totals were usually either large but not record-breaking, as they were in Iceland, or below average, as they were in southern Sweden and the Baltic States. The exception to this rule was in the record totals from central and eastern Europe, which seem to have originated from a final wave which moved south through Scandinavia and not west, as already discussed.

A more likely origin of the trumpet-callers was in Russia or Siberia. Irruptive boreal species which occur in Britain often originate from farther east than many birders realise with, for example, invasions of Nutcrackers *Nucifraga caryocatactes* (of the race *macrorhynchos*), Two-barred Crossbill and Pine Grosbeak *Pinicola enucleator* all likely to have originated in Russia, while a Siberian element in some irruptions is suspected, but still largely unproven (*BWP*). The 2004 Bullfinch irruption occurred at the same time as an irruption of Pine Grosbeaks and a record influx of Waxwings *Bombycilla garrulus* into western Europe. It was speculated that these Waxwings had originated from farther east than usual and the potential for extreme movements in this species has already been established by the past (but presumably exceptional) recovery in Poland of a bird ringed 5,500 km to the east, in eastern Siberia (*BWP*).

However, Siberian origin for the 'trumpet' Bullfinches began to look unlikely when reports came back from two Russian contacts. In the Omsk area of western Siberia, Sergei Soloviev reported that local Bullfinches of the nominate race give normal whistled calls. Recordings sent by Vadim Ivushkin from Irkutsk in eastern Siberia

Jari Peltomäki

15. Two male 'Northern Bullfinches' *Pyrrhula p. pyrrhula* in Finland, disputing the pecking order! Bullfinches are hardy birds which can overwinter in harsh conditions and it is not clear what triggers the species' periodic eruptions.

showed that Bullfinches there, still part of the nominate race, had a loud, piercing version of the normal whistle, quite unlike the trumpet call. Reports from even farther east suggested that the races occurring in Korea and Japan, while differing in plumage, still gave calls which were similar to those given by birds in western Europe. This makes it even more unusual that there is apparently a population somewhere in the middle of this vast range which gives a quite different call.

Alternative origins for the trumpet Bullfinches were soon suggested, however, and they were closer to home than many had expected. Antero Lindholm was able to make the most significant contribution to this debate when he posted recordings of Bullfinches with trumpeting calls made during the breeding season in the Komi Republic in northeastern European Russia on the internet. Jari Peltomäki also reported having heard such calls, on the White Sea island of Sovoletsk in July 2004. This confirmed suspicions that the trumpeting birds had an eastern origin. Reports also came in of such calls being heard in summer in localities much farther west, for example at Utsjoki in Finnish Lapland in June 2002 (Mark Constantine pers. comm.), at Kuusamo, eastern Finland, in April 2002 and 2003 (Pete Marsh pers. comm.), 100 km north of Helsinki in June 2004 (James Lidster pers. comm.); however, the fact that Finnish birders have not reported 'trumpeters' in these areas is strange – perhaps there is a cline which makes the calls of Finnish birds sound unfamiliar to British ears? Most unusually, 'trumpet' calls were heard from a pair at the Altmühlsee, southern Germany, in June 2004 (Christoph Völlm pers. comm.).

The most parsimonious explanation of the whole phenomenon would appear to be that Northern Bullfinches from parts of their range to the east of Finland, but apparently not in Siberia, have a 'trumpet' call-type that they give commonly, mainly as a contact call, and that forms a large part of their repertoire. They also seem capable of giving the familiar 'peeu' call-type, although unequivocal confirmation of this is still required. The Komi Republic recordings supported this hypothetical origin, but the scatter of breeding-season records farther west in Finland, or even Germany, ensured that any explanation was not straightforward. These last records are few, however, and they presumably refer to birds that have originated farther east in a previous irruption and have simply stayed on to breed or spend the summer outside their normal range.

Ultimately, there are still many questions remaining about the 2004 influx. How could such a distinctive call be so unfamiliar to so many observers when it has clearly been heard and recorded in western Europe before? If these 'trumpeters' do pass through northern Europe in large numbers in many irruption years, as suggested by some observers around the Baltic, where do they all disappear to in winter? Is the call simply a local variation, part of the normal repertoire that can be given by some or all birds, a call that can be learned as suggested by Magnus Robb, or does it have any deeper implications in terms of incipient speciation, as in crossbills *Loxia*? If the call is a local variation, why is it apparently restricted to a small area in the middle of the range of the nominate race in European Russia? Only further study on the breeding grounds of these trumpet-callers and, perhaps, genetic analysis will begin to answer these questions. (A selection of sound files, including some of birds from the 2004 influx, are available at www.britishbirds.co.uk/sounds)

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Population estimates of birds in Great Britain and the United Kingdom

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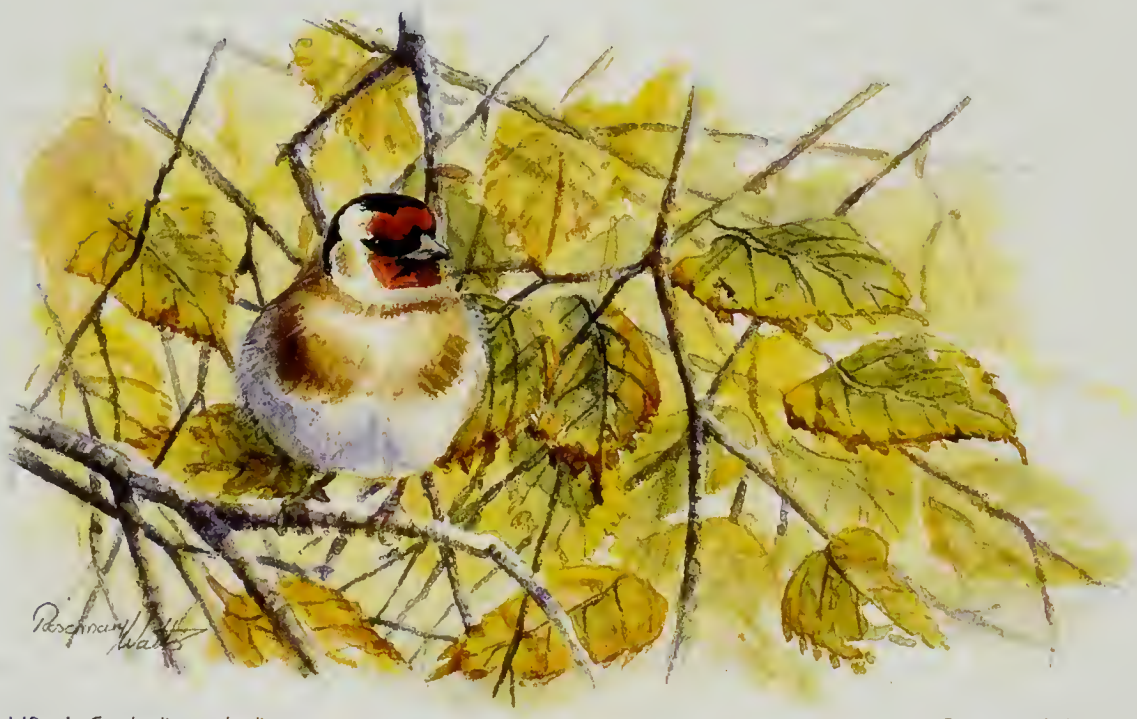

Goldfinch *Carduelis carduelis* — *Rosemary Watts-Powell*

ABSTRACT In 1997, the Avian Population Estimates Panel (APEP) published its first collation of British and UK bird population estimates (Stone *et al.* 1997). This paper provides the first review of those estimates, drawing on information available prior to 2002 for most species. Several major surveys have reported estimates in the intervening period, including for breeding seabirds, wintering gulls, and wintering waterbirds. A new method of deriving estimates for many common species has been adopted, which relies on adjusting former estimates according to published trends. In recognition of the value of a single source of definitive population estimates, the estimates presented in this paper will be the primary reference for statutory conservation purposes until publication of the next review.

The principle of using qualifying thresholds (e.g. 1% of a population) as a mechanism to identify important areas for protecting birds and their habitats has been widely adopted in international conservation practice. Wetlands of International Importance (Ramsar sites) may be designated if they support 1% or more of the biogeographical population of a waterbird species (Ramsar Convention Secretariat 1999; Wetlands International 2002) and Important Bird Areas (IBA) may be identified on a similar basis for a wider variety of species (Heath & Evans 2000). In the UK, sites may be classified as Special Protection Areas (SPA), to meet the requirements of the EU Birds Directive (79/409/EEC), if they support 1% or more of the national population of a species listed in Annex 1 to the Directive (rare and vulnerable species within Europe) or 1% or more of the biogeographical population of a regularly occurring migratory species, or are important for other characteristics (JNCC 1999). At a national level, Sites of Special Scientific Interest (SSSI) in Britain and Areas of Special Scientific Interest (ASSI) in Northern Ireland may be designated, among other reasons, if an area supports 1% or more of the national population of any species (NCC 1989). In the UK, national populations have been defined as 'Great Britain (GB)' and 'All-Ireland' respectively, the latter being Northern Ireland and the Republic of Ireland combined (Stroud *et al.* 2001).

Trends in numbers of birds may be derived from national population estimates that are based on periodic or annual surveys. For many rarer species and other species surveyed infrequently, trends are derived from and reported with the results of each national survey. For many common species, annual monitoring schemes such as the BTO/JNCC/RSPB Breeding Bird Survey (BBS), the JNCC Seabird Monitoring Programme (SMP) and BTO/WWT/RSPB/JNCC Wetland Bird Survey (WeBS) provide information about trends. Trends are valuable indicators of the status of bird populations and the combined trends of species in ecological groupings, such as birds of farmland, are now recognised as valuable 'quality of life' indicators (UK Government 1999). This paper aims to provide definitive national population estimates; information on trends is published elsewhere, e.g. Pollitt *et al.* 2003, Crick *et al.* 2004, Mitchell *et al.* 2004, Raven *et al.* 2004.

Since the Avian Population Estimates Panel (APEP) published its first list (Stone *et al.* 1997; hereafter referred to as the APEP97 list), many new surveys have been completed or initiated, largely under the Statutory Conservation Agencies/RSPB Annual Breeding Bird Survey (SCARABBS), but large-scale census of many of our commoner breeding species has not been undertaken. To overcome this gap, previous estimates for commoner species, typically derived from Gibbons *et al.* (1993; hereafter referred to as *1988–91 Atlas*), have been adjusted wherever possible in accordance with published trends. Another significant update to the APEP97 list is the inclusion of revised estimates for non-breeding waterbirds, following major analyses and reviews of a suite of surveys and reports, such as WeBS and national goose surveys (Kershaw & Cranswick 2003; Rehfisch *et al.* 2003b). In addition, new estimates from *Seabird 2000* (Mitchell *et al.* 2004) are also included.

The APEP97 list attempted both to widen the use of unpublished data and to reduce the inevitable confusion caused by having population estimates published in a wide range of papers and reports. In this current list we have limited the use of unpublished information as far as possible in order to improve accessibility to specific information, to establish a clearer audit of information, and thus to improve confidence in the population estimates presented. In recognition of the value of a single source of definitive population estimates, those presented in this paper will be the primary reference for statutory conservation purposes until revised (planned for 2008). However, for a small number of rarer species of high conservation concern, estimates may be adopted for statutory use earlier than they appear in the APEP list.

The Avian Population Estimates Panel

The Panel comprises representatives of the British Trust for Ornithology (BTO), the Game Conservancy Trust (GCT), the Joint Nature Conservation Committee (JNCC), the Royal Society for the Protection of Birds (RSPB) and The Wildfowl & Wetlands Trust (WWT).

Coverage

Species coverage

All regular breeding, passage or wintering species on the British List (see www.bou.org.uk) in categories A to C (including non-native species), and for which

estimates were available, were considered. Scarce migrants, with the exception of Aquatic Warbler *Acrocephalus paludicola* and those that have breeding populations, and vagrants were excluded. Recognised races or biogeographical populations of some species have been considered separately, for example many of the geese and the Fair Isle race of Wren *Troglodytes troglodytes fridariensis.*

Geographical coverage

Estimates were collated for GB and the UK. For this purpose, GB included England, Scotland, Wales, and the Isle of Man, but excluded the Channel Islands. Estimates for the UK combined those for GB with those for Northern Ireland. This approach was consistent with that adopted for the APEP97 list. However, as the new list will have a formal statutory use in the UK, including as a source for deriving national 1% thresholds, the inclusion of the Isle of Man was problematic. To overcome this, GB estimates for a few key species, including Hen Harrier *Circus cyaneus*, Peregrine Falcon *Falco peregrinus* and Red-billed Chough *Pyrrhocorax pyrrhocorax*, were compiled to exclude the Isle of Man (noted in the list) and separate estimates for the Isle of Man have been listed for completeness. The UK estimates for these species include the Isle of Man. For the great majority of species, the inclusion of the relatively small populations in the Isle of Man did not affect the totals sufficiently to affect any derived thresholds; consequently, for the majority of species listed, GB includes the Isle of Man.

Seasonal coverage

It was not possible to give population estimates for all species in all seasons. However, for some groups of species both breeding and wintering estimates are given, to provide information for implementing conservation policy, and to reflect the fact that numbers of birds present in different seasons may be influenced by migration and may involve different biogeographical populations. For a small number of species that occur principally during migration periods, we have presented estimates for either spring or autumn. For all other species, the term 'wintering' refers to the non-breeding period.

Population estimates

Sources of population estimates

The majority of estimates included in this paper were taken from the most contemporary original published sources available, or from papers accepted for publication in scientific journals. A key difference from the APEP97 list was that some estimates were adjusted according to the best available published population trends (detailed below); in these cases, both the original source and the trend used are indicated in the list. Some of the estimates were extrapolated from published information to provide fuller geographical coverage and these are clearly distinguished.

Common breeding birds

A variety of sources of estimates for common breeding birds were drawn upon, but two were of particular significance: the *1988–91 Atlas* and *Seabird 2000.*

The *1988–91 Atlas* was the source of estimates for many species published in the APEP97 list. This remained the case, but with a significant change in approach: for many species we have used the best available smoothed trends to adjust previous estimates. The principal source of these trends was the BTO/JNCC *Breeding Birds in the Wider Countryside Report* (Crick *et al.* 2004). For species that occur throughout the UK, the analysis for the trend adjustment was done at the UK level and the ratio of the GB to UK population in APEP97 was then used to derive adjusted GB estimates.

The updated figure for Red Grouse *Lagopus lagopus* was obtained by multiplying the *1988–91 Atlas* figure of 250,000 pairs by the 1990–2000 change estimated from the GCT's National Gamebag Census, based on 205 UK upland estates that contributed data on grouse bags during this period. The Gamebag Census trend in bag/km^2 was adjusted to reflect the trend in grouse abundance using the relationship between bag and density described in Hudson (1992).

Seabird 2000 was the third complete seabird census conducted in Great Britain and Ireland (including the Channel Islands and Isle of Man). In contrast to previous national censuses, inland colonies of Great Cormorants *Phalacrocorax carbo*, gulls and terns were surveyed. Estimates of breeding seabirds were made from counts of birds or nest areas, or using 'playback' methods for burrowing nocturnal species (Ratcliffe *et al.* 1998). A full description of counting methods and count units is given in Mitchell *et*

al. (2004). Owing to problems arising from lack of site fidelity, the majority of terns were surveyed within a single year (2000). A complete census of Northern Gannets *Morus bassanus* was not undertaken for *Seabird 2000*, but a national survey was carried out in 2003–04 and we have favoured the use of the estimates from the latter (Wanless *et al.* 2005).

Rare breeding birds

Published estimates from SCARABBS or, when these are not available, estimates derived from published reports of the Rare Breeding Birds Panel (RBBP) have been used. To take natural fluctuation into account we have typically presented the means of published RBBP estimates from the five-year period 1998–02. For most species, a range is given representing a minimum (confirmed pairs or other appropriate breeding unit) and a maximum (representing the sum total of confirmed, probable and possible breeding pairs/units). For some species this was not possible and a single value represents a 'best estimate'. A few species are intermittent breeders in the UK and have five-year means of less than one, so we have expressed the populations of these as 0–1 pairs/units. However, species with five-year means of less than one *and* that bred only in one year of the five-year period used were excluded. Estimates for rarer breeding seabirds were taken from Mitchell *et al.* (2004).

Wintering birds

Two key papers containing new national population estimates allowed us to include the most recent GB estimates for many non-breeding waterbirds (Kershaw & Cranswick 2003 and Rehfisch *et al.* 2003b). The UK estimates for waders were calculated using the same methods for the GB estimates, but with inclusion of data from Northern Ireland (Rehfisch *et al.* 2003a,b). UK estimates for waterfowl were derived either from collation of GB and NI estimates or from extrapolation of the GB estimate using a multiplier based on the ratio of populations in GB and UK derived from the APEP97 list. NI estimates for waterfowl were derived primarily from WeBS (Pollitt *et al.* 2000).

Estimates for non-breeding gulls came from the 1993 BTO Winter Gull Roost Survey, as in the APEP97 list. However, the 1993 survey has since been fully analysed and published leading to slight revisions in figures for gulls (Burton *et al.* 2003). Nonetheless, the estimates for gulls remain minima as a result of incomplete coverage and the data being unsuitable for extrapolation.

Population estimates and trends for wintering populations of non-waterbirds are rarely produced and we chose to repeat most of the estimates reported in the APEP97 list, based largely on the BTO *Winter Atlas* (Lack 1986).

Passage birds

At present, population estimates for waterbirds on passage are of limited value because turnover of individuals may be high in some species and hence the accuracy of estimates is low. For this reason, APEP decided to largely exclude passage population estimates until further work to improve methods of estimation is completed. Some species occur only during passage periods, however, so despite the possible poor quality of the data, we have reported estimates for these species. For waterbirds, the figures are derived from the most recent five-year peak mean from the WeBS; the rounded counts are adjusted to take account of WeBS coverage by multiplying by two for GB and four for NI (see APEP97 for fuller explanation). The estimate for Aquatic Warbler was derived from a variety of sources, including relevant County Bird Reports.

Units of population measure

For the majority of species, the simplest units of population measure – individuals and pairs – are appropriate ways to express population estimates. However, for species with more complex breeding biology, or where the identification of discrete 'pairs' is difficult, it is useful to describe the population in other units, as identified in table 1.

Rounding conventions

If population estimates were rounded in the source publication, these rounded figures have been given here. When (non-rounded) estimates were of high reliability (code 1 or 2; see below) then the exact published estimate has been reproduced. However, for estimates of poor reliability (code 3) we adopted the following rounding convention (consistent with the APEP97 list): >1,000,000 to nearest 100,000; 100,000–1,000,000 to nearest 10,000; 10,000–100,000 to nearest 1,000; 1,000–10,000 to nearest 100; 100–1,000 to the nearest 10; <100 as published.

Using the table

Type of estimate

- Best estimate (Best est.): the best available single figure or range.
- Five-year mean (5-y mean): the average minimum–maximum of published RBBP figures for 1996–00 or the five-year peak mean for non-breeding waterbirds.
- Best estimate with 95% confidence limits (95%): estimates derived from sample surveys in which confidence limits could be calculated.
- Minimum (Min.): for estimates where insufficient data exist to provide an accurate estimate, but where that given is known to be a considerable underestimate.

Derivation (Der)

Numbered from 1 to 7 with following meanings (estimates may be derived from a combination of these):

1 = complete count – a full or near-full census;
2 = expert estimate – the best estimate in the opinion of experts studying the population of the species concerned;
3 = compilation – an estimate derived from a number of sources;
4 = extrapolation – derived from extrapolating from sample surveys and methods based on abundance and distribution data (see above);
5 = extrapolation – derived from extrapolating from an existing estimate using the most representative smoothed trend available; either Common Birds Census (CBC), Breeding Bird Survey (BBS) or a combined CBC/BBS trend;
6 = extrapolation – derived from extrapolating from an existing estimate using the National Gamebag Census trend (see above);
7 = extrapolation – derived from extrapolating from an existing estimate using the Waterways Bird Survey smoothed 1974–00 trend.

Reliability (Rel)

A simple reliability score has been included in the list of estimates, where 1 is good and 3 is poor; this relates to the reliability of the estimate at the time it was made. This score is a judgment by APEP and is intended to indicate one aspect of the quality of an estimate. Quality also depends on how recently the estimate was made and its derivation; consequently, a judgment on the *overall* quality of any one estimate should take all these factors into account.

Change (+/-)

The column headed '+/-' in the list indicates where, in the opinion of APEP, the estimate given is either an under- or overestimate of the current population as a result of changes since the estimate was made; it does not reflect the reliability of the listed estimate. This is used typically when the estimate provided is old and the current population is thought, on the basis of available information and/or expert opinion, to have changed and is now either larger (+) or smaller (-) than that reported in this list.

Use of data

In the opinion of APEP, the estimates presented in the list were the best available at the time of collation. The population estimates were from a number of different surveys with different methods and, in some cases, additional calculations have been made. For this reason, comparisons between figures presented here and those in other sources should be made with caution. Before drawing any conclusions, it is important to pay careful attention to the date of the estimate, its assessed reliability, its method of collection and analytical derivation, and its source. In particular, it is not always possible to derive a Northern Ireland estimate by simply subtracting the GB estimate from the UK estimate. This is because the NI populations are often so small that their identity is lost in the rounding of the other estimates.

Conclusions about population trends should not generally be drawn from the comparison of estimates for the same species between the APEP97 list and the present list. For example, the wintering wader population estimates presented here tend to be systematically higher than those in the APEP97 list, owing to a new method of calculation that estimates the size of any missing counts (Rehfisch *et al.* 2003b). Trend information is published elsewhere, but when this is lacking it may be possible to gain some understanding of population change from the lists, although this requires caution; a review of the methods of derivation is necessary to ensure that the comparison is valid.

The APEP list will be used as a source for deriving national 1% estimates. However, there are a number of rules that need to be applied and these rules, along with thresholds, will be published elsewhere (for example, by JNCC for statutory use).

Table 1. Population estimates of birds in Great Britain and the United Kingdom.
Key to table as follows. Region: (GB = Great Britain; GB* = GB excluding Isle of Man; IoM = Isle of Man; UK = United Kingdom). Season: A = Autumn migration; B = Breeding; S = Spring migration; W = Wintering. Unit: A = individual adults; F = females; I = individuals; M = males; N = nests; P = pairs; T = territories; TP = territorial pairs; W = wild pairs. +/-: + = population known to be larger than estimate listed, but no better estimate available (++ = considerably larger); - = population known to be smaller than estimate listed, but no better estimate available.
Type (Type of estimate): See 'Using the table' for full explanation. Rel (Reliability): 1 (good) to 3 (poor); see text for full explanation. Der (Derivation): See 'Using the table' for full explanation. Ref: numbers refer to those given in References. Note: Numbers refer to the footnote of the table.

Species/population	Region	Season	Number	Unit	Date	+/-	Type	Rel	Der	Ref	Note
Mute Swan	GB	B	5,299	P	1990		Best est.	1	1,4	16,28	
Cygnus olor	GB	W	37,500	I	1994-99		5-y mean	2	1	33	
	UK	B	28,000-30,000	A	1988-91		Best est.	2	1,4	16,23	
	UK	W	43,500	I	1994-99		5-y mean	2	1	33	
Bewick's Swan	GB	W	8,070	I	1994-99		5-y mean	1	4	33	
Cygnus columbianus	UK	W	8,240	I	1994-99		5-y mean	1	3,4	33	
Whooper Swan	GB	B	3-7	W	1996-2000		5-y mean	2	3	51	
Cygnus cygnus	GB	W	5,720	I	1994-99		5-y mean	1	4	33	
	UK	B	3-7	W	1996-2000		5-y mean	2	3	51	
	UK	W	6,920	I	1994-99		5-y mean	1	4	33	
'Taiga' Bean Goose	GB	W	400	I	1994-99		5-y mean	1	1	33	
Anser fabalis fabalis	UK	W	400	I	1994-99		5-y mean	1	1	33	
'Tunda' Bean Goose	GB	W	100	I	1994-99		Best est.	2	3	33	
Anser f. rossicus	UK	W	100	I	1994-99		Best est.	2	3	33	
Pink-footed Goose	GB	W	241,000	I	1994-99		5-y mean	1	1	33	
Anser brachyrhynchus	UK	W	241,000	I	1994-99		5-y mean	1	1	33	
'European' White-fronted Goose	GB	W	5,790	I	1994-99		5-y mean	1	1	33	
Anser albifrons albifrons	UK	W	5,790	I	1994-99		5-y mean	1	1	33	
(Baltic–North Sea)											
'Greenland' White-fronted Goose	GB	W	20,900	I	1994-99		5-y mean	1	1	33	
Anser a. flavirostris	UK	W	21,000	I	1994-99		5-y mean	1	1	33	
Greylag Goose	GB	W	81,900	I	1994-99		5-y mean	1	1	33	
Anser anser	UK	W	81,900	I	1994-99		5-y mean	1	1	33	
(Iceland)											
Greylag Goose	GB	B	3,200	P	1997		Best est.	2	1	40	
(NW Scotland)	GB	W	9,620	I	1997		Best est.	2	1	40	
	UK	B	3,200	P	1997		Best est.	2	1	40	
	UK	W	9,620	I	1997		Best est.	2	1	40	
Greylag Goose	GB	B	29,900	A	1999	-	Best est.	2	4	59	
(re-established)	GB	W	29,900	A	1999	-	Best est.	2	4	59	
	UK	B	30,900	A	1999	-	Best est.	2	4	59	
	UK	W	30,900	A	1999	-	Best est.	2	4	59	
Snow Goose	GB	B	19	P	1996-2000		5-y mean	3	3	50	1
Anser caerulescens	UK	B	19	P	1996-2000		5-y mean	3	3	50	1
Greater Canada Goose	GB	B	82,000	A	1999	-	Best est.	2	4	59	
Branta canadensis	GB	W	82,000	A	1999	-	Best est.	2	4	59	
	UK	B	82,550	A	1999	-	Best est.	2	4	59	
	UK	W	82,550	A	1999	-	Best est.	2	3,4	59	
Barnacle Goose	GB	W	45,000	I	1999		Best est.	1	1	11,33	
Branta leucopsis	GB	W	1,000	I	1991-99		Best est.	2	1	33	
(E Greenland)	UK	W	45,000	I	1999		Best est.	1	1	11,33	
	UK	W	1,120	I	1991-99		Best est.	2	1	33	
Barnacle Goose	GB	W	22,000	I	1994-99		5-y mean	1	1	33	
(Svalbard)	UK	W	22,000	I	1994-99		5-y mean	1	1	33	
'Dark-bellied' Brent Goose	GB	W	98,100	I	1994-99		5-y mean	1	1	33	
Branta b. bernicla	UK	W	98,100	I	1994-99		5-y mean	1	1	33	
'Light-bellied' Brent Goose	UK	W	20,000	I	1990s		Best est.	1	1	39	
Branta bernicla hrota											
(East Canadian High Arctic)											

Species/population	Region	Season	Number	Unit	Date	+/-	Type	Rel	Der	Ref	Note
'Light-bellied' Brent Goose	GB	W	2,900	I	1994-99		5-y mean	1	1	33	
(Svalbard/N Greenland)	UK	W	2,900	I	1994-99		5-y mean	1	1	33	
Egyptian Goose	GB	W	1,000	I	1991-99		Best est.	2	1	33	
Alopochen aegyptiaca	UK	W	1,000	I	1991-99		Best est.	2	1	33	
Ruddy Shelduck	GB	B	1	P	1996-2000		5-y mean	3	3	50	
Tadorna ferruginea	UK	B	1	P	1996-2000		5-y mean	3	3	50	
Common Shelduck	GB	B	10,600	P	1988-91		Best est.	2	4	23	
Tadorna tadorna	GB	W	78,200	I	1994-99		5-y mean	1	4	33	
	UK	B	10,900	P	1988-91		Best est.	2	4	23	
	UK	W	81,300	I	1994-99		5-y mean	1	4	33	
Mandarin Duck	GB	B	7,000	A	1970-87	-	Best est.	3	3,4	15	
Aix galericulata	GB	W	7,000	I	1970-87	-	Best est.	3	3,4	15	
	UK	B	7,000	A	1970-87	-	Best est.	3	3,4	15	
	UK	W	7,000	I	1970-87	-	Best est.	3	3,4	15	
Eurasian Wigeon	GB	B	300-500	P	1988-91		Best est.	2	2	23	
Anas penelope	GB	W	406,000	I	1994-99		5-y mean	1	4	33	
	UK	B	300-500	P	1988-91		Best est.	2	4	23	
	UK	W	426,000	I	1994-99		5-y mean	1	4	33	
Gadwall	GB	B	770	P	1990	+	Best est.	2	4	21,23	
Anas strepera	GB	W	17,100	I	1994-99		5-y mean	2	4	33	
	UK	B	790	P	1990	+	Best est.	2	4	21,23	
	UK	W	17,500	I	1994-99		5-y mean	2	4	33	
Eurasian Teal	GB	B	1,500-2,600	P	1988-91		Best est.	3	4	23	
Anas crecca	GB	W	192,000	I	1994-99		5-y mean	2	4	33	
	UK	B	1,600-2,800	P	1988-91		Best est.	3	4	23	
	UK	W	197,000	I	1994-99		5-y mean	2	3,4	33	
Mallard	GB	B	47,700-114,400	P	1988-91		Best est.	3	2	23	2
Anas platyrhynchos	GB	W	352,000	I	1994-99		5-y mean	3	2	33	
	UK	B	50,400-127,100	P	1988-91		Best est.	3	2	23	2
	UK	W	371,000	I	1994-99		5-y mean	3	2	33	
Pintail	GB	B	10-34	P	1998-2002		5-y mean	2	3	52	3
Anas acuta	GB	W	27,900	I	1994-99		5-y mean	1	4	33	
	UK	B	10-34	P	1998-2002		5-y mean	2	3	52	3
	UK	W	28,180	I	1994-99		5-y mean	1	3,4	33	
Garganey	GB	B	23-115	P	1997-2001		5-y mean	2	3	52	3,4
Anas querquedula	UK	B	23-115	P	1997-2001		5-y mean	2	3	52	3,4
Shoveler	GB	B	1,000-1,500	P	1985-90		Best est.	2	2	34,23	
Anas clypeata	GB	W	14,800	I	1994-99		5-y mean	2	4	33	
	UK	B	1,000-1,500	P	1988-91		Best est.	2	4	34,23	
	UK	W	15,200	I	1994-99		5-y mean	2	4	33	
Red-crested Pochard	GB	B	29	P	1996-2000	-	5-y mean	3	3	50	1
Netta rufina	UK	B	29	P	1996-2000	-	5-y mean	3	3	50	1
Common Pochard	GB	B	457	P	1998-2002		5-y mean	2	3	52	5
Aythya ferina	GB	W	59,500	I	1994-99		5-y mean	2	4	33	
	UK	B	472	P	1998-2002		5-y mean	2	3	52	5
	UK	W	85,500	I	1994-99		5-y mean	2	4	33	
Tufted Duck	GB	B	7,000-8,000	P	1979-83		Best est.	2	4	53	
Aythya fuligula	GB	W	90,100	I	1994-99		5-y mean	2	4	33	
	UK	W	120,000	I	1994-99		5-y mean	2	4	33	
Greater Scaup	GB	W	7,560	I	1990-99		Best est.	2	1	33	
Aythya marila	UK	W	9,200	I	1990-99		Best est.	2	1	33	
Common Eider	GB	B	31,200	P	1988-91		Best est.	2	4	23	
Somateria mollissima	GB	W	73,000	I	1990-99		Best est.	2	1	33	
	UK	B	31,650	P	1988-91		Best est.	2	4	23	
	UK	W	80,000	I	1990-99		Best est.	2	1	33	
Long-tailed Duck	GB	W	16,000	I	1990-2000		Best est.	3	1	33	
Clangula hyemalis	UK	W	16,250	I	1990-2000		Best est.	3	1	33	
Common Scoter	GB	B	95	P	1995		Best est.	1	1	72	
Melanitta nigra	GB	W	50,000	I	1990-99		Best est.	3	1	33	
	UK	B	95	P	1995		Best est.	1	1	72	
	UK	W	50,000	I	1990-99		Best est.	3	1	33	

Species/population	Region	Season	Number	Unit	Date	+/-	Type	Rel	Der	Ref	Note
Velvet Scoter	GB	W	3,000	I	1990-99		Best est.	2	1	33	
Melanitta fusca	UK	W	3,000	I	1990-99		Best est.	2	1	33	
Common Goldeneye	GB	B	200	P	1998		Best est.	2	3	49	
Bucephala clangula	GB	W	24,900	I	1994-99		5-y mean	2	4	33	
	UK	B	200	P	1998		Best est.	2	3	49	
	UK	W	35,000	I	1994-99		5-y mean	2	4	33	
Smew	GB	W	370	I	1994-99		Best est.	2	2	33	
Mergellus albellus	UK	W	390	I	1994-99		Best est.	2	2	33	
Red-breasted Merganser	GB	B	2,150	P	1988-91		Best est.	2	4	23	
Mergus serrator	GB	W	9,840	I	1986-91		Best est.	3	1	35	
	UK	B	2,370	P	1988-91		Best est.	2	4	23	
	UK	W	10,500	I	1986-91		Best est.	3	3	35	
Goosander	GB	B	2,600 (2,300-2,900)	P	1987	+	Best est.	2	4	29	
Mergus merganser	GB	W	16,100	I	1994-99		5-y mean	2	4	33	
	UK	B	2,600 (2,300-2,900)	P	1987	+	Best est.	2	4	29	
	UK	W	16,100	I	1994-99		5-y mean	2	4	33	
Ruddy Duck	GB	B	641-687	P	1994		Best est.	1	4	32	
Oxyura jamaicensis	GB	W	4,110	I	1994-99		5-y mean	2	1	33	
	UK	B	661-707	P	1988-94		Best est.	2	4	32,23	
	UK	W	4,170	I	1994-99		5-y mean	2	1	33	
Red Grouse	GB	B	154,700	P	2000		Best est.	3	2,6	23	
Lagopus lagopus	UK	B	155,000	P	2000		Best est.	3	4,6	23	
Ptarmigan	GB	B	10,000	P	1990		Best est.	3	2	56	
Lagopus muta	UK	B	10,000	P	1990		Best est.	3	4	56	
Black Grouse	UK	B	6,510 (5,000-8,100)	M	1995-96	-	Best est.	1	4	31	
Tetrao tetrix	UK	B	6,510 (5,000-8,100)	M	1995-96	-	Best est.	1	4	31	
Capercaillie	GB	B	1,073 (549-2,041)	A	1998-99		Best est.	1	4	76	
Tetrao urogallus	UK	B	1,073 (549-2,041)	A	1998-99		Best est.	1	4	76	
Red-legged Partridge	GB	B	72,000-200,000	T	2000		Best est.	3	4,5	1,13	
Alectoris rufa	UK	B	72,000-200,000	T	2000		Best est.	3	4,5	1,13	
Grey Partridge	GB	B	70,000-75,000	P	2000		Best est.	2	4,2,5	1,13	
Perdix perdix	UK	B	70,000-75,000	P	2000		Best est.	2	4,2,5	1,13	
Common Quail	GB	B	4-315	M	1998-2002		5-y mean	3	3	52	
Coturnix coturnix	UK	B	4-315	M	1998-2002		5-y mean	3	3	52	
Common Pheasant	GB	B	1,688,000-1,788,000	F	2000		Best est.	2	4,5	61,13	16
Phasianus colchicus	UK	B	1,800,000-1,900,000	F	2000		Best est.	2	4,5	61,13	
Golden Pheasant	GB	B	85-118	P	2000	-	Best est.	3	3	50	
Chrysolophus pictus	UK	B	85-118	P	2000	-	Best est.	3	3	50	
Lady Amherst's Pheasant	UK	B	94	P/T	1998		Best est.	1	3,4	8,48	
Chrysolophus amherstiae	UK	B	94	P/T	1998		Best est.	1	3,4	8,48	
Red-throated Diver	GB	B	935-1,500	P	1994		Best est.	2	2,4	24	6
Gavia stellata	GB	W	4,850	I	1980-86	++	Best est.	3	2	14	7
	UK	B	935-1,500	P	1994		Best est.	2	2,4	24	6
Black-throated Diver	GB	B	155-189	P	1994		Best est.	2	1,2	–	18
Gavia arctica	GB	W	700	I	1980-86		Best est.	3	2	14	
	UK	B	155-189	P	1994		Best est.	2	1,2	–	18
Great Northern Diver	GB	W	2,500-3,000	I	1974-84		Best est.	3	3	36	
Gavia immer											
Little Grebe	GB	B	5,000-10,000	P	1988-91		Best est.	3	4	23	
Tachybaptus ruficollis	GB	W	7,770	I	1994-99		Best est.	3	4	33	
	UK	B	5,900-12,000	P	1988-91		Best est.	3	4	23	
	UK	W	10,040	I	1994-99		Best est.	3	4	33	
Great Crested Grebe	GB	B	8,000	A	1988-91		Best est.	2	4	23	
Podiceps cristatus	GB	W	15,900	I	1994-99		Best est.	2	4	33	
	UK	B	9,400	A	1988-91		Best est.	2	4	23	
	UK	W	19,140	I	1994-99		Best est.	2	4	33	
Red-necked Grebe	GB	B	1	P	1998-2002		5-y mean	2	3	52	
Podiceps grisegena	GB	W	200	I	1981-99		Best est.	2	2	33	
	UK	B	1	P	1998-2002		5-y mean	2	3	52	
	UK	W	200	I	1981-99		Best est.	2	2	33	

Species/population	Region	Season	Number	Unit	Date	+/-	Type	Rel	Der	Ref	Note
Slavonian Grebe	GB	B	39-43	P	1998-2002		5-y mean	1	3	52	3
Podiceps auritus	GB	W	725	I	1986-93		7-y mean	2	2	18	
	UK	B	39-43	P	1998-2002		5-y mean	1	3	52	3
	UK	W	775	I	1986-99		7-y mean	2	2,3	18	
Black-necked Grebe	GB	B	42-60	P	1998-2002		5-y mean	2	3	52	3
Podiceps nigricollis	GB	W	120	I	1981-84		Best est.	2	2	36	
	UK	B	42-60	P	1998-2002		5-y mean	2	3	52	3
	UK	W	120	I	1981-84		Best est.	2	2	36	
Fulmar	GB	B	498,764	P	1998-2002		Best est.	1	1	41	
Fulmarus glacialis	UK	B	504,756	P	1998-2002		Best est.	1	1	41	
Manx Shearwater	GB	B	295,079 (277,793-313,253)	P	1998-2002		95%	2	1	41	
Puffinus puffinus	UK	B	299,712 (281,382-319,499)	P	1998-2002		95%	2	1	41	
European Storm-petrel	GB	B	25,650 (20,994-33,434)	P	1998-2002		95%	2	1	41	
Hydrobates pelagicus	UK	B	25,650 (20,994-33,434)	P	1998-2002		95%	2	1	41	
Leach's Storm-petrel	GB	B	48,047 (36,432-64,883)	P	1998-2002		95%	2	1	41	
Oceanodroma leucorhoa	UK	B	48,047 (36,432-64,883)	P	1998-2002		95%	2	1	41	
Northern Gannet	GB	B	218,546	N	2003-04		Best est.	1	1	74	
Morus bassanus	UK	B	218,546	N	2003-04		Best est.	1	1	74	
Great Cormorant	GB	B	8,355	P	1998-2002		Best est.	1	1	41	
Phalacrocorax carbo	GB	W	23,000	I	1994-99		5-y mean	2	4	33	
	UK	B	9,018	P	1998-2002		Best est.	1	1	41	
	UK	W	24,200	I	1994-99		5-y mean	2	4	33	
Shag	GB	B	27,176	P	1998-2002		Best est.	1	1	41	
Phalacrocorax aristotelis	UK	B	27,477	P	1998-2002		Best est.	1	1	41	
Eurasian Bittern	GB	B	28	M	1998-2002		5-y mean	1	1	52	
Botaurus stellaris	GB	W	50-150	I	1981-84		Best est.	2	3	36	
	UK	B	28	M	1998-2002		5-y mean	1	1	52	
	UK	W	50-150	I	1981-84		Best est.	2	3	36	
Little Egret	GB	B	146-162	P	2002		RBBP	1	3	52	3,8
Egretta garzetta	GB	W	800-900	I	2000		Best est.	1	1	44	
	GB	A	1,650	I	1999		Best est.	1	1	44	
	UK	B	146-162	P	2002		RBBP	1	3	52	3,8
	UK	W	800-900	I	2000		Best est.	1	1	44	
	UK	A	1,650	I	1999		Best est.	1	1	44	
Grey Heron	GB	B	13,430	N	2003		Best est.	1	4	4	
Ardea cinerea	UK	B	14,200	N	2003		Best est.	1	4	4	
Eurasian Spoonbill	GB	B	0-4	P	1998-2002		Best est.	1	3	52	
Platalea leucorodia	UK	B	0-4	P	1998-2002		Best est.	1	3	52	
Honey-buzzard	GB	B	33-69	P	2000		Best est.	2	1,2	2,47	3
Pernis apivorus	UK	B	33-69	P	2000		Best est.	2	1,2	2,47	3
Red Kite	GB	B	430 (372-490)	P	2000		Best est.	1	1	81	
Milvus milvus	UK	B	430 (372-490)	P	2000		Best est.	1	1	81	
White-tailed Eagle	GB	B	21	P	1998-2002		5-y mean	1	1	52	
Haliaeetus albicilla	UK	B	21	P	1998-2002		5-y mean	1	1	52	
Marsh Harrier	GB	B	201	F	1998-2002		5-y mean	1	1,3	52,73	
Circus aeruginosus	UK	B	201	F	1998-2002		5-y mean	1	1,3	52,73	
Hen Harrier	GB*	B	483 (412-553)	TP	1998		Best est.	1	1	66	
Circus cyaneus	GB	W	750	I	1981-83		Best est.	3	2	36	
	IoM	B	49	TP	1998		Best est.	1	1	66	
	UK	B	570 (499-640)	TP	1998		Best est.	1	1	66	
Montagu's Harrier	GB	B	7	TF	1998-2002		5-y mean	1	3	52	
Circus pygargus	UK	B	7	TF	1998-2002		5-y mean	1	3	52	
Northern Goshawk	GB	B	400	P	1995		Best est.	2	3	54	
Accipiter gentilis	UK	B	410	P	1994-2000		Best est.	2	3	54,64	
Eurasian Sparrowhawk	GB	B	38,600	P	2000	+	Best est.	2	4,5	1,13	16
Accipiter nisus	UK	B	41,000	P	2000	+	Best est.	2	4,5	1,13	
Common Buzzard	GB	B	31,100-44,000	T	2000	+	Best est.	2	4,5	1,13	16
Buteo buteo	UK	B	31,100-44,000	T	2000	+	Best est.	2	4,5	1,13	

Species/population	Region	Season	Number	Unit	Date	+/-	Type	Rel	Der	Ref	Note
Golden Eagle	GB	B	422	P	1992		Best est.	1	1	26	
Aquila chrysaetos	UK	B	422	P	1992		Best est.	1	1	26	
Osprey	GB	B	148	P	1998-2002		5-y mean	1	3	52	
Pandion haliaetus	UK	B	148	P	1998-2002		5-y mean	1	3	52	
Common Kestrel	GB	B	35,400	P	2000	-	Best est.	2	4,5	1,13	16
Falco tinnunculus	UK	B	36,800	P	2000	-	Best est.	2	4,5	1,13	
Merlin	GB	B	1,300 (1,100-1,500)	P	1993-94		Best est.	1	2	57	
Falco columbarius	UK	B	1,330	P	1990-94		Best est.	1	2	57,62	
Hobby	GB	B	2,200	P	2000	+	Best est.	2	4	10	
Falco subbuteo	UK	B	2,200	P	2000	+	Best est.	2	4	10	
Peregrine Falcon	GB[4]	B	1,167	P	1991	+	Best est.	1	2	12	
Falco peregrinus	IoM	B	20	P	1991	+	Best est.	1	2	12	
	UK	B	1,283	P	1991	+	Best est.	1	2	12	
Water Rail	GB	B	450-900	P	1988-91		Best est.	3	2,4	23	
Rallus aquaticus	UK	B	700-1,400	P	1988-91		Best est.	3	2,4	23	
Spotted Crake	GB	B	73	M	1999		Best est.	2	3	25	
Porzana porzana	UK	B	73	M	1999		Best est.	2	3	25	
Corn Crake	GB	B	589	M	1998		Best est.	1	1	27	
Crex crex	UK	B	589	M	1998		Best est.	1	1	27	
Moorhen	GB	B	240,000	T	1988-91		Best est.	2	4	23	
Gallinula chloropus	GB	W	750,000	I	1981-84		Best est.	3	3	33	
	UK	B	270,000	P	2000		Best est.	2	4,5	1,13	
	UK	W	750,000	I	1981-84		Best est.	3	3	33	
Common Coot	GB	B	21,700-27,600	P	2000		Best est.	2	4,5	1,13	16
Fulica atra	GB	W	173,000	I	1994-99		5-y mean	2	4	33	
	UK	B	22,600-28,800	P	2000		Best est.	2	4,5	1,13	
	UK	W	188,000	I	1994-99		5-y mean	2	4	33	
Common Crane	GB	B	4	P	1998-2002		5-y mean	1	1	52	
Grus grus	UK	B	4	P	1998-2002		5-y mean	1	1	52	
Oystercatcher	GB	B	113,000 (98,500-127,000)	P	1985-98		Best est.	2	2	46	
Haematopus ostralegus	GB	W	315,200	I	1994-99		Best est.	1	1	60	
	UK	B	113,000 (98,500-127,000)	P	1985-99		Best est.	2	2	46	
	UK	W	338,700	I	1994-99		Best est.	1	1	60	
Black-winged Stilt	GB	B	0-1	P	1998-2002		5-y mean	1	3	52	
Himantopus himantopus	UK	B	0-1	P	1998-2002		5-y mean	1	3	52	
Avocet	GB	B	877	P	1997-2002		5-y mean	1	3	52	9
Recurvirostra avosetta	GB	W	3,395	I	1994-99		Best est.	1	1	60	
	UK	B	877	P	1997-2002		5-y mean	1	3	52	9
	UK	W	3,395	I	1994-99		Best est.	1	1	60	
Stone-curlew	GB	B	214-227	P	1996-2000		5-y mean	1	3	51	3
Burhinus oedicnemus	UK	B	214-227	P	1996-2000		5-y mean	1	3	51	3
Little Ringed Plover	GB	B	825-1,070	P	1988-91		Best est.	2	4	23	
Charadrius dubius	UK	B	825-1,070	P	1988-91		Best est.	2	4	23	
Ringed Plover	GB	B	8,400	P	1984		Best est.	2	1,4	55	
Charadrius hiaticula	GB	W	32,450	I	1994-99		Best est.	1	1	60	
	UK	B	8,540	P	1984		Best est.	2	1,4	55	
	UK	W	34,510	I	1994-99		Best est.	1	1	60	
Dotterel	GB	B	510-750	M	1999		Best est.	2	1	75	
Charadrius morinellus	UK	B	510-750	M	1999		Best est.	2	1	75	
European Golden Plover	GB	B	22,600	P	1981-84		Best est.	3	3,4	58,67	
Pluvialis apricaria	GB	W	250,000	I	1981-92		Best est.	3	2	9,36	
	UK	B	22,600	P	1981-84		Best est.	3	3,4	58,67	
	UK	W	310,000	I	1981-92		Best est.	3	2	9,36	
Grey Plover	GB	W	52,750	I	1994-99		Best est.	1	1	60	
Pluvialis squatarola	UK	W	53,300	I	1994-99		Best est.	1	1	60	
Northern Lapwing	GB	B	154,000	P	1985-98		Best est.	2	3,4	46	
Vanellus vanellus	GB	W	1,500,000-2,000,000	I	1981-92		Best est.	3	2	9,36	
	UK	B	156,000 (137,000-174,000)	P	1985-99		Best est.	2	3,4	46	
	UK	W	1,600,000-2,100,000	I	1981-92		Best est.	3	2	9,36	

Species/population	Region	Season	Number	Unit	Date	+/-	Type	Rel	Der	Ref	Note
Red Knot	GB	W	283,600	I	1994-99		Best est.	1	1	60	
Calidris canutus	UK	W	295,000	I	1994-99		Best est.	1	1	60	
Sanderling	GB	W	20,540	I	1994-99		Best est.	1	1	60	
Calidris alba	UK	W	20,700	I	1994-99		Best est.	1	1	60	
Little Stint	GB	A	450	I	1996-2000		Min.	2	1	5	
Calidris minuta	UK	A	460	I	1996-2000		Min.	2	1	5	
Temminck's Stint	GB	B	1-4	P	1998-2002		5-y mean	1	3	52	
Calidris temminckii	UK	B	1-4	P	1998-2002		5-y mean	1	3	52	
Curlew Sandpiper	GB	A	650	I	1996-2000		Min.	2	1	5	
Calidris ferruginea	UK	A	670	I	1996-2000		Min.	2	1	5	
Purple Sandpiper	GB	B	1-3	P	1998-2002		5-y mean	2	3	52	
Calidris maritima	GB	W	17,530	I	1994-99		Best est.	1	1	60	
	UK	B	1-3	P	1998-2002		5-y mean	2	3	52	
	UK	W	17,760	I	1994-99		Best est.	1	1	60	
Dunlin	GB	B	9,150-9,900	P	1981-84		Best est.	3	3,4	58,67	
Calidris alpina	GB	W	555,800	I	1994-99		Best est.	1	1	60	
	UK	B	9,150-9,900	P	1981-84		Best est.	3	3,4	58,67	
	UK	W	577,100	I	1994-99		Best est.	1	1	60	
Ruff	GB	B	37	M	1998-2002		5-y mean	2	3	52	
Philomachus pugnax	GB	W	700	I	1987-92		Best est.	1	1	9	
	GB	A	1,760	I	1996-2000		Min.	3	4	5	
	UK	B	37	M	1998-2002		5-y mean	2	3	52	
	UK	W	700	I	1989-94		Best est.	1	1	9,5	
	UK	A	1,790	I	1996-2000		Min.	3	4	5	
Jack Snipe	GB	W	10,000-100,000	I	1987-92	-	Best est.	3	2	9	
Lymnocryptes minimus	UK	W	10,000-100,000	I	1989-94		Best est.	3	2	9	
Common Snipe	GB	B	52,500	P	1985-99		Best est.	2	3	46	
Gallinago gallinago	GB	W	>100,000	I	1987-92		Min.	3	2	9	10
	UK	B	59,300 (52,600-69,000)	P	1985-99		Best est.	2	3	46	
	UK	W	>100,000	I	1987-92		Min.	3	2	9	10
Woodcock	GB	B	5,000-12,500	P	2000	-	Best est.	3	4,5	1,13	16
Scolopax rusticola	UK	B	5,400-13,700	P	2000	-	Best est.	3	4,5	1,13	
Black-tailed Godwit	GB	B	44-52	P	1998-2002		5-y mean	1	3	52	3
Limosa limosa	GB	W	15,390	I	1994-99		Best est.	1	1	60	
	UK	B	44-52	P	1998-2002		5-y mean	1	3	52	3
	UK	W	15,860	I	1994-99		Best est.	1	1	60	
Bar-tailed Godwit	GB	W	61,590	I	1994-99		Best est.	1	1	60	
Limosa lapponica	UK	W	65,430	I	1994-99		Best est.	1	1	60	
Whimbrel	GB	B	530	P	1989-92		Best est.	2	2	17	
Numenius phaeopus	GB	S	3,530	I	1997-2001		Min.	3	4	5	
	UK	B	530	P	1989-92		Best est.	2	2	17	
	UK	S	3,840	I	1997-2001		Min.	3	4	5	
Eurasian Curlew	GB	B	105,000	P	1985-99		Best est.	3	3,4	46	
Numenius arquata	GB	W	147,100	I	1994-99		Best est.	1	1	60	
	UK	B	107,000 (99,500-125,000)	P	1985-98		Best est.	3	3,4	46	
	UK	W	164,700	I	1994-99		Best est.	1	1	60	
Spotted Redshank	GB	W	136	I	1994-99		Best est.	1	1	60	
Tringa erythropus	GB	A	530	I	1996-2000		Min.	3	4	5	
	UK	W	138	I	1994-99		Best est.	1	1	60	
	UK	A	540	I	1996-2000		Min.	3	4	5	
Common Redshank	GB	B	38,600	P	1985-98		Best est.	3	3,4	46	
Tringa totanus	GB	W	116,100	I	1994-99		Best est.	1	1	60	
	UK	B	38,800 (31,400-44,400)	P	1985-99		Best est.	3	3,4	46	
	UK	W	125,800	I	1994-99		Best est.	1	1	60	
Common Greenshank	GB	B	1,080 (720-1,480)	P	1995		Best est.	1	1	30	
Tringa nebularia	GB	W	597	I	1994-99		Best est.	1	1	60	
	GB	A	4,290	I	1996-2000		Min.	3	4	5	
	UK	B	1,080 (720-1,480)	P	1995		Best est.	1	1	30	
	UK	W	701	I	1994-99		Best est.	1	1	60	
	UK	A	4,790	I	1996-2000		Min.	3	4	5	

Species/population	Region	Season	Number	Unit	Date	+/-	Type	Rel	Der	Ref	Note
Green Sandpiper	GB	B	1-2	P	1998-2002		5-y mean	1	3	52	3
Tringa ochropus	GB	A	1,000	I	1996-2000		Min.	3	4	5	
	UK	B	1-2	P	1998-2002		5-y mean	1	3	52	3
	UK	A	1,010	I	1996-2000		Min.	3	4	5	
Wood Sandpiper	GB	B	4-8	P	1998-2002		5-y mean	2	3	52	3
Tringa glareola	UK	B	4-8	P	1998-2002		5-y mean	2	3	52	3
Common Sandpiper	GB	B	12,000	P	2000		Best est.	2	4,7	1,13	
Actitis hypoleucos	GB	A	2,600	I	1996-2000		Min.	3	4	5	
	UK	B	12,000	P	2000		Best est.	2	4,7	1,13	
	UK	A	2,610	I	1996-2000		Min.	3	4	5	
Turnstone	GB	W	49,550	I	1994-99		Best est.	1	1	60	
Arenaria interpres	UK	W	52,390	I	1994-99		Best est.	1	1	60	
Red-necked Phalarope	GB	B	16	M	1998-2002		5-y mean	1	3	52	
Phalaropus lobatus	UK	B	16	M	1998-2002		5-y mean	1	3	52	
Arctic Skua	GB	B	2,136	P	1998-2002		Best est.	1	1	41	
Stercorarius parasiticus	UK	B	2,136	P	1998-2002		Best est.	1	1	41	
Great Skua	GB	B	9,634	P	1998-2002		Best est.	1	1	41	
Stercorarius skua	UK	B	9,634	P	1998-2002		Best est.	1	1	41	
Mediterranean Gull	GB	B	108	P	1999-2002		Best est.	1	1	41	
Larus melanocephalus	UK	B	110	P	1999-2002		Best est.	1	1	41	
Black-headed Gull	GB	B	127,907	P	1998-2002		Best est.	1	1	41	
Larus ridibundus	GB	W	1,682,385	I	1993		Min.	2	1	6	
	UK	B	138,014	P	1998-2002		Best est.	1	1	41	
	UK	W	1,697,797	I	1993		Min.	2	1	6	
Common Gull	GB	B	48,163	P	1998-2002		Best est.	1	1	41	
Larus canus	GB	W	429,331	I	1993		Min.	2	1	6	
	UK	B	48,720	P	1998-2002		Best est.	1	1	41	
	UK	W	430,927	I	1993		Min.	2	1	6	
Lesser Black-backed Gull	GB	B	110,101	P	1998-2002		Best est.	1	1	41	
Larus fuscus	GB	W	60,830	I	1993		Min.	2	1	6	
	UK	B	112,074	P	1998-2002		Best est.	1	1	41	
	UK	W	60,830	I	1993		Min.	2	1	6	
Herring Gull	GB*	B	131,469	P	1998-2002		Best est.	1	1	41	
Larus argentatus	GB	W	376,775	I	1993		Min.	2	1	6	
	IoM	B	7,126	P	1998-2002		Best est.	1	1	41	
	UK	B	139,309	P	1998-2002		Best est.	1	1	41	
	UK	W	378,748	I	1993		Min.	2	1	6	
Great Black-backed Gull	GB	B	17,084	P	1998-2002		Best est.	1	1	41	
Larus marinus	GB	W	43,108	I	1993		Min.	2	1	6	
	UK	B	17,160	P	1998-2002		Best est.	1	1	41	
	UK	W	43,156	I	1993		Min.	2	1	6	
Kittiwake	GB	B	366,832	P	1998-2002		Best est.	1	1	41	
Rissa tridactyla	UK	B	379,892	P	1998-2002		Best est.	1	1	41	
Little Tern	GB	B	1,947	P	2000		Best est.	1	1	41	
Sternula albifrons	UK	B	1,947	P	2000		Best est.	1	1	41	
Sandwich Tern	GB	B	10,536	P	2000		Best est.	1	1	41	
Sterna sandvicensis	UK	B	12,490	P	2000		Best est.	1	1	41	
Common Tern	GB	B	10,134	P	2000		Best est.	1	1	41	
Sterna hirundo	UK	B	11,838	P	2000		Best est.	1	1	41	
Roseate Tern	GB	B	52	P	2000		Best est.	1	1	41	
Sterna dougallii	UK	B	56	P	2000		Best est.	1	1	41	
Arctic Tern	GB	B	52,621	P	2000		Best est.	1	1	41	
Sterna paradisaea	UK	B	53,388	P	2000		Best est.	1	1	41	
Common Guillemot	GB	B	1,322,354	I	1998-2002		Best est.	1	1	41	
Uria aalge	UK	B	1,420,900	I	1998-2002		Best est.	1	1	41	
Razorbill	GB	B	164,492	I	1998-2002		Best est.	1	1	41	
Alca torda	UK	B	188,576	I	1998-2002		Best est.	1	1	41	
Black Guillemot	GB	B	38,142	I	1998-2003		Best est.	1	1	41	
Cepphus grylle	UK	B	39,316	I	1998-2003		Best est.	1	1	41	

Species/population	Region	Season	Number	Unit	Date	+/-	Type	Rel	Der	Ref	Note
Puffin	GB	B	579,189	P	1998-2002		Best est.	1	1	41	
Fratercula arctica	UK	B	580,799	P	1998-2002		Best est.	1	1	41	
Rock Dove/Feral Pigeon	GB	B	>100,000	P	1968–72		Min.	3	2	65	
Columba livia	UK	B	>100,000	P	1968–72		Min.	3	2	65	
Stock Dove	GB	B	309,000	T	2000		Best est.	2	4,5	1,13	16
Columba oenas	UK	B	309,000	T	2000		Best est.	2	4,5	1,13	
Wood Pigeon	GB	B	2,450,000-3,040,000	T	2000	+	Best est.	2	4,5	1,13	16
Columba palumbus	UK	B	2,570,000-3,160,000	T	2000	+	Best est.	2	4,5	1,13	
Collared Dove	GB	B	284,000	T	2000		Best est.	3	4,5	1,13	16
Streptopelia decaocto	UK	B	298,000	T	2000		Best est.	3	4,5	1,13	
Turtle Dove	GB	B	44,000	T	2000	-	Best est.	2	4,5	1,13	
Streptopelia turtur	UK	B	44,000	T	2000	-	Best est.	2	4,5	1,13	
Rose-ringed Parakeet	GB	W	4,300	A	2000/01		Best est.	2	2	7	
Psittacula krameri	UK	W	4,300	A	2000/01		Best est.	2	2	7	
Alexandrine Parakeet	GB	B	1	P	1997-2000		4-y mean	1	3	50	
Psittacula eupatria	UK	B	1	P	1997-2000		4-y mean	1	3	50	
Monk Parakeet	GB	B	5	P	2000		Min.	2	3	50	
Myiopsitta monachus	UK	B	5	P	2000		Min.	2	3	50	
Common Cuckoo	GB	B	9,600-19,300	P	2000		Best est.	3	4,5	1,13	16
Cuculus canorus	UK	B	9,600-20,000	P	2000		Best est.	3	4,5	1,13	
Barn Owl	GB	B	4,000 (3,000-5,000)	P	1995-97		Best est.	1	4	71	
Tyto alba	UK	B	4,000 (3,000-5,000)	P	1995-97		Best est.	1	4	71	
Eagle Owl	GB	B	1	P	1996-2000	+	5-y mean	3	3	50	11
Bubo bubo	UK	B	1	P	1996-2000	+	5-y mean	3	3	50	11
Little Owl	GB	B	5,800-11,600	P	2000		Best est.	3	4,5	1,13	
Athene noctua	UK	B	5,800-11,600	P	2000		Best est.	3	4,5	1,13	
Tawny Owl	GB	B	19,400	P	2000		Best est.	3	4,5	1,13	
Strix aluco	UK	B	19,400	P	2000		Best est.	3	4,5	1,13	
Long-eared Owl	GB	B	1,100-3,600	P	1988-91		Best est.	3	4	23	
Asio otus	UK	B	1,460-4,770	P	1988-91		Best est.	3	4	23	
Short-eared Owl	GB	B	1,000-3,500	P	1988-91		Best est.	3	4	23	
Asio flammeus	UK	B	1,000-3,500	P	1988-91		Best est.	3	4	23	
European Nightjar	GB	B	3,400	M	1992		Best est.	1	1,4	43	
Caprimulgus europaeus	UK	B	3,400	M	1992		Best est.	1	1,4	43	
Common Swift	GB	B	80,000	P	68-72, 88-91		Best est.	3	2	23	
Apus apus	UK	B	85,000	P	68-72, 88-91		Best est.	3	4	23	
Common Kingfisher	GB	B	4,300-7,100	P	2000		Best est.	2	4,7	1,13	
Alcedo atthis	UK	B	4,800-8,000	P	2000		Best est.	2	4,7	1,13	
Wryneck	GB	B	0-1	P	1998-2002		5-y mean	2	3	52	3
Jynx torquilla	UK	B	0-1	P	1998-2002		5-y mean	2	3	52	3
Green Woodpecker	GB	B	24,200	P	2000		Best est.	3	4,5	1,13	
Picus viridus	UK	B	24,200	P	2000		Best est.	3	4,5	1,13	
Great Spotted Woodpecker	GB	B	37,000-44,400	P	2000		Best est.	3	4,5	1,13	
Dendrocopos major	UK	B	37,000-44,400	P	2000		Best est.	3	4,5	1,13	
Lesser Spotted Woodpecker	GB	B	1,400-2,900	P	2000	-	Best est.	2	2,5	1,13	
Dendrocopos minor	UK	B	1,400-2,900	P	2000	-	Best est.	2	2,5	1,13	
Wood Lark	GB	B	1,426-1,552	P	1997		Best est.	1	1	78	
Lullula arborea	UK	B	1,426-1,552	P	1997		Best est.	1	1	78	
Sky Lark	GB	B	1,700,000	T	2000	-	Best est.	2	4,5	1,13	16
Alauda arvensis	UK	B	1,785,000	T	2000	-	Best est.	2	4,5	1,13	
Shore Lark	GB	W	<300	I	1981-84		Best est.	3	2	36	
Eremophila alpestris	UK	W	<300	I	1981-84		Best est.	3	2	36	
Sand Martin	GB	B	77,500-250,000	N	1988-91		Best est.	3	4	23	
Riparia riparia	UK	B	85,000-270,000	N	1988-91		Best est.	3	4	23	
Barn Swallow	GB	B	678,000	T	2000	-	Best est.	2	4,5	1,13	16
Hirundo rustica	UK	B	726,000	T	2000	-	Best est.	2	4,5	1,13	

Species/population	Region	Season	Number	Unit	Date	+/-	Type	Rel	Der	Ref	Note
House Martin	GB	B	253,000-505,000	P	2000		Best est.	3	4,5	1,13	16
Delichon urbicum	UK	B	273,000-535,000	P	2000		Best est.	3	4,5	1,13	
Tree Pipit	GB	B	74,400	T	2000		Best est.	3	4,5	1,13	
Anthus trivialis	UK	B	74,400	T	2000		Best est.	3	4,5	1,13	
Meadow Pipit	GB	B	1,600,000	T	2000		Best est.	3	4,5	1,13	16
Anthus pratensis	UK	B	1,680,000	T	2000		Best est.	3	4,5	1,13	
Water Pipit *Anthus spinoletta*	GB	W	<100	I	1981-84		Best est.	3	2	36	
Rock Pipit	GB	B	34,000	P	1988-91		Best est.	3	4	23	
Anthus petrosus	UK	B	35,650	P	1988-91		Best est.	3	4	23	
Yellow Wagtail	GB	B	11,500-26,500	T	2000		Best est.	3	4,5	1,13	
Motacilla flava	UK	B	11,500-26,500	T	2000		Best est.	3	4,5	1,13	
Grey Wagtail	GB	B	34,400-41,300	P	2000		Best est.	3	4,7	1,13	16
Motacilla cinerea	UK	B	38,400-46,200	P	2000		Best est.	3	4,7	1,13	
White/Pied Wagtail	GB	B	255,000-330,000	T	2000		Best est.	2	4,5	1,13	16
Motacilla alba	UK	B	272,000-352,000	T	2000		Best est.	2	4,5	1,13	
Waxwing	GB	W	<100	I	1981-84		Best est.	3	2	36	
Bombycilla garrulus	UK	W	<100	I	1981-84		Best est.	3	2	36	
Dipper	GB	B	6,350-19,100	P	2000		Best est.	3	4,7	1,13	16
Cinclus cinclus	UK	B	6,800-20,000	P	2000		Best est.	3	4,7	1,13	
Wren	GB	B	8,000,000	T	2000		Best est.	2	4,5	1,13	16
Troglodytes troglodytes	UK	B	8,512,000	T	2000		Best est.	2	4,5	1,13	
'Fair Isle' Wren *T. t. fridariensis*	GB	B	28	M	1999-2003		Best est.	1	1	19	
Dunnock	GB	B	2,060,000	T	2000	-	Best est.	2	4,5	1,13	16
Prunella modularis	UK	B	2,163,000	T	2000	-	Best est.	2	4,5	1,13	
Robin	GB	B	5,500,000	T	2000		Best est.	2	4,5	1,13	16
Erithacus rubecula	UK	B	5,895,000	T	2000		Best est.	2	4,5	1,13	
Common Nightingale	GB	B	6,700 (5,600-9,350)	M	1999		Best est.	1	1	77	
Luscinia megarhynchos	UK	B	6,700 (5,600-9,350)	M	1999		Best est.	1	1	77	
Bluethroat	GB	B	0-1	P	1998-2002		5-y mean	2	3	52	3
Luscinia svecica	UK	B	0-1	P	1998-2002		5-y mean	2	3	52	3
Black Redstart	GB	B	25-73	P	1998-2002		5-y mean	2	3	52	3
Phoenicurus ochruros	UK	B	25-73	P	1998-2002		5-y mean	2	3	52	3
Common Redstart	GB	B	101,000	P	2000		Min.	3	4,5	1,13	
Phoenicurus phoenicurus	UK	B	101,000	P	2000		Min.	3	4,5	1,13	
Whinchat	GB	B	14,000-28,000	P	1988-91		Best est.	3	4	23	
Saxicola rubetra	UK	B	14,000-28,000	P	1988-91		Best est.	3	4	23	
Common Stonechat	GB	B	8,500-22,000	P	1988-91		Best est.	3	4	23	
Saxicola torquatus	UK	B	9,000-23,000	P	1988-91		Best est.	3	4	23	
Northern Wheatear	GB	B	55,000	P	1988-91		Best est.	3	4	23	
Oenanthe oenanthe	UK	B	56,000	P	1988-91		Best est.	3	4	23	
Ring Ouzel	GB	B	6,157–7,549	P	1999		Best est.	1	1	79	
Turdus torquatus	UK	B	6,157–7,549	P	1999		Best est.	1	1	79	
Blackbird	GB	B	4,620,000	T	2000	-	Best est.	2	4,5	1,13	16
Turdus merula	UK	B	4,935,000	T	2000	-	Best est.	2	4,5	1,13	
Fieldfare	GB	B	1-4	P	1998-2002		5-y mean	2	3	52	3
Turdus pilaris	GB	W	680,000	I	1981-84		Best est.	3	2	36	12
	UK	B	1-4	P	1998-2002		5-y mean	2	3	52	3
	UK	W	720,000	I	1981-84		Best est.	3	2	36	12
Song Thrush	GB	B	1,030,000	T	2000	-	Best est.	2	4,5	1,13	16
Turdus philomelos	UK	B	1,144,000	T	2000	-	Best est.	2	4,5	1,13	
Redwing	GB	B	2-17	P	1998-2002		5-y mean	2	3	52	3
Turdus iliacus	GB	W	650,000	I	1981-84		Best est.	3	2	36	13
	UK	B	2-17	P	1998-2002		5-y mean	2	3	52	3
	UK	W	685,000	I	1981-84		Best est.	3	2	36	13
Mistle Thrush	GB	B	205,000	T	2000		Best est.	2	4,5	1,13	16
Turdus viscivorus	UK	B	222,500	T	2000		Best est.	2	4,5	1,13	

Species/population	Region	Season	Number	Unit	Date	+/-	Type	Rel	Der	Ref	Note
Cetti's Warbler	GB	B	645	M	1998-2002		5-y mean	2	3	52	
Cettia cetti	UK	B	645	M	1998-2002		5-y mean	2	3	52	
Grasshopper Warbler	GB	B	10,500	P	1988-91	-	Best est.	3	4	23	
Locustella naevia	UK	B	11,750	P	1988-91	-	Best est.	3	4	23	
Savi's Warbler	GB	B	0-6	P	1998-2002		5-y mean	2	3	52	3
Locustella luscinioides	UK	B	0-6	P	1998-2002		5-y mean	2	3	52	3
Aquatic Warbler	GB	A	33	I	1996-2000		5-y mean	3	3		17
Acrocephalus paludicola	UK	A	33	I	1996-2000		5-y mean	3	3		17
Sedge Warbler	GB	B	297,000	T	2000		Best est.	2	4,5	1,13	16
Acrocephalus schoenobaenus	UK	B	321,000	T	2000		Best est.	2	4,5	1,13	
Marsh Warbler	UK	B	3-24	P	1998-2002		5-y mean	1	3	52	3
Acrocephalus palustris	UK	B	3-24	P	1998-2002		5-y mean	1	3	52	3
Reed Warbler	GB	B	60,800-122,000	P	2000		Best est.	3	4,5	1,13	
Acrocephalus scirpaceus	UK	B	60,800-122,000	P	2000		Best est.	3	4,5	1,13	
Great Reed Warbler	GB	B	0-1	P	1998-2002		5-y mean	2	3	52	3
Acrocephalus arundinaceus	UK	B	0-1	P	1998-2002		5-y mean	2	3	52	3
Icterine Warbler	GB	B	0-1	P	1998-2002		5-y mean	2	3	52	3
Hippolais icterina	UK	B	0-1	P	1998-2002		5-y mean	2	3	52	3
Blackcap	GB	B	916,000	T	2000	+	Best est.	2	4,5	1,13	16
Sylvia atricapilla	UK	B	932,000	T	2000	+	Best est.	2	4,5	1,13	
Garden Warbler	GB	B	190,000	T	2000		Best est.	2	4,5	1,13	16
Sylvia borin	UK	B	190,000	T	2000		Best est.	2	4,5	1,13	
Lesser Whitethroat	GB	B	64,000	T	2000		Best est.	2	4,5	1,13	16
Sylvia curruca	UK	B	64,000	T	2000		Best est.	2	4,5	1,13	
Common Whitethroat	GB	B	931,000	T	2000	+	Best est.	2	4,5	1,13	16
Sylvia communis	UK	B	945,000	T	2000	+	Best est.	2	4,5	1,13	
Dartford Warbler	GB	B	1,600-1,890	P	1994		Best est.	1	1,2	22	
Sylvia undata	UK	B	1,600-1,890	P	1994		Best est.	1	1,2	22	
Wood Warbler	GB	B	17,200 (15,830-18,570)	M	1984-85		95%	2	4	3	
Phylloscopus sibilatrix	UK	B	17,200 (15,830-18,570)	M	1984-85		95%	2	4	3	
Common Chiffchaff	GB	B	749,000	T	2000		Best est.	2	4,5	1,13	16
Phylloscopus collybita	UK	B	807,000	T	2000		Best est.	2	4,5	1,13	
Iberian Chiffchaff	GB	B	0-1	P	1998-2002		5-y mean	3	3	52	3
Phylloscopus ibericus	UK	B	0-1	P	1998-2002		5-y mean	3	3	52	3
Willow Warbler	GB	B	1,955,000	T	2000		Best est.	2	4,5	1,13	16
Phylloscopus trochilus	UK	B	2,125,000	T	2000		Best est.	2	4,5	1,13	
Goldcrest	GB	B	773,000	T	2000		Best est.	3	4,5	1,13	16
Regulus regulus	UK	B	842,000	T	2000		Best est.	3	4,5	1,13	
Firecrest	GB	B	80-250	M	1988-91		Best est.	2	2	23	
Regulus ignicapilla	UK	B	80-250	M	1988-91		Best est.	2	4	23	
Spotted Flycatcher	GB	B	58,800	T	2000	-	Best est.	2	4,5	1,13	16
Muscicapa striata	UK	B	63,700	T	2000	-	Best est.	2	4,5	1,13	
Pied Flycatcher	GB	B	35,000-40,000	P	1988-91		Best est.	3	4	23	
Ficedula hypoleuca	UK	B	35,000-40,000	P	1988-91		Best est.	3	4	23	
Bearded Tit	GB	B	504-559	P	2002		Best est.	1	1,2	52	3
Panurus biarmicus	UK	B	504-559	P	2002		Best est.	1	1,2	52	3
Long-tailed Tit	GB	B	261,000	T	2000		Best est.	2	4,5	1,13	16
Aegithalos caudatus	UK	B	273,000	T	2000		Best est.	2	4,5	1,13	
Blue Tit	GB	B	3,333,000	T	2000		Best est.	2	4,5	1,13	16
Cyanistes caeruleus	UK	B	3,535,000	T	2000		Best est.	2	4,5	1,13	
Great Tit	GB	B	1,952,000	T	2000		Best est.	2	4,5	1,13	16
Parus major	UK	B	2,074,000	T	2000		Best est.	2	4,5	1,13	
Crested Tit	GB	B	2,400	P	1995		Best est.	1	2	68	
Lophophanes cristatus	GB	W	5,200-9,500	I	1995		Best est.	1	1	68	
	UK	B	2,400	P	1995		Best est.	1	2	68	
	UK	W	5,200-9,500	I	1995		Best est.	1	1	68	

Species/population	Region	Season	Number	Unit	Date	+/-	Type	Rel	Der	Ref	Note
Coal Tit	GB	B	604,000	T	2000		Best est.	2	4,5	1,13	16
Periparus ater	UK	B	653,000	T	2000		Best est.	2	4,5	1,13	
Willow Tit	GB	B	8,500	T	2000	-	Best est.	3	4,5	1,13	
Poecile montanus	UK	B	8,500	T	2000	-	Best est.	3	4,5	1,13	
Marsh Tit	GB	B	52,800	T	2000	-	Best est.	3	4,5	1,13	
Poecile palustris	UK	B	52,800	T	2000	-	Best est.	3	4,5	1,13	
Eurasian Nuthatch	GB	B	144,000	T	2000		Best est.	2	4,5	1,13	
Sitta europaea	UK	B	144,000	T	2000		Best est.	2	4,5	1,13	
Eurasian Treecreeper	GB	B	204,000	T	2000		Best est.	3	4,5	1,13	16
Certhia familiaris	UK	B	214,000	T	2000		Best est.	3	4,5	1,13	
Golden Oriole	GB	B	5-17	P	1998-2002		5-y mean	1	3	52	3
Oriolus oriolus	UK	B	5-17	P	1998-2002		5-y mean	1	3	52	3
Red-backed Shrike	GB	B	0-5	P	1998-2002		5-y mean	1	3	52	3
Lanius collurio	UK	B	0-5	P	1998-2002		5-y mean	1	3	52	3
Eurasian Jay	GB	B	160,000	T	2000		Best est.	2	4,5	1,13	16
Garrulus glandarius	UK	B	160,000	T	2000		Best est.	2	4,5	1,13	
Magpie	GB	B	590,000	T	2000		Best est.	2	4,5	1,13	16
Pica pica	UK	B	650,000	T	2000		Best est.	2	4,5	1,13	
Red-billed Chough	GB*	B	300-346	P	2002		Best est.	1	1	20,70	14
Pyrrhocorax pyrrhocorax	GB*	B	932-939	I	2002		Best est.	1	1	20,70	15
	GB*	W	932-939	I	2002		Best est.	1	1	20,70	15
	IoM	B	128-150	P	2002		Best est.	1	1	42	14
	IoM	B	426	I	2002		Best est.	1	1	42	15
	IoM	W	426	I	2002		Best est.	1	1	42	15
	UK	B	429-497	P	2002		Best est.	1	1	20,70,42	14
	UK	B	1,360-1,367	I	2002		Best est.	1	1	20,70,42	15
	UK	W	1,360-1,367	I	2002		Best est.	1	1	20,70,42	15
Western Jackdaw	GB	B	503,000	T	2000		Best est.	2	4,5	1,13	16
Corvus monedula	UK	B	555,000	T	2000		Best est.	2	4,5	1,13	
Rook	GB	B	1,022,000-1,304,000	P	2000		Best est.	3	2,5	38,13	16
Corvus frugilegus	UK	B	1,130,000-1,440,000	P	2000		Best est.	3	2,5	38,13	
Carrion Crow	GB	B	790,000	T	1988-91	+	Best est.	2	4	23	
Corvus corone	UK	B	790,000	T	1988-91	+	Best est.	2	4	23	
Hooded Crow	GB	B	160,000	T	1988-91	+	Best est.	2	4	23	
Corvus cornix	UK	B	213,900	T	1988-91	+	Best est.	2	4	23	
Common Raven	GB	B	12,000	P	2000		Best est.	3	4,5	1,13	16
Corvus corax	UK	B	12,900	P	2000		Best est.	3	4,5	1,13	
Common Starling	GB	B	737,000	T	2000		Best est.	3	4,5	1,13	16
Sturnus vulgaris	UK	B	804,000	T	2000		Best est.	3	4,5	1,13	
House Sparrow	GB	B	1,950,000-3,450,000	P	2000	-	Best est.	3	4,5	1,13	16
Passer domesticus	UK	B	2,100,000-3,675,000	P	2000	-	Best est.	3	4,5	1,13	
Tree Sparrow	GB	B	68,000	T	2000	-	Best est.	2	4,5	1,13	16
Passer montanus	UK	B	68,000	T	2000	-	Best est.	2	4,5	1,13	
Common Chaffinch	GB	B	5,562,000	T	2000		Best est.	2	4,5	1,13	16
Fringilla coelebs	UK	B	5,974,000	T	2000		Best est.	2	4,5	1,13	
Brambling	GB	B	0-2	P	1998-2002		5-y mean	2	3	52	3
Fringilla montifringilla	GB	W	45,000-1,800,000	I	1981-84		Best est.	3	2	36	
	UK	B	0-2	P	1998-2002		5-y mean	2	3	52	3
Greenfinch	GB	B	695,000	T	2000		Best est.	2	4,5	1,13	16
Carduelis chloris	UK	B	734,000	T	2000		Best est.	2	4,5	1,13	
Goldfinch	GB	B	299,000	T	2000	-	Best est.	2	4,5	1,13	16
Carduelis carduelis	UK	B	313,000	T	2000	-	Best est.	2	4,5	1,13	
Siskin	GB	B	357,000	P	2000		Best est.	3	4,5	1,13	16
Carduelis spinus	UK	B	369,000	P	2000		Best est.	3	4,5	1,13	
Linnet	GB	B	535,000	T	2000		Best est.	2	4,5	1,13	16
Carduelis cannabina	UK	B	556,000	T	2000		Best est.	2	4,5	1,13	
Twite	GB	B	10,000 (6,000-15,000)	P	1999		Best est.	1	4	37	
Carduelis flavirostris	UK	B	10,000 (6,000-15,000)	P	1999		Best est.	1	4	37	

Species/population	Region	Season	Number	Unit	Date	+/-	Type	Rel	Der	Ref	Note
Lesser Redpoll	GB	B	25,300	P	2000		Best est.	3	4,5	1,13	16
Carduelis cabaret	UK	B	26,900	P	2000		Best est.	3	4,5	1,13	
Common Crossbill	GB	B	1,000-20,000	P	1968-90		Best est.	3	2	23,65	
Loxia curvirostra	UK	B	1,000-20,000	P	1968-90		Best est.	3	2	23,65	
Scottish Crossbill	GB	B	300-1,250	P	1988		Best est.	3	2	1	
Loxia scotica	UK	B	300-1,250	P	1988		Best est.	3	2	1	
Parrot Crossbill	GB	B	30	P	2002	+	Best est.	3	2	52	
Loxia pytyopsittacus	UK	B	30	P	2002	+	Best est.	3	2	52	
Common Rosefinch	UK	B	0-4	P	1998-2002		5-y mean	2	3	52	3
Carpodacus erythrinus	UK	B	0-4	P	1998-2002		5-y mean	2	3	52	3
Bullfinch	GB	B	157,700	T	2000	-	Best est.	2	4,5	1,13	16
Pyrrhula pyrrhula	UK	B	166,000	T	2000	-	Best est.	2	4,5	1,13	
Hawfinch	GB	B	3,000-6,500	P	1988-91	-	Best est.	3	4	23	
Coccothraustes coccothraustes	UK	B	3,000-6,500	P	1988-91	-	Best est.	3	4	23	
Lapland Bunting	GB	W	200-500	I	1981-84		Best est.	3	2	36	
Calcarius lapponicus	UK	W	200-500	I	1981-84		Best est.	3	2	36	
Snow Bunting	GB	B	70-100	P	1988-91		Best est.	2	2	23	
Plectrophenax nivalis	GB	W	9,000-13,500	I	1981-84		Best est.	3	2	36	
	UK	B	70-100	P	1988-91		Best est.	2	4	23	
	UK	W	10,000-15,000	I	1981-84		Best est.	3	2	36	
Yellowhammer	GB	B	792,000	T	2000	-	Best est.	2	4,5	1,13	16
Emberiza citrinella	UK	B	792,000	T	2000	-	Best est.	2	4,5	1,13	
Cirl Bunting	GB	B	697 (645-770)	P	2003		Best est.	1	1	80	
Emberiza cirlus	UK	B	697 (645-770)	P	2003		Best est.	1	1	80	
Reed Bunting	GB	B	176,000-193,000	T	2000		Best est.	2	4,5	1,13	16
Emberiza schoeniclus	UK	B	192,000-211,000	T	2000		Best est.	2	4,5	1,13	
Corn Bunting	GB	B	8,500-12,200	T	2000	-	Best est.	2	4,5	1,13	
Emberiza calandra	UK	B	8,500-12,200	T	2000	-	Best est.	2	4,5	1,13	

Footnote

1. When a site has had no assessment of the breeding numbers, an assessment has been made using size of late-summer flocks divided by 3 (see Meininger *et al.* 1995) where these flocks are known to be self-sustaining and contain breeding birds.
2. The figures for breeding Mallard in APEP97 were poorly adapted from Sharrock (1976). A new estimate has been derived by applying densities of 20 and 48 pairs/10 km square (adapted from CBC data) to *New Breeding Atlas* (Gibbons *et al.* 1993) data to give a range based on the number of 10 km squares with breeding evidence in GB (2,384) and UK (2,521).
3. Range is average of confirmed to average of confirmed + probable + possible breeding attempts.
4. Garganey numbers exclude 2002 figures as RBBP has changed the way that it treats this species.
5. Breeding Common Pochard numbers are total pairs in each year (proved + probable + possible breeding attempts).
6. The minimum figure for Red-throated Diver is proven breeding pairs and the maximum is half of the total number of adults recorded in Scotland in 1994.
7. Owing to limited survey coverage, the winter estimate for Red-throated Diver is likely to be a significant underestimate.
8. For Little Egret, the RBBP figure from 2002 is used because this colonising species, which started breeding in 1996, is still increasing rapidly.
9. Breeding Avocet numbers are confirmed pairs from a 5-year mean for 1997-2002 excluding 2001, when coverage was poor.
10. Estimate based on *Winter Atlas* (Lack 1986), but no real estimate available for Common Snipe.
11. Eagle Owl population is almost certainly larger, but under-reported.
12. APEP97 figures for Fieldfare have been reviewed and corrected.
13. APEP97 figures for Redwing have been reviewed and corrected.
14. Range of breeding Red-billed Chough numbers is (confirmed + probable) to (confirmed + probable + possible) pairs.
15. Estimates for number of individual Red-billed Choughs, in any season, are based on two pairs on territory plus total number of birds in non-breeding flocks.
16. GB estimate derived from UK estimate on basis of ratio in APEP97.
17. Estimate derived from various sources including County Bird Reports.
18. RSPB unpublished data.

Conclusions

There have been several major new surveys and reviews of bird numbers since the collation of the APEP97 list, and the figures presented here reflect considerable progress in improving our understanding of British and UK bird numbers. Nonetheless, despite the extensive range of existing bird surveys in the UK and continued efforts to develop these to provide more precise population estimates, we still need to improve our understanding of the population status of some species.

One of the key outcomes of this type of review exercise is to identify gaps in our knowledge. Such gaps may relate to the quality of existing information (including estimate 'age') as well as where estimates are completely lacking. There are a few species for which we have no population estimate at all. For example, Little Gull *Larus minutus* was excluded from the list because previous estimates (e.g. Lack 1986) were based on a small part of the population and are unsuitable for extrapolation; in our opinion, this species lacks a British or UK population estimate. There are a number of species for which the existing estimates are of very poor quality, either due to the nature of the original surveys or because they are now out of date; new surveys are required for these species. Of particular urgency is the need to complete national surveys for non-breeding seaducks, divers and grebes in inshore marine waters to establish baseline estimates. Notwithstanding the poor quality of some of the figures, table 1 includes the best population estimates currently available, and these estimates remain relevant for conservation uses.

Some of the older estimates presented here will be updated when the list is next revised. Several national surveys (including the 2002 Peregrine and 2003 Golden Eagle *Aquila chrysaetos* surveys) have been completed recently, but the results had not been accepted for publication when this list was put together so they have not been used. The GCT/BTO breeding Woodcock *Scolopax rusticola* survey was carried out in 2003 and estimates may also be available for the next list. There are a number of ongoing or new surveys that will also contribute estimates for future revisions. A new BTO-led national survey of non-breeding gulls (WinGS) began in the winter of 2003/04 and will report in 2007, and within WeBS a new survey has been launched, the Dispersed Waterbird Survey, which aims to provide better estimates for widely dispersed non-breeding waterbirds. Ongoing surveys in coastal waters may provide us with better estimates for some of the species that we know occur in large numbers around our coasts but which are not readily surveyed from shore, such as Common Scoter *Melanitta nigra*. The SCARABBS programme identifies possible timings of future national surveys for our rarer breeding birds, based on an annual, six- or 12-year cycle of repeat, e.g. European Nightjar *Caprimulgus europaeus* in 2004, and new estimates may become available for the next list revision. Finally, the BTO has announced that it intends to carry out a new breeding and wintering 'Atlas' survey of Britain & Ireland in 2007–11. This may provide a good opportunity to update many of the population estimates for common birds and may allow much better-quality estimates to be produced for some species that have never been well surveyed.

Future compilations

APEP intends to publish future revisions to the list of GB and UK population estimates every three years. In addition, in collaboration with colleagues in Ireland, it plans to produce a list of estimates for All-Ireland in the near future. There is increasing interest in country-level estimates and APEP is also considering expanding the list to include these.

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(Numbers in square brackets refer to those listed in table 1 under 'Ref')

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Letters

Birds and windfarms: what are the real issues?

I refer to Steve Percival's article on this subject (Percival 2005). By the end of 2004, 16,534 wind turbines were installed in Germany, which provides enormous scope for research on the potential impacts to bird populations. Most of this research has been carried out for environmental impact assessments (EIAs), and is relatively short-term (from a few weeks to one or at most two years). A variety of conclusions have been drawn from the many different studies, the results being partly determined by different situations (geography, bird species involved, habitats, time of year, etc.). Furthermore, most observations have been carried out at comparatively small turbines, 50–70 m high, whereas newer turbines are higher than 100 m, and some up to 180 m are now in production. Despite these caveats, I wish to summarise the three main impacts of wind turbines on bird populations in mainland Germany (offshore windfarms have not yet been well studied).

Loss of habitat This affects especially geese (Anserinae) and cranes (Gruidae), large numbers of which (hundreds of thousands) migrate through, stage and overwinter in northern Germany. Windfarms reduce considerably the feeding habitat available in farmland areas, and effectively concentrate birds even more in areas where there are already conflicts between farmers and birds. The area surrounding the turbine from which birds are prevented from feeding varies according to species and individual location, but as a general rule for geese and cranes an area with a radius roughly 8–10 times the height of the turbine is disturbed, where feeding rates are reduced or birds do not feed at all (Kruckenberg & Jaene 1999; BfN 2000; Exo 2001; Borbach-Jaene pers. comm.). One windfarm of 10–20 turbines can thus render up to 5–10 km^2 of feeding habitat unavailable. Similar impacts were established for Northern Lapwings *Vanellus vanellus* and European Golden Plovers *Pluvialis apricaria* (Brehme 1999; GNOR 2001).

Barrier effect Windfarms force birds such as geese, cranes and waders (Charadriiformes) to fly longer distances between feeding areas and the roost, which has time/energy implications. The migration of other birds, including passerines (larks (Alaudidae), finches (Fringillidae), thrushes (Turdidae), etc.) is affected, for example by disorientation, splitting of flocks, interruption of migration (BfN 2000, GNOR 2001). Most diurnal migrants fly lower than 200 m, thus potentially within reach of turbines (Gatter 2000; Bruderer & Liechti 2004), while extensive research in Switzerland using radar has also revealed that 15–25% of nocturnal migrants fly below 200 m (Bruderer & Liechti 2004).

There are some breeding species where barrier effects within or between territories (e.g. between nest-site and foraging areas) are known or can be expected. One territory of Black Stork *Ciconia nigra* was abandoned after construction of a windfarm nearby (GNOR 2001). Lesser Spotted Eagles *Aquila pomarina* (c. 120 territories in Germany) avoid human structures including roads and settlements in their territories, and it is believed that windfarms are potentially a major threat to this declining species (Langgemach *et al.* 1999; Scheller *et al.* 2001). One of three remaining breeding sites for Great Bustard *Otis tarda* in Germany, which are some 40 km distant from each other but are linked as a form of metapopulation, has recently been isolated from the others by a windfarm (Langgemach *in litt.*).

Casualties The Brandenburg State Bird Conservation Centre collects data on birds and bats (Chiroptera) killed by wind turbines in Germany and published the following numbers (by August 2005, all raptors with more than five individuals mentioned, mostly collision victims): Red Kite *Milvus milvus* 70, Common Buzzard *Buteo buteo* 45, White-tailed Eagle *Haliaeetus albicilla* 15, Common Kestrel *Falco tinnunculus* 12, Black Kite *M. migrans* 6. In addition, 8 White Storks *C. ciconia*, one Black Stork and small numbers of a wide variety of other bird species were killed, and 376 bats were found dead. Habituation within breeding territories may bring the raptors close to the rotating windmills. Low atmospheric pressure on the lee side of the turbine seems to be responsible for at least some bat casualties, while a White Stork (a potentially vulnerable species, because it does not usually avoid artifi-

cial structures) was knocked down by turbulence and sustained two broken legs. Given their respective population size, White-tailed Eagle and Red Kite seem to be the worst-affected bird species in Germany. In particular, 35 of the 38 Red Kites for which age was determined were adults, and 30 were killed during the breeding season (March–July). For White-tailed Eagle, six of the 15 were adults, and ten were killed between early March and mid April alone.

It is not known whether wind turbines are just another artificial structure which kills birds, or whether they may have an effect at the population level. However, the selective impact on some raptor species and the effects of reducing feeding habitat for geese, cranes and some waders, as well as their concentration in certain areas, may indicate a more serious impact.

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The Fair Isle sandpiper

In his review of the Fair Isle Sandpiper (*Brit. Birds* 98: 356–364), Martin Garner did not comment on the vocalisation heard by H. G. Alexander and described as 'chirr-rr-rr'. Although apparently heard only once, this is to my mind highly supportive of the bird in question being a Semipalmated Sandpiper *Calidris pusilla*. This is an excellent description of the flight call of Semipalmated and certainly does not resemble a transcription of a Western Sandpiper *C. mauri* call (generally described as 'thin', 'squeaky', etc.). I have heard the calls of both species many times and, to my ears, Semipalmated flight calls always contain '-rr-'s whereas Western's never do. This is borne out by the numerous descriptions of Western calls that can be found in the literature which do not contain the letter 'r'! I routinely identify Western from Semipalmated on call rather than by visual cues as the calls of the two species are so distinctive.

Terry Walsh

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EDITORIAL COMMENT It seems likely that the distinctions commented on by Terry Walsh are essentially correct, and most of the modern identification literature (including Hayman *et al.*, 1986, *Shorebirds*; Svensson *et al.*, 1999, *The Collins Bird Guide*; Sibley, 2000, *The North American Bird Guide*; and Paulsen, 2005, *Shorebirds of North America*) gives transcriptions of the calls of Semipalmated which include the letter 'r' and of Western which lack the letter 'r'. However, there are some published references to Western Sandpiper vocalisations containing an 'r' sound. For example, *BWP* describes the call of Western Sandpiper thus: 'A high-pitched, shrill "chiet" or "cheet", sometimes repeated; short and penetrating, reminiscent of call of White-rumped Sandpiper *C. fuscicollis*... described also as a trilled "bbeet", given in various contexts including when flushed, but most commonly in flocks throughout non-breeding period... This apparently the variable, loud "cheE-rp cheep" or "chir-eep" of Nichols (Nichols 1920 [*Auk*: 37: 519–40]), who also distinguished a "sirp" or "chir-ir-ip" from flushed birds, resembling calls of Shore Lark *Eremophila alpestris*.' *Eds*

News and comment

Compiled by Adrian Pitches

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

Bird flu

As 2005 drew to a close, the virulent H5N1 strain of avian influenza was reported in poultry in the Crimea peninsula of Ukraine. This was the fourth country in Europe to report bird flu, following outbreaks in October in Romania (dead Mute Swans *Cygnus olor* found in the Danube delta), Russia (an outbreak at a poultry farm 200 km south of Moscow) and Croatia (Mute Swans killed by H5N1 on fish ponds in the east of the country). In November, the Kuwaiti authorities reported the first known case in the Gulf region, saying that a culled flamingo (Phoenicopteridae) was carrying the deadly bird flu strain.

However, these isolated cases were in stark contrast to the predicted widespread infection spread by wild birds migrating from Siberia to Europe that was forecast by more alarmist pundits. Dr Michael Rands, Chief Executive of BirdLife, said: 'The most obvious explanation is that migrating wild birds are *not* spreading the disease. Migratory wild birds were blamed for spreading bird flu west from Asia, yet there's been no spread back eastwards, nor to South Asia and Africa this autumn. The limited outbreaks in eastern Europe are on southerly migration routes but are more likely to be caused by other vectors such as the import of poultry or poultry products. The hypothesis that wild birds are to blame is simply far from proven. Wild birds occasionally come into contact with infected poultry and die: they are the victims not vectors of H5N1 bird flu.'

BirdLife maintains that better biosecurity is the key to halting the spread of bird flu. In particular, BirdLife is urging governments and relevant agencies to concentrate their efforts on the poultry and cage-bird trades and to ban the movement of poultry and poultry products from infected areas, and restrict the international movement of captive birds in trade. BirdLife is also strongly urging governments to ban the use of untreated poultry faeces as fertiliser and feed in fish farms and in agriculture. Domestic bird waste is used widely for these purposes, yet infected poultry are known to excrete virus particles in their faeces.

The use of untreated faeces in fish farming was recently described by the UN's Food and Agriculture Organization as a 'high risk production practice'. Russian fish farms have begun using chicken faeces as a fertiliser, and this practice is already employed in eastern Europe where poultry faeces are also spread onto agricultural land; it may be significant that Mute Swans which died of bird flu in Croatia and Romania were found dead near fish ponds.

In Southeast Asia, where the present bird flu outbreak was first identified in South Korea in December 2003, the virus has now claimed 70 lives. The vast majority of fatalities (more than 40) have been in Vietnam. Wild birds were scapegoated, and unilateral culls were ordered by city authorities in Ho Chi Minh City, Da Nang and Hue in an attempt to prevent the spread of avian flu from the countryside. The culls mostly targeted feral pigeons *Columba*, but egrets and herons (Ardeidae) were also killed, and one city official said the aim was to empty the city skies of wild birds. However, the Vietnamese government ordered a halt to the culls in December and has now warned its people about the risk of dumping tonnes of chicken faeces into rivers and lakes as fish food; one boy died of bird flu after swimming in a river where infected chicken carcases were discarded. There have also been deaths in Indonesia, Thailand, Cambodia – and now China. But South Korea has effectively stamped out bird flu and remains disease-free through improved biosecurity. In autumn 2005, hundreds of thousands of waterbirds arrived to winter in, or migrated through, South Korea, and there was no bird flu outbreak. Visit the Birds Korea website for one of the better summaries of 'poultry flu', as they pointedly call the disease: www.birdskorea.org/poultryflu_mainpage.asp

Save Our Spoonies

Of course, there is one highly charismatic shorebird that can only be grateful for South Korea's bird-flu-free status: Spoon-billed Sandpiper *Eurynorhynchus pygmeus*. But that's where the gratitude ends. The South Korean government may have contained bird flu but is doing its utmost to drive 'Spoonies' to extinction with the ongoing attempt to 'reclaim' the birds' foremost migration stopover, Saemangeum estuary. As we have reported in N&c in the past (e.g. *Brit. Birds* 98: 164), Saemangeum is one of the most important wetlands in the world, but the plan to dam the Mangyeung and Dongjin Rivers and convert the land into rice paddy has been halted at the eleventh hour only by conservationists' concerted court action. Consolidating that victory will require detailed data on shorebird numbers so that any court appeal by the South Korean government can be rebutted with hard facts. The 33-km seawall constructed to dam the estuary is almost complete and could be finished rapidly, con-

demning the 40,000-ha area to stagnation and reclamation as low-grade farmland.

Wader watchers are planning a series of shorebird counts this spring and in subsequent migration periods. They need people and funds (an estimated $20,000), and are proposing a World Birdwatch Day for Saemangeum in February to coincide with World Wetlands Day (2nd February). So, if you fancy a sponsored birdwatch on the weekend of 4th–5th February, please contact Birds Korea for more information; the money you raise will support an extremely worthy cause. It may help the Endangered Spoon-billed Sandpiper to survive (the world population is estimated at just 2,000 birds). And, one day, one of those Spoonies just might turn up on an estuary closer to home... Visit www.birdskorea.org/worldbwday.asp

Eagle Owls – here to stay?

The 'revelation' that Eagle Owls *Bubo bubo* have been breeding on the North York Moors for a decade was the subject of a BBC TV programme in mid November. The story attracted plenty of media attention – and plenty of interest from birders. Of course, it was no revelation to *BB* readers, as the annual 'Non-natives' report of the Rare Breeding Birds Panel has included this pair of Eagle Owls since 1996 (see *Brit. Birds* 97: 637 for the most recent report).

Coincidentally, 1996 was the year that BOURC reviewed the status of Eagle Owl in Britain. That review examined c. 90 reports of the species since 1684 (Eagle Owl has been known in captivity in this country since at least the seventeenth century). After careful consideration, the committee unanimously concluded that, even where the descriptions allowed the unequivocal elimination of alternative species, the possibility of escapes, releases and confusion over the provenance of skins could not be dismissed. There was no evidence that Eagle Owl had occurred in the wild in Britain for over 200 years, and the species was therefore removed from Category B of the British List.

Since 1996, more than 20 young birds have been ringed at the nest on MOD land in North Yorkshire, one of which was recovered this year as a fatality in Shropshire. It has been suggested that there may now be a breeding population of 40 pairs in the UK, all presumed to have a captive origin. And this is where a curiosity becomes a controversy. Raptor enthusiast Roy Dennis, whose zeal for reintroduction has encompassed White-tailed Eagle *Haliaeetus albicilla*, Red Kite *Milvus milvus* and Osprey *Pandion haliaetus* – and latterly Beaver *Castor fiber* and Lynx *Felis lynx* – argued that Eagle Owl was once native to the UK, may well be occurring naturally once again as a vagrant from Europe and should therefore be encouraged to colonise this country. However, the RSPB takes a much more cautious view. It says that the official (BOURC) position is that Eagle Owl has *never* occurred naturally in the UK and it should be treated as an alien species, indeed a potentially damaging one that could wreak havoc on our native birdlife. Julian Hughes, the RSPB's head of species protection, told the *BirdGuides* website: 'Efforts to remove the small numbers of Eagle Owls breeding in the UK may be justified, if it can be shown that they are having, or are likely to have, a negative impact on native species, whether as prey or competitors. We believe that the departments responsible for coordinating government policy on non-native species in each country within the UK should assess the likely impacts and consult interested parties on its suggested response.'

All this sparked a lively debate on the *BirdGuides* message board, reminiscent of the controversy over the Defra-sponsored cull of Ruddy Ducks *Oxyura jamaicensis* (also supported by the RSPB). The North Yorkshire Eagle Owls seem to exist on an exclusive diet of Rabbits *Oryctolagus cuniculus*, although the temptation to predate Black Grouse *Tetrao tetrix* or even Hen Harriers *Circus cyaneus* must be ever-present. What concerns the RSPB is that disease has wiped out Rabbits in The Netherlands and the Dutch Eagle Owls, recent colonists from farther north and east, are now preying on Common Buzzards *Buteo buteo*... After 50 years battling against pesticides and persecution, could our resurgent raptor populations now be at risk from an alien predator set loose by incompetent or irresponsible falconers? Visit www.rspb.org.uk/policy/species/eagleowl/index.asp

Günter Bachmeier

16. Eagle Owl *Bubo bubo*: native or not?

British bustard scheme threatening Russian population?

Attempts to re-establish the Great Bustard *Otis tarda* in Britain are undermining the Russian population of this endangered species. So says the project's chief scientist, Dr Patrick Osborne, who wrote the feasibility study for the reintroduction on Salisbury Plain in Wiltshire, and who claims that British taxpayers' money is being paid to Russian farmers to take eggs from viable nests, despite assurances that only abandoned eggs and those threatened by agriculture would be used.

In a letter to Ben Bradshaw, the minister for nature conservation, quoted in *The Daily Telegraph*, Osborne, a conservation ecologist from the University of Southampton, says that he is withdrawing from the project because he does not want to 'bring shame on Britain'. He writes: 'It is now clear that the Severtsov Institute [the project's Russian partner] has routinely made payments to farm workers to collect eggs and that the practice is known to, and was funded by, the Great Bustard Group in 2004 and 2005. Paying farm workers to collect eggs is a very blunt instrument and has resulted in excessive and inappropriate collecting from all nests, doomed or not. Without proper monitoring (which I do not believe takes place) there is a danger that actions taken in Russia to supply bustards to Britain may damage the Russian population. I therefore suggest to the Government that the licence to release bustards in Britain be suspended until 2009 pending further data.'

The Great Bustard Group has a licence to import bustard chicks from Russia in an attempt to reintroduce the species to Britain. In 2004, 28 chicks were translocated from the Saratov region of Russia and in 2005 a further 38 chicks were imported. The Group plans to continue bringing young bustards to Britain for up to ten years, with the aim of establishing a self-sustaining wild population. The project costs about £100,000 a year, with £60,000 paid by the Government and the EU. Russian farmers, who earn an average of about £20.00 a month, are paid 100 roubles (£2.00) if they report the location of eggs, or 60 roubles if they take eggs from nests when their tractors threaten destruction. Alexander Antonchikov, the chairman of the Saratov branch of the Russian Bird Conservation Union, said that payments to farmers had resulted in eggs being taken from viable nests, while in some cases Demoiselle Crane *Anthropoides virgo* and Little Bustard *Otis tetrax* eggs had been removed by mistake.

David Waters, the Great Bustard Group's chairman, admitted that farmers were paid for eggs and that more than the 60 specified in the licence were taken during the past two summers. But he denied that the project was affecting Great Bustard numbers in Saratov. He said: 'Last year, when 76 eggs were collected... [under] a licence for 60, he [Dr Osborne] was there. He counted every egg; he knew everything and there were no allegations when he was out there. It is impossible to find nests other than while conducting this cultivation [and] to suggest that there are people going out specifically to look for eggs for the project is ridiculous.' Defra, who issue the importation licence, said: 'We take allegations of this sort extremely seriously and will investigate them fully.' As a result of the allegations, the Great Bustard Group consultative committee is to appoint an independent monitor to oversee egg collection.

Seabird Group conference

Here's a date for that new 2006 diary: the Seabird Group is holding its international conference at Aberdeen University during 1st–3rd September. The theme is highly topical: 'Seabird Populations Under Pressure'. Talks will cover the full range of pressures that seabirds experience, both in the UK and elsewhere. These include climate change, fishing, pollution (from oil or other sources), development (e.g. windfarms) and disease, as well as the potential consequences of those pressures. The deadline for papers is 28th February 2006. Provisional titles of papers (oral or posters) should be sent to Mark Tasker, JNCC, Dunnet House, 7 Thistle Place, Aberdeen AB10 1UZ; e-mail: mark.tasker@jncc.gov.uk Booking forms will be sent to Seabird Group members in spring 2006, and will be available from www.seabirdgroup.org.uk or Martin Heubeck, Sumburgh Lighthouse, Virkie, Shetland ZE3 9JN; e-mail: martinheubeck@btinternet.com Participation is limited to 175 delegates.

New Recorder for Herts

As of 1st January 2006, the new Hertfordshire Bird Recorder is Tony Blake, 9 Old Forge Close, Stanmore, HA7 3EB; e-mail: recorder@hertsbirdclub.org.uk

How many birds?

The data contained in the paper on pp. 25–44 of this issue make interesting reading. Any estimate of British bird populations can only be that – an estimate – but the relatively small size of both our breeding avifauna and our landmass makes it easier to be (relatively) accurate. It would be a brave man to attempt to estimate the exact number of birds in North America, for example. But one brave man did just that and came up with a very precise number. That man was renowned field-guide author Roger Tory Peterson and his estimate, in the 1950s, was 7,612,866,560 individual birds! No-one dared to demand a recount.

RSPB complains to Brussels about Lewis windfarm

RSPB Scotland has lodged what is termed a 'complaint' with the European Commission over plans by Lewis Wind Power to build a 200-turbine windfarm on the Lewis Peatlands Special Protection Area (SPA), which is protected under the European Birds Directive. In a terse statement, the RSPB said: 'This step has been taken because we believe the advice provided to the developer by the Scottish Executive on the consideration of alternatives for the site does not fall into line with domestic or European decisions and guidance. If this environmentally sensitive site is to be damaged, we want to ensure that it is damaged for the right reasons. We are also concerned that dangerous precedents could be set for other similarly sensitive sites in the future if this application is not dealt with according to the guidelines... RSPB Scotland lodged a formal objection to the proposed windfarm development in February 2005. According to the developers' own Environmental Statement, the proposal will result in the loss of at least 50 Golden Eagles *Aquila chrysaetos*, 50 Merlins *Falco columbarius* and up to 150 Red-throated Divers *Gavia stellata* due to collision with turbines during the lifetime of the windfarm. The RSPB supports the increased use of wind power to help to combat climate change – as long as windfarms are sited, designed and managed so they do not significantly harm birds and other wildlife or their habitats.'

The Western Isles Council gave its permission for the windfarm in June 2005 but such a massive development has to be approved by the Scottish Executive before it can proceed. To emphasise just how enormous the Lewis windfarm would be, the RSPB has produced a series of maps of major cities superimposed with the proposed layout of the turbines. They reveal how the development would stretch north from Edinburgh Zoo to beyond Methil, on the other side of the Firth of Forth, and west to Dunfermline; from Glasgow Central Station to East Kilbride in the south and Falkirk to the northeast; and from Epsom Downs south of London to several miles north of the Thames flood barrier and east to Hampton Court. Visit www.rspb.org.uk/scotland/action/lewis/news/maps.asp

Windfarm halted by geese

Meanwhile, another power company in northern Scotland has dropped plans for a windfarm because of fears that geese could be killed by the turbines. Perth-based Scottish & Southern Energy (SSE) wanted to build the 56-turbine, 116 megawatt development at Broubster Leans in Caithness, a site of European nature conservation importance. However, a two-year study showed that the windfarm site would be under the flight route of migrating 'Greenland' White-fronted *Anser albifrons flavirostris* and Greylag Geese *A. anser* which roost in the area. SSE decided that a windfarm would pose a significant risk of collision for the birds and dropped the proposals.

Dr Brian Smith, SSE's head of projects, said: 'The development of more windfarms in Scotland is vital if we are to maintain secure supplies of power and tackle the huge risks to our country posed by climate change. But each potential site must be considered on its merits and be the subject of detailed scrutiny. Our work has shown that a windfarm at Broubster would not be sufficiently compatible with other environmental concerns, and so we have decided not to progress this further.' (It should be noted that SSE is the RSPB's partner in RSPB Energy. For each RSPB member that signs up for electricity from SSE, the RSPB receives £10.00 on sign-up and £5.00 each subsequent year from SSE. This fund has already been used to purchase land in East Anglia, the Isle of Wight and Scotland to help to offset the effects of climate change).

A recent Scottish Natural Heritage report showed that geese are returning to winter in Scotland in some of the highest numbers recorded since their populations crashed in the early part of the twentieth century. The numbers of Greenland White-fronts in Scotland reached a peak of 21,164 in 1998/99 but after a period of stability the birds are now showing signs of a decline to around 17,500. The population of Icelandic Greylags peaked at 115,000 in 1990, followed by a decline to about 73,000 in 2002. The report concluded that goose populations remain extremely vulnerable to changing circumstances in their Arctic breeding grounds and their migration stopovers.

Skokholm up for sale

The island of Skokholm is up for sale for the first time in over 350 years. Made famous by Ronald Lockley, who arrived in 1927 and founded Britain's first bird observatory in 1933, Skokholm has been managed by the Wildlife Trust of South and West Wales since the 1950s, and the Trust has been identified as the preferred buyer of the island by the owners. Skokholm has been owned by the same family since being purchased for £300.00 in 1646 by William Phillips, one of the founders of the Estate. The decision to sell the island is not one that has been taken lightly, but has been forced by death duties incurred after the death of Mrs Osra Lloyd Phillips.

Skokholm is a 100-ha (247 acres) outcrop of Old Red Sandstone, 4 km southwest of the Marloes Peninsula in Pembrokeshire. It is designated as a Site of Special Scientific Interest (SSSI) and as a European Natura 2000 site. Along with the neighbouring islands of Skomer and Grassholm, it forms one of the most important seabird breeding sites in Europe. Skokholm alone supports 45,000 pairs of Manx Shearwaters *Puffinus puffinus*, besides European Storm-petrels *Oceanites oceanicus* and three species of auk (Alcidae). Lockley took up a 21-year lease in 1927. His research on the island's rabbit population formed the basis for Richard Adams's novel *Watership Down*.

Dupont's Larks singing from the same hymn sheet

Dupont's Larks *Chersophilus duponti* are having trouble hearing more distant songsters because of the way their habitat has been broken up. As a result, the birds are living in more isolated groups and learning songs only from their closest neighbours. Researchers believe that these changes in song patterns are an early warning of habitat fragmentation, which could lead to lower genetic diversity and inbred populations. Paola Laiolo and José Tella, of the Estación Biológica de Doñana, in Seville, recorded and analysed the songs of Dupont's Larks in 21 localities in Spain and Morocco. This species has particular habitat requirements and is restricted to arid steppe dominated by Wormwood *Artemisia* sp. By comparing song similarity among birds, the researchers showed that fragmented habitats made the male larks mimic their neighbours' songs more than expected, but lose touch with birds on the other side of the habitat break. Neighbours shared up to 70% of their phrases, while non-neighbours shared only around 30%; by contrast, birds living in pristine habitat shared around 45% of their phrases with non-neighbours over a similar distance. The researchers believe that an increase in agricultural land, forest plantations and roads has fragmented the arid steppe habitat, preventing Dupont's Larks from sharing songs over greater distances. The fragmentation confines the species to smaller areas and eventually the genetic diversity of the population will decline according to the authors, who report their findings in the *Journal of Applied Ecology*.

New Editorial Board member

We are delighted to announce that Steve Votier has accepted our invitation to join the *BB* Editorial Board, with effect from 1st January. Steve is a now a lecturer in marine biology at the University of Plymouth, after completing his PhD and post-doctoral research at Glasgow University, working chiefly on Bonxies *Stercorarius skua* in Shetland. He has been birding as long as he can remember, most notably in his home county of Norfolk and on Shetland, and is a former *BB* Young Ornithologist of the Year. As well as his interests in the marine environment, he is particularly keen on bird migration and identification, and looks for any opportunity to get out in the field. Steve is also a member of the BOURC, and his appointment brings the *BB* Editorial Board up to nine-strong.

Big Brother guns for House Sparrow

A House Sparrow *Passer domesticus* recently made a spectacular demonstration of the domino effect before it was gunned down in a Dutch TV studio. The TV company Endemol – the creators of *Big Brother* – were stacking more than 4,000,000 dominoes prior to a televised world-record attempt when a sparrow flew into the exhibition centre in Leeuwarden and knocked over 23,000. The sparrow would have broken the record itself, except that a system of 750 built-in gaps, or safety valves, prevented all the dominoes toppling over. Before the unfortunate bird could make a second attempt, it was shot by an Endemol employee armed with an air rifle.

There was a justified outcry in The Netherlands, particularly given that House Sparrow is a Red List species there, as it is in the UK, having undergone a 50% population decline in the past 20 years. The Dutch animal protection agency said it would pursue a prosecution of Endemol. 'Under Dutch law, you need a permit to kill this kind of bird, and a permit can only be granted when there's a danger to public health or a crop,' agency spokesman Niels Dorland said. 'That was not the case. I might add, is it really necessary to kill a bird that knocked over a few dominoes for a game?' In its defence, Endemol said that more than 100 people from 12 countries had spent a month lining up the dominoes for the world-record attempt.

Scarce woodland birds

A big 'thank you' to everyone who completed and returned the Casual Recording Form for the BTO Scarce Woodland Bird Project mailed out with *BB* last spring. We have had a fantastic response, and are keen for people to continue recording the target species (Lesser Spotted Woodpecker *Dendrocopos minor*, Tree Pipit *Anthus trivialis*, Common Redstart *Phoenicurus phoenicurus*, Wood Warbler *Phylloscopus sibilatrix*, Firecrest *Regulus ignicapilla*, Willow Tit *Poecile montanus*, Lesser Redpoll *Carduelis cabaret* and Hawfinch *Coccothraustes coccothraustes*) in spring 2006 as well. More forms can be downloaded from http://www.bto.org/survey/special/CasualFINAL.pdf Contact Su Gough (e-mail: su.gough@bto.org; tel: 01842 750050) for paper copies of the forms, or if you would like information on participating in the main part of the survey.

(Contributed by Su Gough)

OSME supports Middle East projects

The Ornithological Society of the Middle East (OSME) has awarded grants to a number of projects in the Middle East over recent months. The grants come from the Conservation and Research Fund (which recently received a generous donation of £1,500 from Avi-Fauna), which is used to support a wide range of conservation, survey and educational projects in the Middle East. Recent awards include £1,500 to the Society for the Protection of Nature in Lebanon (SPNL) to assist in the production of the *Field Guide to the Birds of the Middle East* in Arabic. Hopefully, this will be launched in January 2006, to mark the 20th anniversary of SPNL. OSME welcomes new applications for grants of up to £500. Please write to OSME, c/o The Lodge, Sandy, Bedfordshire SG19 2DL.

(Contributed by Dawn Balmer)

Announcements

BBRC says goodbye to birders' favourites

The number of records that the BBRC assesses has grown rapidly, while at the same time some observers are becoming less willing to submit descriptions for species that they feel are 'less' rare. Following a consultation with County Recorders and records committees, and in order to control this increasing workload, BBRC has decided to remove a number of Britain's best-loved rarities from its list as from 1st January 2006. For all the species involved there have been more than 200 records in total *and* 100 or more in the last ten years, and, in most cases, the identification is relatively straightforward and well known.

The species that we will no longer consider are as follows, listed in decreasing order of the number of British records between 1958, when BBRC was formed, and the end of 2004: Arctic Redpoll *Carduelis hornemanni*, White-winged Black Tern *Chlidonias leucopterus*, Red-footed Falcon *Falco vespertinus*, Subalpine Warbler *Sylvia cantillans*, Red-rumped Swallow *Cecropis daurica*, Alpine Swift *Apus melba*, Rustic Bunting *Emberiza rustica*, Red-throated Pipit *Anthus cervinus*, Greenish Warbler *Phylloscopus trochiloides*, Wilson's Storm-petrel *Oceanites oceanicus*, White-rumped Sandpiper *Calidris fuscicollis*, Black Kite *Milvus migrans*, Ferruginous Duck *Aythya nyroca*, Dusky Warbler *Ph. fuscatus*, Great White Egret *Ardea alba*, Radde's Warbler *Ph. schwarzi* and American Golden Plover *Pluvialis dominica*. We will, however, continue to consider rare races of the above species, such as the eastern race *albistriata* of Subalpine Warbler and 'Two-barred' Greenish Warbler *Ph. t. plumbeitarsus*.

If these species had been excluded from the 2004 BBRC Report, this would have meant a reduction of around 300 records. These records will not be lost, however, as county and regional bodies such as the Scottish Birds Rarities Committee and the Welsh Rarities Panel will continue to use high standards to assess them, and they will be published in a revamped Scarce Migrants Report. Removing species from the list of species that we consider has, of course, happened previously: Aquatic *Acrocephalus paludicola*, Pallas's Leaf *Ph. proregulus* and Yellow-browed Warblers *Ph. inornatus*, Cory's Shearwater *Calonectris diomedea*, and Richard's *Anthus richardi* and Tawny Pipits *A. campestris* were all once considered 'official' rarities, and yet these are still exciting finds. The fears that such birds lose their interest to birders has proven unfounded and, in the case of both Tawny Pipit and Aquatic Warbler, a case for a return to the list might be made; BBRC will continue to monitor species via the Scarce Migrants Report.

County records committees now have the capacity to assess these records, and are probably in a better position to chase up those records which are not submitted. With counties taking on the extra responsibility for the assessment of the species listed above, BBRC can devote more time to the assessment (and development of criteria for the identification and assessment) of difficult rare taxa.

Rare Breeding Birds Panel seeks new Secretary

After 13 years of distinguished service, Malcolm Ogilvie will shortly be standing down as Secretary of the Rare Breeding Birds Panel. We are therefore looking for a new Secretary, to take over in spring 2006. If you are interested in taking on the role and believe that you are qualified to do so, please contact RBBP Chairman Ken Smith (RSPB, The Lodge, Sandy, Bedfordshire SG19 2DL; e-mail: ken.smith.research@rspb.org.uk) or visit the Panel's website: www.rbbp.org.uk

We are looking for a well-respected, experienced and knowledgeable member of the ornithological community who would command the respect and trust of Recorders, Raptor Groups, organisational partners and others providing highly sensitive data on rare breeding birds. The self-employed post is paid on a part-time basis and involves around 60 days' work per year with funding for additional clerical support. Duties include liaison with Recorders and other records providers, compilation of data, maintenance of a confidential database, representation of the Panel at meetings and production of annual reports, including those published in *BB*. Some travel is involved. It is essential that the affairs of the Panel be handled with discretion and a high level of integrity, and suitable candidates are likely to have considerable experience of birds and bird conservation in the UK, be strong networkers, and to understand the issues surrounding records of rare breeding birds.

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Changes to the British Birds *list of birds of the Western Palearctic*

The policy of *British Birds* regarding the implementation of taxonomic changes has been to adopt all new recommendations made by the BOURC's Taxonomic Sub-committee (TSC). For taxa that are outside the remit of the TSC, *British Birds* usually adopts taxonomic recommendations made in the reports of the Association of European Rarities Committees (AERC). During 2005, the TSC proposed a series of recommendations, which *British Birds* will embrace from 1st January 2006. These recommendations include some changes at the species level, brought about by taxonomic splits (listed in Appendix 1), and changes to generic and scientific names (listed in Appendix 2). Further details surrounding the justification and background to these decisions can be found in *Ibis* 147: 821–826, or online at http://www.blackwell-synergy.com/doi/full/10.1111/j.1474-919X.2005.00483.x

Introduced at the same time were a number of recommendations regarding species currently held in Category C of the British List, i.e. species that, although introduced, now derive from the resulting self-sustaining populations. An explanation of these changes can be found in *Ibis* 147: 803–820, or online at http://www.blackwell-synergy.com/doi/full/10.1111/j.1474-919X.2005.00470.x

British Birds maintains a list of the birds recorded within the boundaries of the Western Palearctic, which can be downloaded from the *BB* website (http://www.britishbirds.co.uk/bblist.htm); this list is now fully updated to take account of all the latest changes proposed by the BOU.

Appendix 1. Changes to the existing list: new names resulting from taxonomic splits.

Canada Goose *Branta canadensis* is now treated as two separate species: Greater Canada Goose *B. canadensis* (polytypic, with races *canadensis, fulva, interior, maxima, moffitti, occidentalis* and *parvipes*) and Lesser Canada Goose *B. hutchinsii* (polytypic, with races *hutchinsii, leucopareia, minima* and *taverneri*).

Common Scoter *Melanitta nigra* is now treated as two separate species: Common Scoter *M. nigra* (monotypic) and Black Scoter *M. americana* (monotypic).

Velvet Scoter *Melanitta fusca* is now treated as two separate species: Velvet Scoter *M. fusca* (monotypic) and White-winged Scoter *M. deglandi* (polytypic, with subspecies *deglandi* and *stejnegeri*).

Little Shearwater *Puffinus assimilis* – North Atlantic taxa are now treated as specifically distinct from Little Shearwaters of the southern hemisphere. The newly recognised species is North Atlantic Little Shearwater *P. baroli* (polytypic, with subspecies *baroli* and *boydi*).

Herring Gull *Larus argentatus* is now treated as three separate species: Herring Gull *L. argentatus* (polytypic, including the races *argentatus, argenteus* and, for the time being at least, *smithsonianus* and *cachinnans*), Yellow-legged Gull *L. michahellis* (polytypic, including the races *michahellis* and *atlantis*) and Armenian Gull *L. armenicus* (monotypic).

Firecrest *Regulus ignicapilla* is now treated as two separate species: Firecrest *R. ignicapilla* (polytypic, with subspecies *ignicapilla* and *balearicus*) and Madeira Firecrest *R. madeirensis* (monotypic).

Appendix 2. Changes to the existing list: new generic or scientific names proposed by the BOU.

Booted Eagle *Aquila pennata* (formerly *Hieraaetus pennatus*)
Bonelli's Eagle *Aquila fasciata* (formerly *Hieraaetus fasciatus*)
Spanish Imperial Eagle *Aquila adalbertii* (formerly *A. adalberti*)
Aleutian Tern *Onychoprion aleutica* (formerly *Sterna aleutica*)
Sooty Tern *Onychoprion fuscata* (formerly *Sterna fuscata*)
Bridled Tern *Onychoprion anaethetus* (formerly *Sterna anaethetus*)
Little Tern *Sternula albifrons* (formerly *Sterna albifrons*)
Saunders's Tern *Sternula saundersi* (formerly *Sterna saundersi*)
Gull-billed Tern *Gelochelidon nilotica* (formerly *Sterna nilotica*)
Caspian Tern *Hydroprogne caspia* (formerly *Sterna caspia*)
Red-rumped Swallow *Cecropis daurica* (formerly *Hirundo daurica*)
Cliff Swallow *Petrochelidon pyrrhonota* (formerly *Hirundo pyrrhonota*)
Richard's Pipit *Anthus richardi* now a monotypic species (formerly *A. novaeseelandiae*, polytypic)
Azure Tit *Cyanistes cyanus* (formerly *Parus cyanus*)
Blue Tit *Cyanistes caeruleus* (formerly *Parus caeruleus*)
Crested Tit *Lophophanes cristatus* (formerly *Parus cristatus*)
Coal Tit *Periparus ater* (formerly *Parus ater*)
Sombre Tit *Poecile lugubris* (formerly *Parus lugubris*)
Willow Tit *Poecile montana* (formerly *Parus montanus*)
Marsh Tit *Poecile palustris* (formerly *Parus palustris*)
Siberian Tit *Poecile cinctus* (formerly *Parus cinctus*)

Bird Photograph of the Year 2006

As always, this competition, established in 1976, seeks to recognise the best and/or the most scientifically interesting bird photographs. Preference is given to photographs taken in the Western Palearctic (Europe, North Africa and the Middle East), but those of species on the Western Palearctic List taken anywhere in the world are also eligible. Up to three images, each taken during the previous year (in this case 2005), may be submitted by each photographer. As in the past two years, both transparencies and digital images are acceptable. For full details of the rules (essential for those who wish to submit digital photos) and this year's sponsorship, visit our website (www.britishbirds.co.uk), or write to *British Birds* (BPY), The Banks, Mountfield, Robertsbridge, East Sussex TN32 5JY, enclosing a stamped, self-addressed envelope. This year, for the first time, an additional category, with prizes, will be available for the best digi-scoped entry.

The closing date for entries will be **28th February 2006** and, as in previous years, the winning entries will be exhibited at the British Birdwatching Fair in August, where the awards will be presented.

Recent reports

Compiled by Barry Nightingale and Anthony McGeehan

This summary of unchecked reports covers early October to early December 2005.

Blue-winged Teal *Anas discors* Cley (Norfolk), 5th–9th November. Ferruginous Duck *Aythya nyroca* Brogborough Lake, 22nd October; another, Elstow (both Bedfordshire), 13th–26th November; Radipole (Dorset), 12th–20th November; Brookless Lake, 20th–29th November, then Tittesworth Reservoir (Staffordshire), 4th December; Gort (Co. Galway), 24th November. Lesser Scaup *Aythya affinis* Myerscough Quarry (Lancashire), 6th October to 5th November; Drift (Cornwall), at least 11th November to 4th December; Hornsea Mere (East Yorkshire), 13th November to 2nd December; Kilbirnie Loch (Ayrshire), 27th November to 3rd December. Barrow's Goldeneye *Bucephala islandica* Quoile Pondage (Co. Down), 20th November to 10th December.

White-billed Diver *Gavia adamsii* Nesting (Shetland), 25th October to 11th December; Balbriggan (Co. Dublin), 5th–9th November.

Zino's/Fea's Petrel *Pterodroma madeira/feae* Flamborough Head (East Yorkshire), 23rd October. Magnificent Frigatebird *Fregata magnificens* One, picked up near Whitchurch (Shropshire), 7th November, taken into care but died 9th November. Various reports of a frigatebird sp. (presumed same), off Cornwall and in Bristol Channel, 6th November.

Green-backed Heron *Butorides virescens* Schull (Co. Cork), 11th–13th October; same, Pentraeth (Anglesey), at least 7th–20th November. Cattle Egret *Bubulcus ibis* Listowel (Co. Kerry), 22nd October; Portland (Dorset), 17th November. Glossy Ibis *Plegadis falcinellus* Porth Neigwl (Glamorgan), 27th–30th October. Sora *Porzana carolina* St Mary's (Scilly), long-stayer to 1st November.

Iain Leach

17. Green-backed Heron *Butorides virescens*, Pentraeth, Anglesey, November 2005.

Hugh Harrop

18. Juvenile Semipalmated Sandpiper *Calidris pusilla*, Grutness, Shetland, November 2005.

American Golden Plover *Pluvialis dominica* Mizen Head, 30th October, another Lissagriffin (both Co. Cork), also 30th October; Loop Head (Co. Clare), 30th October; The Mullet (Co. Mayo), up to three, 31st October to 14th November; Mullaghmore (Co. Sligo), 18th November. Sociable Lapwing *Vanellus gregarius* Rainham Marshes (London), 4th–5th December. Semipalmated Sandpiper *Calidris pusilla* Grutness (Shetland), 1st–6th November. White-rumped Sandpiper *Calidris fuscicollis* Grafham Water (Cambridgeshire), long-stayer to 22nd October; Lewis (Western Isles), 11th October, with four 12th October; Unst (Shetland), 11th–12th October; North Ronaldsay (Orkney), 12th October, with seven 13th October, three to

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21st October, one to 24th October; South Uist (Western Isles), three, 16th October with one 29th–30th October; Fleck (Shetland), 16th October; Quilty South Pier (Co. Clare), 20th October; East Tilbury (Essex), 23rd–27th October; Southwold (Suffolk), 28th October; Radley Gravel-pits (Oxfordshire), 27th October to 9th November; Salthouse/Kelling Quags (Norfolk), 13th–15th November. **Baird's Sandpiper** *Calidris bairdii* Barra (Western Isles), 16th–17th October. **Long-billed Dowitcher** *Limnodromus scolopaceus*, The Mullet, 13th–14th October; Blennerville (Co. Kerry), 15th–17th October; Ballycotton (Co. Cork), 20th November. **Upland Sandpiper** *Bartramia longicauda* Kingston Seymour (Somerset), 12th–26th November. **Lesser Yellowlegs** *Tringa flavipes* Killingholme Haven (Lincolnshire), 15th October to 22nd November; Titchfield Haven (Hampshire), 23rd–28th October; Inchydoney (Co. Cork), 30th October to 2nd November; Lewis, 6th November. **Solitary Sandpiper** *Tringa solitaria* St Agnes (Scilly), 4th–6th November. **Spotted Sandpiper** *Actitis macularius* Easington (East Yorkshire), 23rd October.

George Reszeter

19. Upland Sandpiper *Bartramia longicauda*, Kingston Seymour, Somerset, November 2005.

Laughing Gull *Larus atricilla* Unprecedented influx in November involving around 60 birds. The following may involve some duplication (all dates unless otherwise stated refer to November). **Argyll:** Islay, two, 16th. **Berkshire:** Burghfield Gravel-pits, 3rd–5th December. **Carmarthenshire:** Llandeilo, 6th; Llanelli, 25th–27th. **Ceredigion:** Aberystwyth, 12th–14th. **Co. Cork:** Union Hall, 16th; Ballycotton, 26th–27th; Inchydoney, 27th; Kinsale Marsh, two, 4th December. **Cornwall:** Penzance 2nd–11th and 21st, with two 4th–5th, with one or another Newlyn, 3rd–17th, two on 14th and three 18th–19th; near Land's End, two, 4th, with one to 17th, presumably one of same Sennen to 13th, and again 27th; Looe, 5th; Newquay, two, 6th, with one staying to 4th December; Drift Reservoir 11th–26th, with two on 18th; Falmouth, 12th–20th and 25th. **Dorset:** Radipole/Weymouth, 3rd–15th.

Simon Stirrup

20. First-winter Laughing Gull *Larus atricilla*, Gosport, Hampshire, November 2005. The unprecedented influx in late autumn 2005 allowed many birders to catch up with this species in Britain.

John Carter

21. Brünnich's Guillemot *Uria lomvia*, Bressay, Shetland, December 2005.

Stef McElwee

22. Pallid Swift *Apus pallidus*, Newbiggin, Northumberland, November 2005.

Steve Stansfield

23. Blyth's Pipit *Anthus godlewskii*, Bardsey, Gwynedd, October 2005.

Rebecca Nason

24. First-winter female Siberian Rubythroat *Luscinia calliope*, Fair Isle, Shetland, October 2005.

Devon: Seaton, 4th; Kingsbridge, 5th–13th; Brixham, 6th and 20th November to 5th December; Bideford, 6th–24th; South Huish Marsh, 6th; Lundy, 13th–17th (and another found dead in mid November); Exmouth, 26th, 28th November and 4th December; Plymouth, 26th–27th. **Co. Durham:** Blaydon, 4th December. **East Sussex:** Ovingdean 4th. **Co. Galway:** Waterside, 12th to 10th December, with two on 28th; Nimmo's Pier, 12th–21st and 3rd–4th December. **Glamorgan:** Porthcawl/Kenfig area, 4th–13th, again 26th November to 4th December, same, Ogmore, 5th November; Swansea, 15th. **Gwynedd:** Porthmadog, 14th November to 4th December. **Hampshire:** Gosport, 5th–13th, probably same Normandy, 20th; another, Lepe, 5th. **Kent:** Dungeness, 11th–13th. **Pembrokeshire:** Fishguard, 4th; Dale, 6th–11th, another, Pembroke, 11th–20th, presumably one of same Haverfordwest, 28th to 5th December. **Scilly:** St Mary's, 2nd, with two 3rd, four 4th–5th, and at least three to 4th December, with possibly one of same Tresco, 4th. **Shetland:** Fetlar, 9th. **Somerset:** Stolford, 6th; Minehead, 9th. **Warwickshire:** Ladywalk, 2nd December. **Western Isles:** Lewis, up to two, 8th–13th, with one to 18th. **Worcestershire:** Throckmorton, same Westwood Pool, 25th, 28th.

Franklin's Gull *Larus pipixcan* Hayle estuary (Cornwall), 1st–4th November; near Land's End, 4th November, with one or the other Newquay, 4th–14th November; Rosslare (Co. Wexford), 2nd November; Llandeilo, 6th November; Rossaveal (Co. Galway), 10th–19th November. **Bonaparte's Gull** *Larus philadelphia* Heybrook Bay (Devon), 3rd December. **Caspian Tern** *Hydroprogne caspia* Bardsey (Gwynedd), 12th October. **Forster's Tern** *Sterna forsteri* Nimmo's Pier (Co. Galway), 26th November to 6th December. **Brünnich's Guillemot** *Uria lomvia* Lerwick and Bressay Sound (Shetland), 29th November to 11th December.

Wood Pigeon *Columba palumbus* Heavy passage was apparent in late October/early November (together with good numbers of Stock Doves *C. oenas*) along south coast of England, particularly at Dungeness and Portland, with 37,000 Wood Pigeons over the latter site on 1st November. **Eurasian Scops Owl** *Otus scops* Crookhaven (Co. Cork), one killed by car, 4th November.

Chimney Swift *Chaetura pelagica* Up to three at various sites in Co. Cork, 29th October to 2nd November; St Mary's, 30th–31st October, another, Tresco, 30th October, and one of same or different St Agnes, 2nd November; Dungarvan (Co. Waterford), 1st–2nd November; Holy Island (Northumberland), 2nd November; Plymouth Sound (Devon), one found dead on naval vessel, 4th November; Spurn (East Yorkshire), 4th November; Berry Head (Devon), 5th November; Woolston Eyes (Cheshire), 5th November. Pallid Swift *Apus pallidus* Sheringham (Norfolk), 30th–31st October; St Mary's Island (Northumberland), 30th October; South Gare (Cleveland), 2nd November; Sea Palling, 2nd November, probably same, Winterton, 2nd November and Overstrand (all Norfolk), 3rd November; North Foreland (Kent), 4th November; Newbiggin (Northumberland), 5th–8th November. Little Swift *Apus affinis* Overstrand, 12th November, same Cromer (both Norfolk), 12th–13th November.

Blyth's Pipit *Anthus godlewskii* Bardsey, 16th–17th October. Olive-backed Pipit *Anthus hodgsoni* Fair Isle (Shetland), 13th, 23rd October, 4th November; Thorpeness (Suffolk), 16th–20th October; Isle of May (Fife), 16th October; Flamborough Head, 16th October; Wormiston (Fife), 25th October; Sumburgh (Shetland), 26th October to 22nd November; Barra, 29th October; Lewis, 5th November. Red-throated Pipit *Anthus cervinus* Farne Islands (Northumberland), 10th–12th October; St Mary's (Scilly), 12th–16th October and 25th–26th October; Bardsey, 16th–21st October; St Mary's Island (Northumberland), 19th October; Tresco, 26th–30th October.

Siberian Rubythroat *Luscinia calliope* Fair Isle, 23rd–27th October. Red-flanked Bluetail *Tarsiger cyanurus* Lundy, 14th October; Berry Head, 18th–19th October. Isabelline Wheatear *Oenanthe isabellina* North Ronaldsay, 23rd–29th October. Pied Wheatear *Oenanthe pleschanka* Bredon Hill (Worcestershire), 5th November. Desert Wheatear *Oenanthe deserti* Out Skerries (Shetland), 19th October; Holy Island, 31st October to 13th November; Hayling Island (Hampshire), 13th November; Herne Bay (Kent), 19th–21st November; Caister (Norfolk), 19th–23rd November; South Gare (Cleveland), 29th November.

Stef McElwee

25. Grey-cheeked Thrush *Catharus minimus*, Northaw Great Wood, Hertfordshire, November 2005.

Deryk Shaw

26. Male 'Black-throated Thrush' *Turdus ruficollis atrogularis* Fair Isle, Shetland, October 2005.

Grey-cheeked Thrush *Catharus minimus* Cape Clear (Co. Cork), 29th October to 6th November; Northaw Great Wood (Hertfordshire), 13th–25th November. 'Black-throated Thrush' *Turdus ruficollis atrogularis* Fair Isle, 21st–22nd October (female), with a male there 23rd–24th October. Redwing *Turdus iliacus* Large influx across southern England during 1st–2nd November, including 10,000 over Christchurch Harbour (Dorset), on 2nd.

Lanceolated Warbler *Locustella lanceolata* Fair Isle, 13th–14th and 17th October. Paddyfield Warbler *Acrocephalus agricola* Torness (Lothian), 13th–29th October; St Mary's, 15th October. Blyth's Reed Warbler *Acrocephalus dumetorum* St Mary's Island (Northumberland), 17th–18th October; St Mary's (Scilly), 1st–3rd

Iain Leach

27. Paddyfield Warbler *Acrocephalus agricola*, Torness, Lothian, October 2005.

November. Subalpine Warbler *Sylvia cantillans* Nanquidno (Cornwall), 10th–13th October; Quendale (Shetland), 20th October. Sardinian Warbler *Sylvia melanocephala* Fife Ness (Fife), 15th October to 1st November; Skegness (Lincolnshire), 27th–28th October.

Greenish Warbler *Phylloscopus trochiloides* Marsden Quarry (Co. Durham), 15th October; St Martin's (Scilly), 27th–28th October. Arctic Warbler *Phylloscopus borealis* St Martin's, 12th October; Lewis, 2nd November. Yellow-browed Warbler *Phylloscopus inornatus* Up to 1,250 were reported during October, with a second mass arrival (following that in late September/early October) in mid October, particularly along east-facing coasts, and including 16 between South Shields and Sunderland (Co. Durham), 11 at St Abb's Head (Borders), and 14 in the Whitby area (North Yorkshire), all on 15th, and 11 on Holy Island on 16th. Hume's Warbler *Phylloscopus humei* Skateraw (Lothian), 25th–27th October; Seaton Hole (Devon), 26th November to 3rd December. Radde's Warbler *Phylloscopus schwarzi* Portland, 10th October; St Agnes, two, 10th–11th October, one to 14th October; St Abb's Head, 15th October; South Gare (Cleveland), 16th October; Seaham (Co. Durham), 16th October; St Mary's, 16th–18th October; Galley Head (Co. Cork), 19th October; Cape Clear, 28th October; Nanjizal (Cornwall), 29th October. Dusky Warbler *Phylloscopus fuscatus* Rame Head (Cornwall), 10th October; Spurn, 11th–16th October; Lannacombe Valley (Devon), 15th October; St Mary's, 16th October; Voe (Shetland), 16th–19th October; Southwold (Suffolk), 16th October; Farne Islands, 18th–28th October; Boulby Cliffs (Cleveland), 19th–21st October; Wells (Norfolk), 19th–23rd October; Unst, 20th October; Scoughall (Lothian), 23rd–28th October; Dungeness, 12th–13th November. Western Bonelli's Warbler *Phylloscopus bonelli* Brownstown Head (Co. Waterford), 31st October.

Penduline Tit *Remiz pendulinus* Beachy Head (West Sussex), 11th October; Cley, 23rd October; Dungeness, 26th October and 14th November. Golden Oriole *Oriolus oriolus* Leighton Moss (Lancashire), 13th–19th November.

Isabelline Shrike *Lanius isabellinus* Montrose Basin (Angus), 22nd–28th October. Woodchat Shrike *Lanius senator* Tresco, 12th October.

Arctic Redpoll *Carduelis hornemanni* North Ronaldsay, 18th October; Fair Isle, two, 20th October, with one to 24th; Sandgarth (Shetland), 30th October. Hawfinch *Coccothraustes coccothraustes* Small but widespread influx in mid October, including up to 20 on Scilly and up to seven in Shetland, and 15 over Sancreed (Cornwall), 23rd October.

Yellow-rumped Warbler *Dendroica coronata* Cape Clear, 30th–31st October. Blackpoll Warbler *Dendroica striata* Long-stayer, St Mary's, to 3rd November.

Pine Bunting *Emberiza leucocephalos* Whalsay (Shetland), 4th–5th November; North Uist (Western Isles), 16th November. Rustic Bunting *Emberiza rustica* Bempton (East Yorkshire), 15th–17th October; Spurn, 15th–18th October; Hoswick (Shetland), 24th–27th October. Black-headed Bunting *Emberiza melanocephala* Loch of Strathbeg (Northeast Scotland), 13th–18th October.

Hugh Harrop

28. Male Pine Bunting *Emberiza leucocephalos*, Whalsay, Shetland, November 2005.

Classified advertising

Payment for all classified advertisements must be made in advance by VISA, Mastercard or by cheque payable to British Birds. **Copy deadline:** 10th of the month.

Contact: Ian Lycett, Solo Publishing Ltd., B403A The Chocolate Factory, 5 Clarendon Road, London N22 6XJ
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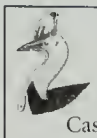

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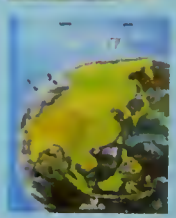

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An exceptional movement of Redwings across northwest England in October 2004

Jean Roberts and Steve J. White

Alan Harris

ABSTRACT On the weekend of 9th–10th October 2004, an unprecedented movement of Redwings *Turdus iliacus* was witnessed in northwest England. The birds were heading in the unusual direction of east and north instead of the more expected south and west. A search of internet websites enabled this movement to be set in both a national and an international context, and flight-lines and origins of the Redwings to be determined. The influence of the weather, particularly the position of a former hurricane in the Bay of Biscay, was a major factor in the pattern of movements observed.

Exceptionally large daytime movements of Redwings *Turdus iliacus* and other passerines occurred over Cheshire, North Merseyside and Lancashire on 9th–10th October 2004. The prevailing weather conditions throughout northwest England were moderate NE or ENE winds (force 3–4) with mostly clear skies and excellent visibility. These were ideal conditions for autumn migration and, since these days were a weekend, birders were out in force, no doubt hoping for a good day's 'vis mig' (visible migration). Those who connected with the thrush flocks were, however, overwhelmed by the numbers involved and astounded by their unprecedented direction of flight: northeasterly on the coast (where almost all autumn diurnal migrants head south or southwest), while inland birds headed north (the usual pattern is west or southwest). Following our investigation of thrush movements in other parts of Britain, and in western Europe, and a detailed examination of the meteorological situation, we aim in this paper to explain the unprecedented movements in northwest England.

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Methods and sources of data

Detailed information about the movements in northwest England was available from our own contacts in the region. For Redwing movements in other parts of Britain, the BirdTrack website project, run by BTO/RSPB/Birdwatch Ireland (www.birdtrack.net), proved extremely useful. More-detailed information came as a result of requests for information from *British Birds* readers, County Recorders, observatory wardens and ringers, and internet searches. The Pennine VisMig Group (http://groups.yahoo.com/group/vismig) provided invaluable information.

A vital source of information for overnight movements came from Dutch radar monitoring, based near Amsterdam. Hans van Gasteren kindly consented to his observations being used for publication. A number of European websites which report visible migration were consulted, notably www.trektellen.nl for data for The Netherlands and Belgium, the French www.leclipon.com and Swedish www.svalan.environ.se, while information for Norway came via www.noa.org.uk

Information on weather conditions during the Redwing influx was provided by many observers, and several websites were consulted to give the wider picture, including: www.metoffice.gov.uk for the UK; www.met.fu-berlin.de for detailed weather-station data and synoptic charts across Europe; www.sat.Dundee.ac.uk for satellite photographs; and www.ssd.noaa.gov for information about snow cover in Europe.

Northwest England, 9th October

Nearly 145,000 thrushes, the vast majority of them Redwings, were reported from visible-migration watches in northwest England. More than 90% were recorded from just three sites: Whitley Reed, in Cheshire, some 15 km east of the inner Mersey estuary and 45 km inland from the Irish Sea; Marshside, on the Merseyside coast of Liverpool Bay, just north of Southport; and Fluke Hall, Pilling, on the Lancashire coast at the southern end of Morecambe Bay.

The numbers reported represent best estimates; the movement was so large that 'the skies were thick with thrushes'. Several observers described it as the experience of their birding lives. Typical comments were 'we gazed with awe' and 'an amazing four hours of visible migration', while everyone commented on the strange silence, with almost no birds calling and just the swishing of wings heard.

At Whitley Reed, the movement began at 07.30 hrs. Initially, it was estimated that 100,000 thrushes, in flocks of up to 500, all flying northeast, had passed over on a 1-km front by the time counting ceased at 10.30 hrs. On reflection, the observer later revised this total downwards to 50,000–60,000 but, although the movement was slowing down, it was continuing when he left the site.

Thrushes began to appear at Marshside at 09.00 hrs, and an estimated minimum of 40,000 had passed over by 13.00 hrs. The movement continued all day, albeit at a far slower rate in the afternoon, and some were still heading inland at 18.00 hrs. The birds moved through in flocks of up to 300, at approximately 100 m altitude on a front roughly 1 km wide, many of them passing over Southport town centre to the southwest before heading inland in a northeasterly direction.

At Pilling, large numbers of thrushes were first noticed at around 09.30 hrs. They were following the coast, some of them so high that they could be detected only with binoculars, and flying ENE. By 13.00 hrs, a total of 49,800 thrushes had been counted, although birds were still moving through, the passage having begun to slow at noon. The movement had begun earlier, according to other observers on the north Fylde coast, and 6,500 seen that morning at Fleetwood, to the west of Pilling, and large numbers to the east at Cockerham Moss probably involved the same birds.

Species

At all three sites, the overwhelming majority of birds were Redwings but significant numbers of Fieldfares *T. pilaris* were also involved: best estimates were up to 30% at Whitley Reed but only 10% at Marshside and 2% at Pilling. A range of other species accompanied the thrushes but species composition also varied among sites. Substantial numbers of finches were reported at Whitley Reed but neither numbers nor species were noted. In four hours at Marshside, the following were seen with the Redwing flocks: 150 Common Chaffinches *Fringilla coelebs*, 70 Blue Tits *Cyanistes caeruleus*, 50 Greenfinches *Carduelis chloris*, 15 Siskins *C. spinus*, 40 Blackbirds *T. merula*, 25 Mistle Thrushes *T. viscivorus*, 20 Song Thrushes *T. philomelos*, one Ring Ouzel *T.*

torquatus, 10 Eurasian Sparrowhawks *Accipiter nisus* (possibly local birds harassing the thrushes) and 13 Great Spotted Woodpeckers *Dendrocopos major*. No Sky Larks *Alauda arvensis* were reported at either Whitley Reed or Marshside, but at Pilling, 1,550 Sky Larks, almost double Lancashire's previous highest day-count, were seen in the space of 30 minutes in advance of the main movement of thrushes. Also seen were 184 Greenfinches and smaller numbers of Song and Mistle Thrushes, while Meadow Pipits *Anthus pratensis*, Linnets *Carduelis cannabina* and Chaffinches were described as 'conspicuous by their absence'.

Day-totals of thrushes

Marshside lies some 50 km to the northwest of Whitley Reed and 20 km south of Pilling; consequently, given the ENE flight direction at the three watchpoints and the more or less simultaneous timing of the movements, it is certain that there was little or no overlap between them. The best estimate of the total numbers of thrushes seen at these three sites on 9th October was 130,000, some 110,000–120,000 of which were Redwings. They formed three discrete streams of birds, which moved on precisely the same flight-line for several hours (and all day at Marshside at least). No more than 1,000 were seen at any other single northwest coastal site that day. Redwings reported elsewhere in northwest England totalled about 13,000, almost all of them in Lancashire and Cheshire with just a few hundred in Greater Manchester and Cumbria. To the south of Lancaster, most were moving east and were recorded from daybreak onwards, but in north Lancashire none was seen until 09.00 hrs when birds moved northwards on a front at least 30 km wide from the coast to the Bowland Fells.

Previous movements of thrushes

Prior to 9th October 2004, the largest day-totals of migrating Fieldfares and Redwings recorded from a single site in Lancashire and North Merseyside were around 3,000 and 6,000 respectively. Fieldfare numbers at Marshside that day surpassed the previous county record by a small margin, but Redwing counts at both Marshside and Pilling were 600–700% higher than had been seen previously. This was by far the largest diurnal passage of Redwings across the region (neither the scale nor direction of regular nocturnal movements is known).

Northwest England, 10th October

Redwings continued to move through NW England the following day, 10th October, when numbers again surpassed anything that had been witnessed before 2004, although total numbers were only a third of those seen on 9th, amounting to at least 37,000. Once again, most were seen between north Cheshire and Lancaster, although 1,200 were reported at Bowness, in Cumbria, crossing the Solway into Scotland. Flight direction on and near the coast was again between east and northeast. The largest counts were 4,000 northeast at Grappenhall, near Warrington; 4,150 east at Fleetwood; 3,000 ENE at Pilling; and 6,000 northeast in two hours at Lancaster University. On reaching the western edge of the Pennines, at Anglezarke, near Bolton, an estimated 10,000 Redwings were observed changing direction to head north (A. Porter pers. comm.). A similar change in direction was noted at nearby Darwen Moor and at Haslingden Laund, a north–south-orientated valley, where 'thousands' flew north to NNW in constant streams all morning. Yet at Haslingden Grane, an east–west-orientated valley just a few kilometres away, only 1,000 were seen, emphasising their reluctance to head in the direction of the Pennines.

Redwing movements elsewhere in Britain

On the morning of 8th October, a northwesterly movement of moderate numbers of Redwings, the first of the autumn, was recorded from several sites in the Pennines (max. 2,167 in three hours over Thornton Moor, near Bradford). Birds were described as 'exceptionally high in the sky and moving very fast' (D. Barker pers. comm.). As fig. 1 and table 1 show, there was a virtual absence of records from the Yorkshire coast or anywhere farther north in the UK during 8th–10th October. For example, on Shetland (including Fair Isle), which was well-manned by observers during early October, the first arrival of more than 100 Redwings was 400 on Foula on 15th October. Normally, the Northern Isles would be expected to feature prominently in reports of thrushes moving southeast out of Fennoscandia in October. In fact, the only significant report we received from northern Britain related to c. 3,000 Redwings moving southeast over Coll in the Inner Hebrides from 16.00 hrs onwards on 8th (S. Wellock, J. Bowler pers. comm.). A much larger westerly movement occurred over Suffolk, Essex

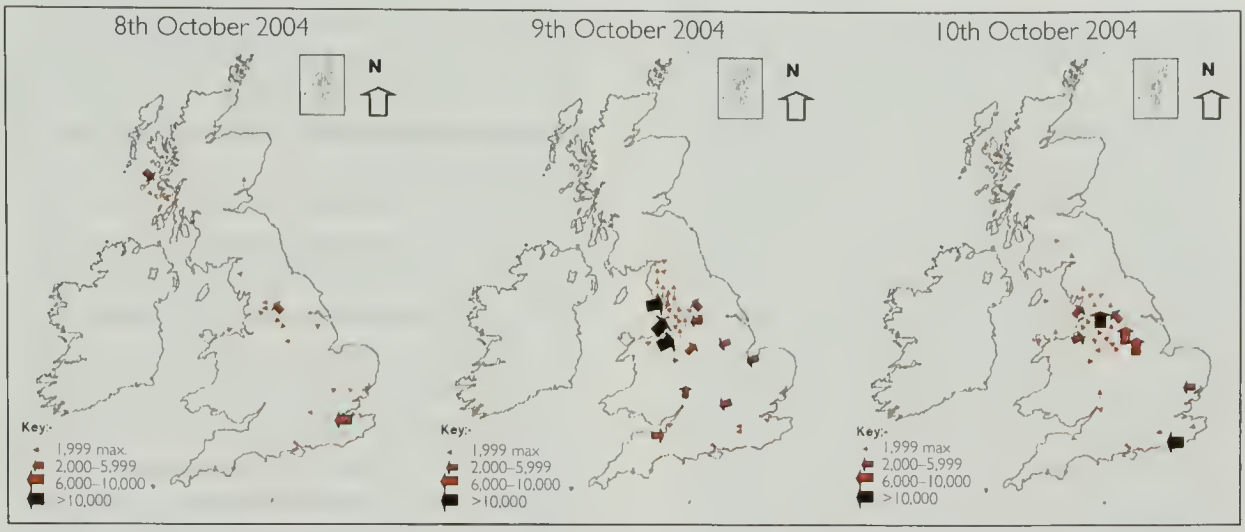


Fig. 1. Movements of Redwings *Turdus iliacus* across the UK, 8th–10th October 2004. On the map for 9th October, the point of the three large arrows in northwest England marks the position of the three main observation sites: Pilling is the northernmost, Whitley Reed the southernmost and Marshside is between the two (see text).

and Kent. At Lowestoft, Suffolk, large numbers were arriving in off the sea throughout the first half of the day (http://home.clara.net/ammodytes), while at the same time 6,000 moved inland over Minnis Bay in Kent (www.kentos.org.uk).

On 9th October, almost 19,000 Redwings were reported over the Yorkshire Pennines, mostly flying west or northwest, including 5,490 over Baitings (near Halifax) and 4,336 over Thornton Moor. These sightings took place at the same time as the influx eastwards over Lancashire and Cheshire, so they clearly did not involve the same birds. More than 22,000 were recorded in southeast England, including 10,000 southwest over Steps Hill, in Buckinghamshire, in just over three hours from 07.10 hrs. Other large movements occurred in a mainly westerly direction over Surrey from 07.00 to 09.00 hrs. Approximately 15,000 were reported from southwest England, mainly from Somerset (mostly heading northeast) and

Table 1. Numbers of Redwings *Turdus iliacus* recorded at migration watchpoints in western Europe and in the UK, by region, 8th–12th October 2004.

Date (October 2004)	8th	9th	10th	11th	12th	Total
Area						
Netherlands	'v. large' nos.	100,000	'vast' nos.			100,000++
Flanders, Belgium	50,000					50,000
Le Clipon, N France		17	689			706
UK						
North	'hundreds'	700	1,200			1,900+
Northeast*	1,266	4,454	60			5,780
Northwest	570	192,319	30,060	3,005	'thousands'	225,954++
Pennines	5,673	18,692	19,784			44,149
Midlands		2,750	3,616			6,366
Southeast	9,028	22,343	17,583	2,755		51,709
Southwest	1	18,400	6,213	244		24,858
Wales	600	770	2,350	influx		3,720+
Scotland	3,320		520			3,840
Total UK	20,458+	260,428	81,386	6,004+		368,276

Key: 'North' = Cumbria; 'Northeast' = Northumberland, Co. Durham, North Yorkshire, East Yorkshire, Lincolnshire, Nottinghamshire; 'Northwest' = Lancashire, Cheshire, Merseyside, Greater Manchester; 'Pennines' = West Yorkshire, South Yorkshire, Derbyshire; 'Central' = Shropshire, Staffordshire, Leicestershire, Worcestershire, Herefordshire, Warwickshire, Northamptonshire, West Midlands; 'Southeast' = Norfolk, Suffolk, Cambridgeshire, Bedfordshire, Buckinghamshire, Oxfordshire, Surrey, Essex, Sussex, Kent, Greater London; 'Southwest' = Gloucestershire, Wiltshire, Dorset, Somerset, Devon, Cornwall.

NB * Bulk of 'Northeast' sightings in Nottinghamshire

Gloucestershire (mostly north). Very few Redwings were reported over Wales during daylight hours and none over Ireland or the Isle of Man, although 'plenty' were heard in south Co. Dublin that night.

On 10th October, a further 20,000 were reported over the Yorkshire Pennines, including 7,500 over Strines (west of Sheffield) and 5,000 over Agden (northwest of Sheffield). As on the previous day, birds were moving predominantly north or northeast at the same time as eastwards passage was taking place over Cheshire and the Lancashire coast and these are unlikely to have been the same birds. Once again, few Redwings were seen on the Yorkshire coast or farther north, although Spurn reported its first arrival of 200. Large counts, totalling over 20,000, were made over southeast England and East Anglia, including 10,000 west over Brighton, East Sussex, and 'large numbers' west over Lowestoft. Several thousand, mostly moving north or northeast were seen in southwest England.

No further large influxes were reported anywhere in England during October, although on Shetland several hundred were counted daily on Fair Isle in the latter half of October, with a peak of 7,000 on 20th, when there were also 2,000 in Unst.

Weather conditions and migration in continental Europe

The first indication of a potential Redwing movement came on 6th October when the Norfolk Ornithologist's Association website (www.noa.org.uk) referred to a build-up of thrushes in southern Norway, owing to the succession of active weather fronts which had crossed Scandinavia from the west during late September and early October, bringing much cloud and rain and hence 'blocking' migration.

On 7th October, air pressure over Scandinavia began to rise and a northerly airstream developed. At around 03.00 hrs on 8th October, massive numbers of birds were detected by radar in The Netherlands (http://groups.yahoo.com/group/trektellers/), flying due south from Norway and, on reaching The Netherlands, they were joined by four other streams of birds coming from the east and northeast. During daylight hours, over 90,000 Redwings streamed in a west and southwest direction over The Netherlands (www.trektellen.nl), and 50,000 were recorded over Flanders, in Belgium (www.natuurpunt.be).

From early morning on 9th October, huge numbers were again detected by Dutch radar coming over the sea from Norway and flying southwest upon reaching The Netherlands, with some continuing west towards Britain. As an indication of the scale of this movement, an estimated 100,000 were recorded at de Nolle and a further 90,500 from other sites in The Netherlands (www.trektellen.nl).

In early October 2004, the weather in northwest Europe was dominated by the Azores high, situated out in the Atlantic and extending over Iceland. It moved slowly eastwards over Britain from 8th to 10th October and, as pressure rose, this resulted in a northerly airstream and clearing skies developing over Norway (figs. 2–3). For birds such as Redwings, setting off at night, the 'easiest' direction to move in would have been south, with the following wind.

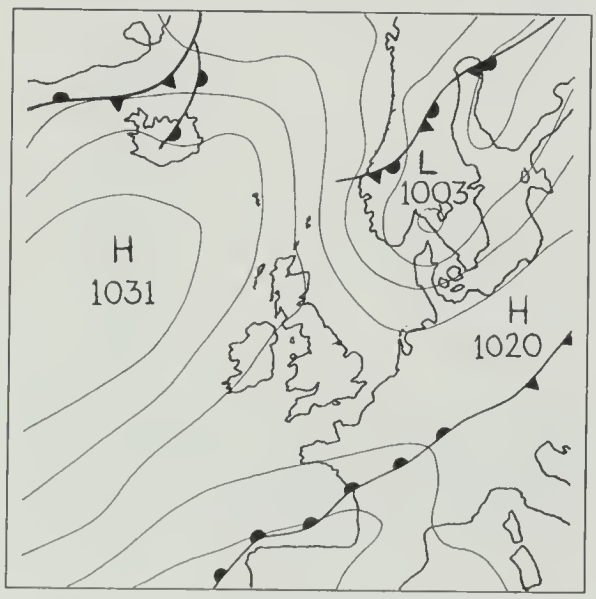


Fig. 2. Synoptic chart, 00.00 hrs, 8th October 2004.

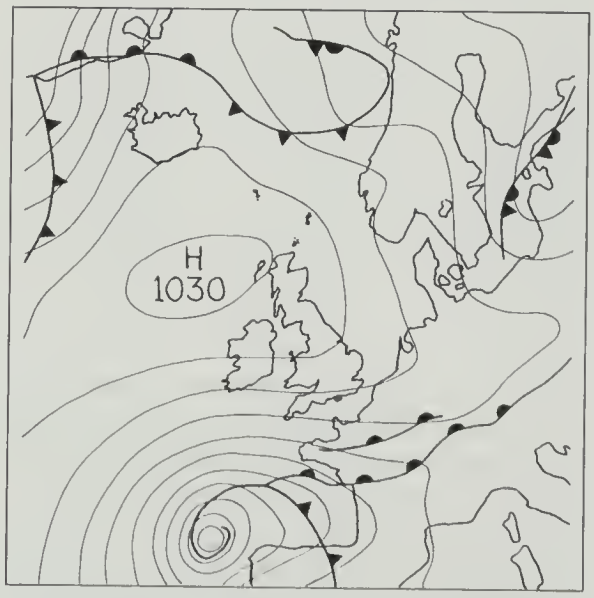


Fig. 3. Synoptic chart, 00.00 hrs, 9th October 2004.

Meanwhile, over the Bay of Biscay, a powerful depression, the remnants of Hurricane Jeanne, was also tracking eastwards and northwards. Strong easterly winds developed to the north of the depression, affecting the southern half of Britain, the English Channel and northern France and Belgium. The weather map for 9th October 2004 (fig. 3) shows a front, extending from northern France to Russia, separating the cold, clearer air in northern Europe from the cloudy, sometimes turbulent and wet air to the south and effectively forming a barrier to birds wanting to move southwest. Migrating birds were probably concentrated to the north of this boundary in the area of easterly winds which displaced them to the west. The stage was therefore set for a decidedly atypical arrival of Redwings in Britain.

Discussion

Typically, large arrivals of Redwings in autumn in Britain are associated with high pressure over Fennoscandia and/or Russia, when clear skies and light to moderate easterly winds lead them to head west or southwest across the North Sea to reach eastern coasts of Scotland and England, where many make first landfall before dispersing throughout Britain.

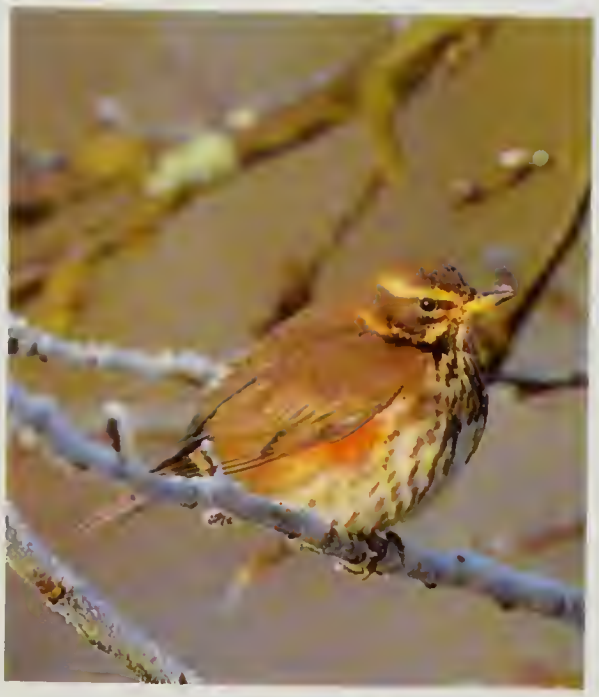
In 2004, however, night migrants appear to have been displaced farther south than usual by strong northerly winds, completely overshooting their usual east-coast landfall sites. Those birds which reached The Netherlands, southern England and the English Channel flew west or southwest with the following wind but found their progress impeded by the thick cloud and blustery, thundery weather affecting northwest France and the western part of the English Channel on 9th and 10th October as the depression in the Bay of Biscay edged northwards. It seems likely that, faced with these adverse weather conditions, birds reorientated northwards somewhere over southern England or the English Channel. The possibility that some arrived in Britain via the northeast coast cannot be excluded, although the fact that hardly any were seen at many well-watched coastal sites does not support this. Certainly, there is no evidence that any crossed the Pennines from the east on the 9th or 10th. All observations in the Yorkshire Pennines indicated a northward movement simultaneous with the eastward passage across Cheshire and Lancashire, while the latter movement appears to have reorientated northwards on the west side of the hills. The Yorkshire birds may, therefore, have come via southeast England.

The flight-line of Redwings into northwest England cannot be traced precisely. It is possible that the significant numbers seen in Somerset and Gloucestershire on the morning of 9th October were the tail-end of a larger night-time movement heading north. Perhaps more likely, given the almost complete absence of sightings in the intervening areas of England or anywhere in Wales, most may have been swept westwards into the Irish Sea before reorientating to head inland at dawn. This kind of movement, involving a dawn ascent and reorientation of Redwings prior to lower flight overland, has been well documented from radar studies over the North Sea (Bourne 1961, 1978, 1990; Myres 1964; Bourne & Lucas 1981). Although these radar studies showed movement on a broad front, a detailed Dutch radar study in October 2003 (van Gasteren & Roos 2003) showed the tendency for Redwings to fly in long, narrow bands when flying over the sea from Norway to The Netherlands, and this latter type of movement fits with the observations of incoming birds over northwest England in 2004.

Given the enormous numbers involved and the known build-up and departure from Norway and the Low Countries, it seems almost certain that the origin of the Redwings seen in England on 8th–10th October 2004 was eastern Europe or Fennoscandia. Nonetheless, the movement of birds southeastwards over Coll on the 8th stands out. Birds there were identified (on the basis of their dark coloration) as being Icelandic in origin and, given the wind direction around the top of the Azores high, which was centred to the south of Iceland, birds would have had following winds to northwest Scotland. Aside from the birds on Coll, however, the absence of any other significant numbers in Scotland, together with the meteorological evidence, suggests that Iceland was not the most likely source of the birds in northwest England on 9th October.

Acknowledgments

More than 120 people from around the country generously responded to our request for information. They are too numerous to name but the observers at the three main northwest sites deserve special mention: Chris Hancock (Whitley Reed), Barry McCarthy and Paul Thomason (Marshside), and Bob Danson and Barry Dyson (Fluke Hall, Pilling). Special thanks to Dave Barker, who collated data from the Yorkshire Pennines, provided many



David Tipling/Windrush

29. Redwing *Turdus iliacus*.

references and prepared the flow maps. Thanks also to Jolien Jarrett for translating several e-mails and articles from Dutch to English, and to Tony Disley for preparing the synoptic chart diagrams. Finally, thanks to Dave Barker, Pete Marsh and Keith Clarkson for their helpful comments on the drafts of this paper.

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Looking back

Seventy-five years ago:

'RAPID COLONIZATION BY THE GREAT CRESTED GREBE. That the number of Great Crested Grebes (*Podiceps c. cristatus*) nesting in some parts of England is largely determined by the frequency of nesting sites of a certain type can, I think, be proved from the remarkable rapidity they show in colonizing an entirely new water.

'A new reservoir in the Midlands, completed in 1928, was filled with water for the first time early in January, 1929. The area of the water is approximately 136 acres and I learn from Mr. G. B. Kershaw that, though the average depth is 7 feet and the depth at the dam 24 feet, there are many acres where it varies from 18 to 24 inches only.

'On June 7th, 1930, only eighteen months after the filling of the reservoir, and although the shallow end and sides were still almost bare of reeds and rushes, I counted fifteen nests of the Great Crested Grebe, all at this end in the shallow water, each with an old bird sitting on it, and one more which a pair was building; several of these were only a yard or two apart, and there was in fact a bunch of ten or twelve in a more or less compact group.

'Several other nests were placed at intervals round the reservoir, making a *minimum* total of twenty nests for the water.

'Though they nest in plenty on the Cheshire meres, a pair very often has a reed-bed to itself, and I have never seen anything approaching this gregariousness; often enough a pair seems to have its own definite territory.

'On the other hand, I know of few localities with so extensive an area of shallow water attractive for nest-building, though it is true that one other Midlands reservoir I visit has a large piece of shallow water that they do not favour to the same degree.

'A colony of this sort seems to approximate in density more to that of the Black-necked Grebe [*Podiceps nigricollis*] in Ireland, as reported in *British Birds* for December, 1930 (*Brit. Birds* 24: 170–172).

'Coots (*Fulica a. atra*) also were nesting in plenty, and an attack by one of them on a Great Crested Grebe's nest is perhaps worth putting on record.

'The Coot persistently pulled the nest to pieces and the two Grebes were evidently afraid to protect it, nor did any other Grebe show any interest; the pair swam side by side in great distress, and though I was too far off to hear the noise they made I could watch their open bills vibrating; every now and then one would dive, and I hoped to witness an underwater attack on the Coot, but in every case the Grebe's courage failed.

'Apart from this, the colony seemed to be living in perfect harmony. A. W. Boyd.' (*Brit. Birds* 24: 259–260, February 1931)

Masked Shrike:

new to Britain

Tom Glass, Alan W. Lauder, Mark Oksien and Ken D. Shaw

ABSTRACT A juvenile Masked Shrike *Lanius nubicus* was present at Kilrenny Common, Fife, from 29th October to 14th November 2004. This constitutes the first record for Britain. The possible origin of the bird and the weather patterns immediately preceding its arrival are discussed.

The dream of finding a major rarity or a national 'first' touches the mind of most birders at sometime during their life. At around 11.00 hrs on 29th October 2004, TG discovered an unfamiliar shrike at Kilrenny Common, Fife. Like so many of us, TG patrols his local patch regularly, and in the past has found a handful of scarce migrants and rarities. Familiar with Great Grey *Lanius excubitor*, Red-backed *L. collurio* and Isabelline Shrikes *L. isabellinus*, he knew when faced with this unfamiliar shrike that he had something good, the worst-case scenario being a new bird for Fife!

The following morning, MO, AWL, TG and Willie Irvine were waiting expectantly on the Common just after dawn. To their relief, the bird was relocated around 09.00 hrs and they tentatively identified it as a juvenile Woodchat Shrike *L. senator*, although doubts were expressed that the bird did not look quite right. They put the news out as a Woodchat Shrike and by 10.00 hrs Ken Shaw (KDS) arrived. Looking at the bird through AWL's telescope, he immediately posed the question 'OK, why isn't it a Masked?' Over the next couple of hours KDS, AWL and MO, with the help of John S. Nadin, Willie McBay, Gerry Owens, Willie Irvine, Jeremy Squire, Rab Shand, Anne-Marie Smout and Nick Mutch, reidentified the bird as a juvenile Masked Shrike *L. nubicus* moulting into first-winter plumage. To establish the identification beyond all doubt, authorisation to trap the bird was sought, and obtained, from the BTO Ringing Unit. AWL and MO erected a mist-net and quickly caught the bird. After examination in the hand, they confirmed its identity as Masked Shrike. With the identification established and the news released, a continuous stream of excited birders began to arrive, which developed into a flood over the following days. Fortunately, it was a most obliging bird, enabling most twitchers to see it without a prolonged wait, and was subsequently seen by several thousand observers during its protracted stay.

Description

The following details were noted in the field:

Size, structure and overall appearance

A small shrike, with a proportionately long tail and short wings, more delicate than Woodchat Shrike. In flight, lighter and more buoyant than any other shrike we have seen in the UK. When perched, reminiscent of Pied Flycatcher *Ficedula hypoleuca*. Generally, a cold, grey, white and black bird, lacking any warm or rufous tones.

Upperparts

The crown and nape were barred grey and white. The ear-coverts were darker, forming an indistinct mask reminiscent of Lesser Whitethroat *Sylvia curruca*. The lores and lower forehead were similar to the crown but paler, giving the bird an indistinct supercilium in front of the eye. The bird showed a vague off-white collar, which, at some angles, extended almost onto the nape. The hindneck and mantle were browner-grey than the head. The back and rump were greyer than the mantle, but all were strongly barred, with each feather having a single dark subterminal band. The bird did not show a pale rump. Some feathers were missing from the left side of the tail (these were later discovered to be regrowing when examined in the hand), but the remaining tail feathers were long and thin. The central rectrices were black, and the outer two tail feathers were white, with the white extending from base to tip.

The primaries and secondaries were black,

whereas the tertials were similarly dark although slightly browner. The tertials and secondaries were edged white, while the inner primaries and secondaries were also narrowly tipped white. The bird showed a large triangular white patch at the base of the primaries on the closed wing. The greater coverts had brownish centres with pale edges, but the remainder of the coverts were untidy, comprising a combination of prominent white feathers and greyish feathers. These white feathers formed an untidy white shoulder-patch.

Underparts

Entirely off-white, lacking any obvious darker fringes or scalloping that is usually typical of most juvenile shrikes. The bird showed a faintly darker moustachial mark. Similarly, a faint dark wash was present on the upper flanks/shoulder.

Bare parts

Legs and feet black. Bill proportionately longer, finer and less hooked than that of Woodchat Shrike. Although it often looked dark, in good light the upper mandible was greyish horn with a darker tip. The lower mandible was paler at the base and darker towards the tip. Eye dark.

Table 1. Biometric data of juvenile Masked Shrike *Lanius nubicus* trapped and ringed at Kilrenny, Fife, 30th October 2004. Tail difference measures the distance between central and outermost tail feathers. Bill depth and width measurements taken at distal edge of nostril. PC = longest primary covert; WP = wing point (i.e. longest primary). Primary projection measured from tip of longest tertial. Primaries numbered ascendantly. Fat-score scale 0–8 ('Kaiser' system), muscle-score scale 0–3.

Wing length	88 mm
Tail length	86 mm
Tail difference	14 mm
Tarsus	22.1 mm
Bill (skull)	17.2 mm
Bill depth	5.8 mm
Bill width	4.4 mm
Weight	19.2 g
Fat score	0
Muscle score	1
P1	PC +10 mm
P2	WP –8 mm
P3	WP
P4	WP
P5	WP –2 mm
P6	WP –4 mm
P7	WP –9 mm
P8	WP –11 mm
P9	WP –14 mm
P10	WP –17 mm
Primary projection	18 mm
Primaries emarginated	P3, P4, P5

Behaviour

Frequently seen flycatching and returning to the same or a nearby perch. Regularly dropped to pick prey items from the ground. While perched, frequently held wings slightly drooped, and often shuffled them and pumped its tail.

Measurements and wing structure

Biometrics taken when the bird was captured are summarised in Table 1.

Population, distribution and status

Breeding

Masked Shrike is a monotypic species, with the smallest distribution of the six shrike species breeding in the Western Palearctic, being confined to the eastern end of the Mediterranean, Asia Minor and locally within the Middle East. Within this region, the breeding range would appear to form three distinct population centres. The breeding range of the western population extends from western Turkey, north and west through Greece and into southern Bulgaria. A second breeding centre encompasses southeastern Turkey, including Cyprus, and south through the hill country fringing the coastal areas of Syria and Lebanon, to northern and central Israel. The third breeding area lies further to the east, extending from northeastern Iraq southeast across southwestern Iran (Vaurie 1959; Shirihai 1996; Hagemeijer & Blair 1997; Lefranc & Worfolk 1997). It seems possible that isolated breeding can also occur in suitable habitats in the adjoining areas of central Turkey and along the Euphrates River valley. Breeding appears to be restricted to three main habitat types. The species shows a strong preference for olive groves and orchards, but breeding also occurs in brushy pastures and woodlands, and in riverine woodlands (Moskat & Fuisz 2002).

Estimates of the number of breeding pairs in Europe include: Turkey, 30,000–90,000; Cyprus, 4,000–10,000; Greece, 500–2,000; Macedonia, 100–150; and Bulgaria, 50–100 (BirdLife International 2004). The species suffered a large decline between 1970 and 1990, but the populations in Cyprus, Bulgaria and Macedonia were stable or increased during 1990–2000, whereas those in Greece and the European stronghold of Turkey declined, the latter by more than 10%. Given the impact of ongoing habitat loss (Perktas 2004), together with increased hunting pressures, the top-end figures may now be considered to be optimistically high.

Migration and wintering

Post-breeding dispersal begins as early as mid July, sometimes as early as June, but autumn passage does not start until mid-August and appears to peak in the first half of September. At this time it can be particularly numerous on migration through the Middle East, although autumn passage appears to occur mainly through the eastern Mediterranean. Stragglers can still occur in Turkey until mid October (Lefranc & Worfolk 1997). Masked Shrike is a relatively short-distance migrant, wintering within a narrow band of sub-Saharan Africa, extending from the headwaters of the River Niger in Mali, east through Chad to encompass most of Sudan and Ethiopia through to the Red Sea coastline, with a small and localised population wintering in western Saudi Arabia and Yemen.

Steve Young/Birdwatch

30. Juvenile Masked Shrike *Lanius nubicus*, Kilrenny Common, Fife, November 2004.

Recent European records to the north and west of the breeding range

Although this is the first record of Masked Shrike in Britain, there have been two previous extralimital records in northwestern Europe, and both occurred in October. The first concerned a first-winter at Lemland, Lågskär, Finland, on 23rd October 1982, which was found dead the following day. The second bird, also a juvenile, occurred at Ottenby, Öland, Sweden, on 1st October 1984. Another first-winter was found near Lunzjita, Gozo, Malta, on 20th October 1985. Clearly, late-autumn vagrancy by Masked Shrike into western and northern Europe is not unprecedented.

Iain Leach

31. Juvenile Masked Shrike *Lanius nubicus*, Kilrenny Common, Fife, November 2004.

Possible origins of the Kilrenny Masked Shrike

The arrival of this bird coincided with a fall of migrants along the east coast of Scotland on 28th October, when species recorded in the East Neuk of Fife included Woodcock *Scolopax rusticola*, Black Redstart *Phoenicurus ochruros*, Reed Warbler *Acrocephalus scirpaceus*, Barred Warbler *Sylvia nisoria*, and 'eastern' Lesser Whitethroat, four Pallas's Warblers *Phylloscopus proregulus* and a Red-breasted Flycatcher *F. parva*. Elsewhere in eastern Scotland, the last few days of October saw the arrival of

many migrants, including a Lesser Grey Shrike *L. minor* at Newburgh, Northeast Scotland, on 31st.

Weather situation

Assuming that the Masked Shrike arrived in Britain on 29th October, estimates of its migration track and likely speed of travel suggest an entirely natural reversed passage. This species is a nocturnal migrant, but it is difficult to judge precisely when this individual left its breeding area, since it was presumably off-passage during daylight hours.

An area of high pressure lay over the westernmost part of the breeding range from the third week of October. A light southerly airflow became established on 26th October, ahead of a weak area of low pressure over central Europe. A reversed heading at any time during the previous week, stimulated by the fine weather, would have put the bird under the influence of southeasterly winds which were strengthening over northwest Europe ahead of an explosively deepening depression approaching southwest Britain. This depression became more or less stationary between 27th and 29th October, maintaining a strong southeasterly airflow over Britain, which steadily penetrated eastwards into northwest Europe during 27th and 28th October. It seems likely that the Masked Shrike was caught up in this airflow, which, as it increased in strength, carried it across central and northwest Europe, and finally across the North Sea and into Fife.

Acknowledgments

We would like to thank everyone who helped us to research this article, in particular Norman Elkins who interpreted the weather data. In addition to those listed in the account above we would like, in particular, to thank: Pete Ellis, Paul Harvey, Angus Murray, Roger Riddington and Stuart Rivers for their valuable advice offered over the phone. Many other people were present at the time of identification and made useful comments; to any that we may have omitted, we offer our sincerest apologies. Our gratitude also goes to the residents of Kilrenny for their patience and understanding, as the experience of thousands of birders passing through their quiet village must have been daunting to some.

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EDITORIAL COMMENT Colin Bradshaw, Chairman of the British Birds Rarities Committee, commented: 'This excellent find was a straightforward bird for BBRC to assess. The bird was seen by hundreds of admirers once the news was broadcast, and the excellent photos, two of which are reproduced here, together with a detailed description of the bird in the hand, made life easy for us! It seemed almost inevitable that, when a Masked Shrike did eventually turn up in Britain, it would be an immature bird; this had the added bonus of giving many observers the chance to become familiar with the species in a plumage which they had previously not encountered.'

Eric Meek, Chairman of the British Ornithologists' Union Records Committee, commented: 'With records in the 1980s from Finland and Sweden, both also in October, it was probably only a matter of time before Masked Shrike was accepted onto the British List. The timing, east-coast locality and the fact that this species is unknown in captivity all made this a relatively easy decision for the BOURC. With Rüppell's Warbler *Sylvia rueppelli* already an established vagrant to Britain, we eagerly await the arrival of an Olive-tree Warbler *Hippolais olivetorum* to complete the southeast European triumvirate!'

The *BB*/BTO Best Bird Book of the Year 2005

British Birds and the British Trust for Ornithology announce the winner of the Award for BEST BIRD BOOK OF THE YEAR. All books reviewed in *British Birds* or the BTO publications *BTO News* and *Bird Study* during the year 2005 were eligible for consideration for this Award.

Another bumper crop of books (79 in total) were available for consideration in this year's competition, seemingly a reflection that the bird-book publishing business remains buoyant, like the demand for their products from birdwatchers. Each of the six judges initially (and independently) compiled a ranked short-list of their six favourite titles, on the basis of the reviews published by *BB* and BTO, and their own experience. No formal criteria for judging are laid down, but we look for special merit in books that we consider will appeal to the readership of both *BB* and *BTO News*. An extraordinary 26 of the 79 made it to the initial short-list, which in particular reflects the difficulty of selecting just six books from the diverse array of high-quality books on show.

The judging took place at the BTO's annual conference in December 2005, where (thanks to the BTO library and Subbuteo Books) all the books on the first short-list were made available to us for the afternoon. After considerable debate, and settling on a final short-list of eight books, it became clear that we had two strong contenders for the top prize. It is often apparent before we vote for the final time what the winning book will be, but this year the vote was essential. And it revealed, for the first time in this competition, a dead heat between the top two. Given that each of the two books concerned gained three firsts and three seconds from the six judges, there seemed no point in a re-run, so we have decided to award the title of 'Best Bird Book of the Year' jointly in 2005.

JOINT WINNERS:

Birds Britannica

By Mark Cocker and Richard Mabey. Chatto & Windus, London, 2005 (see Brit. Birds *98: 611–612).*

Birds in England

By Andy Brown and Phil Grice. T & AD Poyser/ A&C Black, London, 2005 (see Brit. Birds *98: 436).*

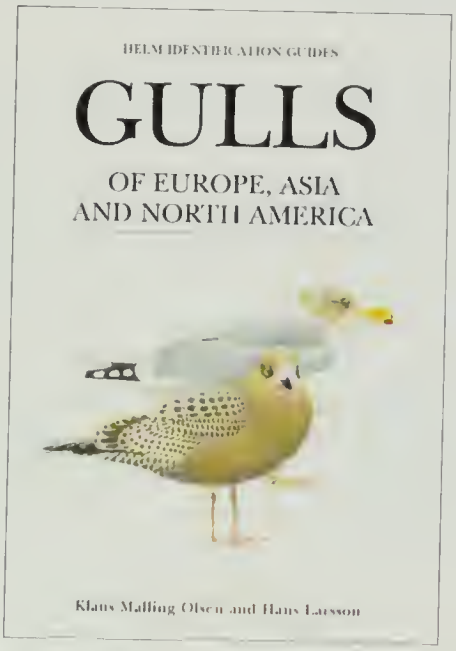
These are two completely different books but both are quite outstanding individual pieces of work. *Birds Britannica* is quite unique, and it merits special mention for that. It will appeal to an extremely wide audience, arguably more than any other book available to us this year. It's the book to buy for even the most casual of birdwatchers, yet it will also appeal to ornithologists, rabid twitchers, patch workers, ringers and, well, any other category of birder you care to think of. *Birds in England* is a thorough, scholarly and more 'conventional' package of information and data about the birds of England. It is superbly written and researched, and will henceforth be the standard-bearer of this type of country avifauna that others will want to match up to. To sum up the differences, *Birds Britannica* is the book to go to if you want to explore the Common Raven's *Corvus corax* 'cultural baggage'; while *Birds in England* will

provide details of the current distribution, number and nesting habitats of Ravens in England, and the contraction of their range in the country through persecution

3rd: Gulls of Europe, Asia and North America

By Klaus Malling Olsen and Hans Larsson. Christopher Helm/A&C Black, London, 2003 (see Brit. Birds *98: 270–271).*

In third place was this detailed treatise of gull identification from the Christopher Helm stable. Although not all reviews of the book have been wholeheartedly positive, this may to some extent reflect different perceptions of the importance or even existence of often extremely subtle identification characters, particularly colours (shades of grey!) and jizz, and the fact that there are many ways to approach the subject. It would be hard to argue that this book is not a major step forward, however, and it is likely to remain the gull-watcher's 'new bible' for the foreseeable future. The fact that gulls are ubiquitous, and almost every birder in the country will have access to some gull-watching potential, added to our feeling that this book, although perhaps not perfect, represents a monumental effort by the authors and takes a worthy 'podium finish' in this year's award.



4th: In a Natural Light: the wildlife art of Chris Rose

By Chris Rose. Langford Press, Wigtownshire, 2005 (see Brit. Birds *98: 612–613).*

This is a sumptuous, large-format offering, quite different from any other in our final short-list, which provides the perfect platform for an enthralling selection of Chris Rose's artwork. This is a book to lose yourself in; have it to hand when you sink into your favourite armchair to thaw out with a mug of tea on a winter's afternoon after returning from the local gull roost (assuming that you don't need to turn to our 3rd-placed book first). Simply marvellous, a treat for almost anyone in our view.

5th equal: Birds New to Britain

By Adrian Pitches and Tim Cleeves. T. & A. D. Poyser/A&C Black, London, 2005.

5th equal: Nature's Music: the science of birdsong

By Peter Marler and Hans Slabbekoorn. Elsevier/Academic Press, London, 2004.

Birds New to Britain is an update of the 1982 Poyser volume of (almost) the same name. However, the approach is sufficiently different from that of the first book (with the addition of readable summaries of the year's highlights and a selection of personal accounts from various members of the current birding scene) that we felt it deserved a placing in this year's award. It is both a useful reference work and a good read.

Nature's Music is perhaps the most 'scientific' of the books to be placed in this year's award, and may not be 'bedtime reading' for most *BB* readers. Nonetheless, it is an excellent treatment of an aspect of birdwatching that most of us would benefit from understanding more fully. The quite astonishingly poor selection and treatment of the photographs used to illustrate it did not help the final placing, however.

Two other titles also made the final short-list. *The Birds of Blakeney Point* (by Andy Stoddart and Steve Joyner, Wren Publishing, Sheringham, 2005) is a really excellent little book which provides comprehensive details of this, one of the most famous (infamous?) of all birding sites in the UK; it sums up the highs and lows of a regular slog to 'The Point' admirably. *The Birdwatcher's Companion* (by Malcolm Tait, Robson Books, London, 2005) was championed by one panel member in particular as unputdownable and something to have by your bed. *The Birds of Dorset* and *The New Birds of the West Midlands* were two county/regional avifaunas of extremely high quality that would have made the final short-list comfortably in another year; both will have wide appeal, and not just to birders based in Dorset or the West Midlands. *Ducks, Geese and Swans*, edited by the late Janet Kear, was also a whisker away from the final short-list, although we felt that a price tag of £150.00 did it no favours (compare this with the eminently more reasonable £35.00 and £40.00 of our two winners). Finally, we must also mention another impressive volume of *Handbook of Birds of the World*, and also BirdLife's *Birds in Europe*, a ten-year revision of a book that really should be on the shelves of most if not all *BB* readers.

Roger Riddington, Dawn Balmer, Andrew Gosler, Peter Hearn, John Marchant and Robin Prytherch
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Looking back

Fifty years ago:

'REVIEW THE GOLDEN EAGLE: KING OF BIRDS. By SETON GORDON, C. B. E. (Collins "New Naturalist", London, 1955). 246 pages, 17 photographs. 16s.

'A MONOGRAPH on the Golden Eagle [*Aquila chrysaetos*] in Scotland is long overdue and who could have produced a better one than Seton Gordon? For half a century the author has studied and written about eagles, and now *The Golden Eagle: King of Birds* summarizes this work of a life-time. Seton Gordon, as always, has an eye for atmosphere; and the special atmosphere of the Golden Eagle and the countryside in which it lives comes over vividly. The author rarely states precisely where his eyries are, but again and again one realises that one knows the very spot – the eyrie high on the forbidding crag in North Harris, and the other where three eaglets were reared for several years running.

'The first half of the book deals with topics and includes the Golden Eagle in winter and in falconry, its food, nesting and hunting habits, flight and enemies. The author, like his subject, ranges far and he has collected much information, published and unpublished, on Golden Eagles in other lands... The book is illustrated by many excellent photographs by the author and others. There is an appendix on races of the Golden Eagle and on its status in many countries. A bibliography lists some quite obscure publications, but does not include two notes in *The Scottish Naturalist* on the food of eagles in south-west Scotland...

'This book by a veteran field naturalist summarizes all that is known about Golden Eagles in Scotland but the author carefully points out that much more remains to be learned. The value of the book is twofold: it gives a wealth of readable information on the Golden Eagle, but it shows too where knowledge is lacking. J. D. LOCKIE' (*Brit. Birds* 49: 87–88, February 1956)

Report on scarce migrant birds in Britain in 2003

Part 1: American Wigeon to Wryneck

Peter A. Fraser and Michael J. Rogers

ABSTRACT This report documents the changing fortunes of those scarce migrants recorded in Britain in 2003. Favourable conditions brought record numbers of Pectoral Sandpipers *Calidris melanotos* and the largest influx of Yellow-browed *Phylloscopus inornatus* and Pallas's Leaf Warblers *Ph. proregulus* yet reported. Rose-coloured Starling *Sturnus roseus* continued to enjoy a series of good years, the years spanning 2001–03 having produced the three highest annual totals. Impressive arrivals of Nearctic waterfowl, including Surf Scoter *Melanitta perspicillata* and Green-winged Teal *Anas carolinensis*, suggest that common factors are influencing their appearances here, while, conversely, Ring-billed Gull *Larus delawarensis* experienced one of its poorer years. Although 2003 was a good year for Ortolan Bunting *Emberiza hortulana* and Common Rosefinch *Carpodacus erythrinus*, with their third- and fourth-highest totals respectively, many species originating from northern and eastern Europe reached Britain in disappointingly low numbers, with totals for Bluethroat *Luscinia svecica*, Icterine Warbler *Hippolais icterina*, Red-breasted Flycatcher *Ficedula parva*, Red-backed Shrike *Lanius collurio* and Little Bunting *E. pusilla* all below average. Arrivals from southern Europe were also disappointing, and 2003 was the worst year on record for Kentish Plover *Charadrius alexandrinus*. Totals of the scarcer herons, including Night Heron *Nycticorax nycticorax* and Purple Heron *Ardea purpurea*, were well below average, and numbers of Short-toed Lark *Calandrella brachydactyla*, Tawny Pipit *Anthus campestris* and Melodious Warbler *Hippolais polyglotta* are well below those occurring in recent years. Although the factors influencing the arrival of these scarcer migrants in Britain are uncertain, it is only by the long-term monitoring of the scarcer migrants, where the identification is assessed at the local or county level and established by records panels, that possible changes in status and populations can be determined.

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In this, the ninth annual report on scarce migrant birds in Britain, we have again adopted a two-part approach to this report, with this section covering American Wigeon *Anas americana* to Wryneck *Jynx torquilla*. The section detailing the passerines will follow in March 2006.

It is notoriously difficult to assess the numbers of certain species covered in Part 1, particularly some waterfowl and Ring-billed Gull *Larus delawarensis*. In addition to newly arrived birds, some individuals recorded in previous years return to traditional wintering sites or migration stopover sites, while others move between sites, both within and between years. With so many birds of some species occurring or reappearing, movements of individuals between years, across county boundaries, or between regions of the country are becoming almost impossible to track. Nevertheless, we have made every effort to try to estimate the number of new individuals arriving (though we acknowledge that our totals may often include overestimates), with the help of local knowledge and (where known) the age profile of individuals. We are extremely grateful to County Recorders and Records Committees, who are an invaluable component of such estimates, and also to observers who diligently establish the age of certain species, since this is often the key indicator of whether or not an individual is likely to be newly arrived.

Readers should note that only a selection of maps and graphs are presented in this report, but that those for all species can be found at www.scarce-migrants.org.uk In preparation for the 2004 report, we urge regional and local recorders to submit their data for the relevant species to Peter Fraser, either at the address below or, preferably, at statistician@bbrc.org.uk, as soon as possible.

In 2003, Pectoral Sandpiper *Calidris melanotos* appeared in record numbers during August and September, and several waterfowl species of Nearctic origin, including Surf Scoter *Melanitta perspicillata*, Green-winged Teal *Anas caroli-*

Table 1. The data show the relative abundance of each species in 2003, by ranking the number of individuals recorded during 2003 in the context of previous annual totals. For example, 2003 was the best year on record for Pectoral Sandpiper *Calidris melanotos*. Note that the number of years of comparable data varies according to species. This table highlights in more detail which species were recorded in relatively high or low numbers in 2003. When it is compared with those in previous reports in this series (e.g. Fraser & Rogers 2002, 2003, 2004 and 2005), it is apparent that some species are appearing more regularly towards the bottom of the table. In particular, the two southern herons, Purple *Ardea purpurea* and Night Heron *Nycticorax nycticorax*, are in the midst of a run of poor years.

Species	No. in 2003	Year rank	Years of data
Pectoral Sandpiper *Calidris melanotos*	170	1	36
Surf Scoter *Melanitta perspicillata*	23	3	46
Common Crane *Grus grus*	161	4	46
Green-winged Teal *Anas carolinensis*	36	4	46
Wryneck *Jynx torquilla*	320	4	18
White Stork *Ciconia ciconia*	38	5	46
Rough-legged Buzzard *Buteo lagopus*	53	6	30
Ring-necked Duck *Aythya collaris*	23	7	46
Honey-buzzard *Pernis apivorus*	159	7	18
American Wigeon *Anas americana*	14	9	46
Grey Phalarope *Phalaropus fulicarius*	167	9	18
Sabine's Gull *Larus sabini*	137	10	36
European Bee-eater *Merops apiaster*	25	11	46
Spotted Crake *Porzana porzana*	40	14	18
Cory's Shearwater *Calonectris diomedea*	97	15	46
Red-necked Phalarope *Phalaropus lobatus*	23	15	18
Hoopoe *Upupa epops*	112	18	36
Kentish Plover *Charadrius alexandrinus*	15	18	18
Ring-billed Gull *Larus delawarensis*	46	21	31
Temminck's Stint *Calidris temminckii*	80	26	36
Buff-breasted Sandpiper *Tryngites subruficollis*	9	29	46
Purple Heron *Ardea purpurea*	13	30	46
Night Heron *Nycticorax nycticorax*	3	34	46

nensis, Ring-necked Duck *Aythya collaris* and American Wigeon *Anas americana*, enjoyed a good year. Originating from closer to home, Common Crane *Grus grus*, Wryneck *Jynx torquilla* and Rough-legged Buzzard *Buteo lagopus* put in particularly good showings. For other species, however, 2003 was a particularly poor year. Kentish Plover *Charadrius alexandrinus* experienced its worst year since 1986, when monitoring began on a national basis. Buff-breasted Sandpiper *Tryngites subruficollis* and Purple Heron *Ardea purpurea* continue a run of disappointing years, while two species that had been faring well in recent years, Ring-billed Gull and Night Heron *Nycticorax nycticorax*, were well down on recent expectations.

In recent years, many 'scarce migrants' have been reported via the various bird information services. In this report, however, only those records which have been assessed and accepted by the relevant local, regional or national records panels have been included. For years prior to 2003, late-accepted records are included within the revised statistics presented in the tables. Current gaps in the source material for the scarce migrants database can be seen on the website (see above), and we urge recorders still to submit data for 2003 and previous years if they have not yet done so. Statistics will be updated to include any omitted data for 2003 in future reports but for obvious reasons it is always our desire to make each report as complete as possible at the time of publication. In addition, records previously treated as being 'at sea' but within the 200-mile 'British Economic Zone' have been included.

Systematic list

Interpretation of the statistics used and quoted in the species accounts should take into consideration the following points:

- Increasing numbers of field observers, armed with greater knowledge and improved mobility, and spending more time in the field, must, to some extent, be responsible for the increase in the recorded numbers of certain species.
- Known breeding individuals (of such species as Common Crane and Red-necked Phalarope *Phalaropus lobatus*) have been excluded from the report.
- Individuals remaining from one year to the next (e.g. overwintering Ring-necked Ducks) have been counted only in their year of arrival.
- Returning individuals (e.g. Ring-billed Gulls) have, where possible, been counted only in their year of arrival, unless stated otherwise.
- Known escapes from captivity (e.g. some White Storks *Ciconia ciconia*) have been excluded.
- Statistics for some species for 2003, and to a lesser degree for earlier years, are incomplete because of the unavailability of data from some counties.

American Wigeon *Anas americana*

Number of individuals in 2003	Number of individuals in 1958–2003	Year rank	Highest annual maxima 1958–2003			Annual means 1958–2003				
			2000	1998	2002	1958–69	1970–79	1980–89	1990–99	2000–03
14	373	9	30	27	23	1	4	8	15	20

Of the 22 American Wigeons recorded in Britain in 2003, a minimum of 14 are believed to be new arrivals, making this the ninth-best year on record. Since 1995, numbers have consistently matched or exceeded the 2003 total (while only two years prior to 1995 have been better for American Wigeon: 1990 (19) and 1992 (15). Clearly, the trend towards increasing numbers is being maintained. As in previous years, wintering birds predominated, and there were only two between early May and November: a female which wintered at Holme, Norfolk, then remained throughout the summer at various sites along the north Norfolk coast; and a male at the Add Estuary, Argyll, on 17th–19th September. Inevitably, males outnumbered females, with only four females being found: at Benacre Broad, Suffolk, on 3rd–4th January; Tresco, Scilly, from 7th January to 23rd February; Holme (above), from 26th January; and Loch

of Houlland, Shetland, on 23rd November. It seems that many females are still being overlooked.

Information on the population trends of some North American birds since 1966 can be found on the North American Breeding Birds Survey website (www.mbr-pwrc.usgs.gov/bbs/trend/tf04.html) and, for Canada alone, over much the same period, on the Canadian Bird Trends website (www.cws-scf.ec.gc.ca/birds/trends/default_e.cfm). The American Wigeon population has been on something of a gentle roller coaster during the whole period, but the overall picture is described as an insignificant increase. A comparison of peak years for breeding in Canada and the best years in Britain shows no clear correlation. The best two years in Britain, 2000 and 1998, were distinctly average in Canada and the third-best year, 2002, was below par there. The peak year in Canada, 1990, was a good year in Britain too (above) but the next-best year was 1979 when only three were recorded in Britain. There have been four recoveries of Canadian-ringed American Wigeons in Britain & Ireland, three of these originating from New Brunswick, the other from Prince Edward Island (Grantham 2004a). No breeding data are available for these areas, but data for the Quebec region are given on the Canadian Wildlife Service website (www.qc.ec.gc.ca/faune/sauvagine/html/waterfowl.html), although these do not always match the overall Canadian trend. The correlation between peak years in this state – which, on limited ringing evidence, is part of the likely source area for our birds – and peak years in Britain is still frustratingly patchy. The year 2000 was the best on record, both in Canada and for British sightings, but both 1998 and 2002 were poor in Quebec.

The overall trend in Britain of maintaining a steady increase has thus occurred against a background of ups and downs in North America as a whole and a distinctly average (and below-average in 2001 and 2002) performance in Canada. All of this begs a number of questions on the reasons why there is a clear pattern of increasing numbers in Britain, especially as presumably even more would be recorded if females were easier to identify.

Green-winged Teal *Anas carolinensis*

Number of individuals in 2003	Number of individuals in 1958–2003	Year rank	Highest annual maxima 1958–2003			Annual means 1958–2003				
			2002	1999	2000	1958–69	1970–79	1980–89	1990–99	2000–03
36	605	4	54	48	43	2	6	12	23	41

The increase in the number of Green-winged Teals appearing in Britain mirrors an increasingly common pattern among Nearctic waterfowl. The 36 new arrivals in 2003 made this the fourth-best year to date, while a further 16 returning birds from previous winters brought the total number reported in 2003 to 52. Inevitably, all were males. Sightings were reported from Shetland, Orkney and the Western Isles, southwest to Cornwall and east to Suffolk although, surprisingly, Scilly missed out in 2003. Inland, birds were found at Grimley, Worcestershire, on 18th January; Nene Washes, Cambridgeshire, in February–March (returning bird); Walthamstow Reservoir, Greater London, in February–March, moving to Cornhill Meads, Essex, on 17th March; Cotswold Water Park, Wiltshire, in March–April; and Dogsthorpe, Cambridgeshire, in October. A wintering bird at Loch Bhasapoll, Argyll, was last seen on 26th May, and one visited a number of sites in Cleveland between 26th May and 23rd June. There were no further records until the first of the autumn was discovered at Scatness, Shetland, on 22nd October.

In North America, the breeding data show a significant increase during 1966–79, and an insignificant decrease since then. In Canada, the data show a more gradual rise over the study period, with small peaks and troughs, culminating in two excellent years in 1996 and 1998, and a slow decline since then. The pattern in Britain is, as described above, one of steady increase, with the four best years falling between 1999 and 2003. This pattern closely resembles that shown by American Wigeon, and the two species also share the difficulty/impossibility of identifying females in the field. There have been three recoveries of Canadian-ringed Green-winged Teals in Britain & Ireland, of birds ringed in New Brunswick, Newfoundland and Quebec (Grantham 2004c). The correlation between good breeding years in that part of Canada and peak numbers in Britain is better than the overall Canadian picture suggests: of the four best years in Britain, 2000 was exceptional in Quebec, while 1999, 2002 and 2003 were either average or above-average (for references see previous account).

Ring-necked Duck *Aythya collaris*

Number of individuals in 2003	Number of individuals in 1958–2003	Year rank	Highest annual maxima 1958–2003			Annual means 1958–2003				
			2001	2002	2000	1958–69	1970–79	1980–89	1990–99	2000–03
23	495	7	49	40	35	1	8	13	13	36

As with all ducks, establishing just how many are new arrivals and how many are birds which have crossed the North Atlantic in previous years and returned to regular wintering sites is difficult. Tracking individuals can be fraught with problems, and only by careful observations can the movements of particular individuals be monitored. For example, four records of males from Vane Farm, Perth & Kinross, in September are treated as four separate new arrivals, perhaps representing a small influx at that time. Conversely, sightings of a female, seen intermittently at Dozemary Pool and Siblyback Reservoir, Cornwall, between 23rd January and 8th May are believed to relate to the same individual. In 2003, there were judged to be at least 23 new arrivals, and at least nine returning birds, well below the 49 and 40 of the two preceding years. Nonetheless, since 1999, Ring-necked Duck has experienced five of its best years; before that, only 1979 (26) and 1980 (28) bettered the 2003 total. Reports were widely scattered throughout the country and there was no obvious influx.

The correlation between breeding population trends and British records is arguably somewhat more positive for this species than the previous two. For North America as a whole, there has been a significant increase, with ground lost during 1966–79 being made up during the period 1980–2003. There has been just one ringing recovery of Ring-necked Duck in Britain: a bird ringed in New Brunswick, Canada, in September 1967 was shot in Powys three months later. Remarkably, one ringed at Slimbridge, Gloucestershire, in March 1977 was shot in Greenland in May of the same year, presumably on its return spring migration (Grantham 2004b). In Quebec, the best breeding years since 1990 were 1999, 2000 and 2003, although the poorest were 1996, 1998 and 2002. As for the two previous species, breeding success in North America cannot be the sole reason for increasing numbers of Ring-necked Ducks in Britain. At least we have a better picture of the true occurrences of this species given that females are easier to identify.

Surf Scoter *Melanitta perspicillata*

Number of individuals in 2003	Number of individuals in 1958–2003	Year rank	Highest annual maxima 1958–2003			Annual means 1958–2003				
			1999	1989	2003	1958–69	1970–79	1980–89	1990–99	2000–03
23	399	3	26	24	23	2	5	11	15	16

Compared with other Nearctic waterfowl, Surf Scoters tend to be rather predictable in both location and timing. Most occur in Scotland (fig. 1), among large wintering flocks of Common *M. nigra* and Velvet Scoters *M. fusca*, with smaller numbers scattered along the coasts of Wales and southwest England. In 2003, of the 23 new birds reported, this tendency was particularly marked, with no fewer than 12 reported from Scotland, four from Wales, and four from the southwest, with two others in Northumberland and one in East Yorkshire. Returning birds added a further 13 to this total, including two males and two females at Ruddon's Point, Fife, and singles at Aberlady Bay/Mussel-

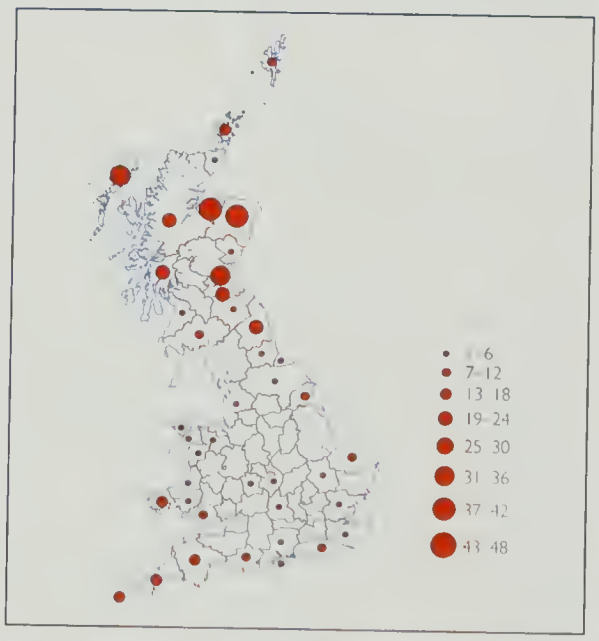

Fig. 1. Distribution of Surf Scoters *Melanitta perspicillata* in Britain, 1958–2003. The high proportion of records in Scotland is notable.

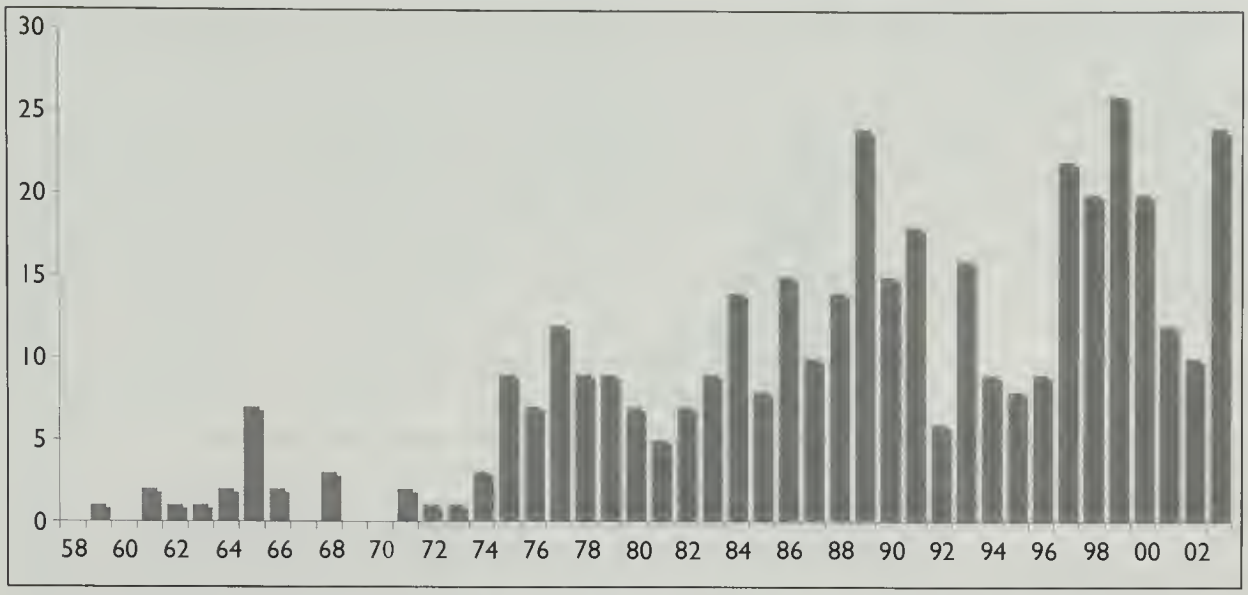

Fig. 2. Annual totals of Surf Scoter *Melanitta perspicillata* in Britain, 1958–2003. Compare and contrast the essentially cyclical pattern of occurrences since the mid 1970s with the more consistent rise in records of other Nearctic waterfowl in Britain (in particular the first two species in this report; see *Brit. Birds* 98: 75–77).

burgh, Lothian, and Sound of Taransay, Western Isles. Unlike those of other Nearctic waterfowl, records were more evenly spread throughout the year, though with none during July and August and most in January–March and October–December.

Although Surf Scoters in Britain have increased in recent years, numbers have not burgeoned in the same fashion as they have done for other Nearctic waterfowl. Instead, since 1974, Surf Scoters have followed a somewhat cyclical trend (fig. 2), with peaks in 1977, 1989 and 1999, and troughs in 1981, 1992, 1995 and 2002.

Cory's Shearwater *Calonectris diomedea*

Number of individuals in 2003	Number of individuals in 1958–2003	Year rank	Highest annual maxima 1958–2003			Annual means 1958–2003				
			1998	1999	1980	1958–69	1970–79	1980–89	1990–99	2000–03
97	22,851	15	5,116	3,636	2,851	14	18	453	1,519	695

The year 2003 was not a memorable one for Cory's Shearwater in Britain, ranking fifteenth since 1958. All were seen between the end of June and late October, with peak passage (46) during the middle ten days of July. Thereafter, weekly totals remained in single figures throughout the autumn, apart from 12 in late August and 11 in mid October.

Night Heron *Nycticorax nycticorax*

Number of individuals in 2003	Number of individuals in 1958–2003	Year rank	Highest annual maxima 1958–2003			Annual means 1958–2003				
			1990	1987	1999	1958–69	1970–79	1980–89	1990–99	2000–03
3	441	34	61	53	26	3	6	13	18	8

With just three records, 2003 proved to be one of the worst years on record for Night Heron in Britain. Apart from three in 1991, it is necessary to go back to 1973–75 for similarly low annual totals. Of these three, two (typically) appeared in the first week of May (see fig. 3, page 80), with one at Bolton's Pit, Cambridgeshire, on 3rd May, and one at Brompton-on-Swale, North Yorkshire, on 6th–7th May; the other was at Hornsea Mere, East Yorkshire, on 8th September. In addition, one on the Nene Washes, Cambridgeshire, on 19th July, was colour-ringed and is treated as an escape. This is believed to be the same individual which appeared at the Nene Washes in 2001, and at Bainton Gravel-pits, Cambridgeshire, in 2002.

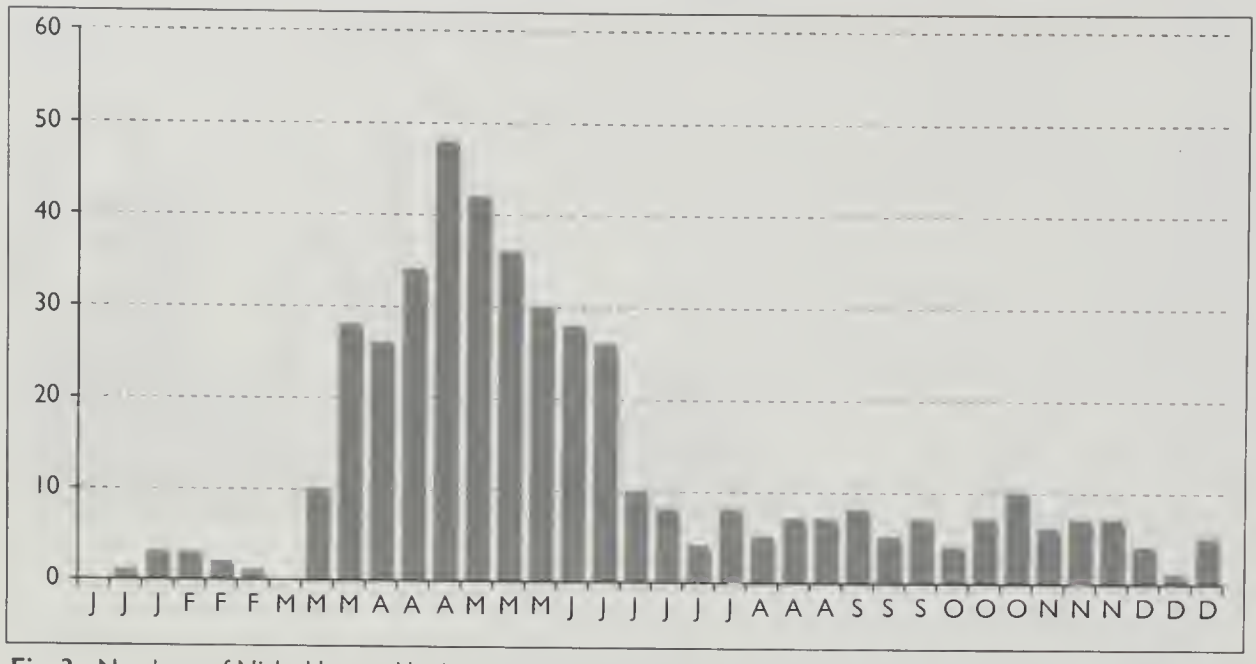

Fig. 3. Numbers of Night Herons *Nycticorax nycticorax* in Britain, 1958–2003, showing arrival times of migrants in ten-day periods. The period between mid April and mid May is clearly the peak time for this attractive heron.

Purple Heron *Ardea purpurea*

Number of individuals in 2003	Number of individuals in 1958–2003	Year rank	Highest annual maxima 1958–2003			Annual means 1958–2003				
			1987	1999	1994/70	1958–69	1970–79	1980–89	1990–99	2000–03
13	762	30	35	32	28	7	19	21	20	18

Purple Heron was another southern heron which fared badly in 2003. The total of 13 recorded in 2003 matches a similar total in 2002 and continues a trend of declining numbers apparent since the 32 recorded in 1999. Spring arrivals in southwest England predominated, with the first of the year at Sutton Bingham Reservoir, Somerset, on 16th April. This was followed by three on Scilly, two in Cornwall, and singles in Devon, Nottinghamshire, Greater London, plus another in Somerset. The last of the spring was on St Martin's, Scilly, on 23rd June. In the autumn, just three were discovered: at Nanquidno, Cornwall, on 14th September; at Venus Pool, Shropshire, on 24th September; and at Filsham, Surrey, on 27th–30th September.

There are just two ringing recoveries of Purple Heron in Britain, both from the same breeding colony in Noorden, The Netherlands, and both in the spring two years after ringing: one was trapped on Fair Isle, Shetland, in May 1969, the other found dead on St Mary's, Scilly, in May 1970 (Grantham 2005). Ringing returns confirm that the winter quarters of Purple Herons breeding in west and central Europe are in West Africa; poor overwinter survival and desiccation of winter habitats may well be linked to a significant decline in numbers in Europe in recent decades, particularly 1970–90 (BirdLife International 2004).

White Stork *Ciconia ciconia*

Number of individuals in 2003	Number of individuals in 1958–2003	Year rank	Highest annual maxima 1958–2003			Annual means 1958–2003				
			2002	1998	1986	1958–69	1970–79	1980–89	1990–99	2000–03
38	682	5	58	56	48	2	16	15	21	34

Although it is becoming increasingly difficult to determine precisely how many new White Storks are appearing in Britain, there is little doubt that this conspicuous species is doing well. Many birds are highly mobile, moving between sites both within and between counties, and unless they are in some way distinctively marked, some will inevitably be treated as new birds. Conversely, apparent duplica-

tion may be masking the true numbers occurring here. After comparison with previous years, it is considered that a minimum of 38 new birds were seen in 2003, along with at least two from previous years, and an indeterminate number of escapes. This all adds to a confusing picture, and makes any analysis difficult! For example, in April two birds roamed widely within Suffolk, being noted south over Minsmere on 23rd April before roosting at Alton Water later the same day. One of these birds was unringed, but the other carried a black darvic ring (see below). A further 12 sightings of a single White Stork followed between 25th April and 8th May at sites throughout Suffolk, although none established whether the bird was ringed. Should these birds be treated as two re-established birds (and excluded from these totals), or as one wild and one re-established bird, two wild birds, or, as in this case, given the benefit of the doubt and treated as eight new birds?

The ringed bird in Suffolk noted above was the nineteenth report of a foreign-ringed White Stork in Britain. When caught and ringed at an animal park near Antwerp, Belgium, in April 2002, it was carrying a blue 'chicken' ring, indicating that it had escaped from an illegal bird keeper (Clark *et al.* 2004). This bird was one of the pair that subsequently attempted to breed with a French-ringed bird in West Yorkshire in 2004.

Honey-buzzard *Pernis apivorus*

Number of individuals in 2003	Number of individuals in 1986–2003	Year rank	Highest annual maxima 1986–2003			Annual means 1986–2003		
			2000	1999	2002	1986–89	1990–99	2000–03
159	4,187	7	2,188	203	190	61	124	675

Another excellent year for Honey-buzzard, and the recent trend of good years seems firmly established. Since 1993, numbers have dipped below 100 in just one year, the 90 seen in 1997. Of the total of 159, 67 occurred away from known breeding sites between 8th April and 31st July. Records in spring are presumed to relate to passage migrants, while records after mid June presumably refer to failed or non-breeding birds dispersing within Britain. Since there were so many wandering birds appearing throughout the country (fig. 4), it is difficult to judge exactly when autumn passage began, but there was a distinct upsurge in records in August, beginning on 8th. Numbers gradually increased to reach a peak of 27 reported during the first ten days of September, after which sightings declined rapidly. Most occurred in the English eastern and southern counties, although the last autumn record was at Hoveringham, Nottinghamshire, on 5th October.

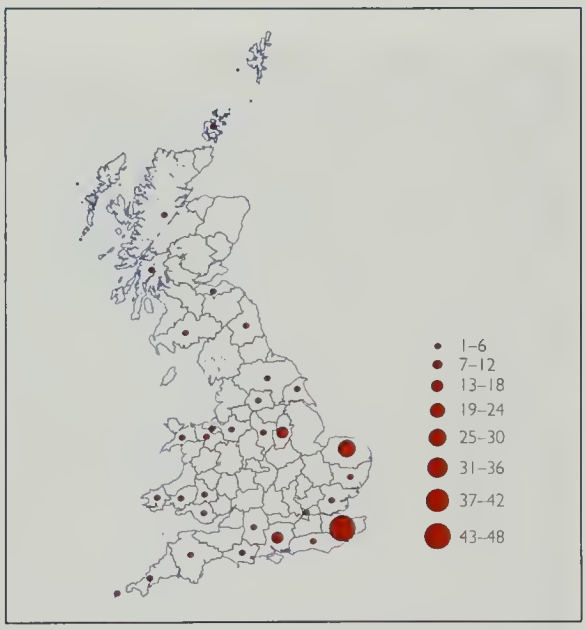

Fig. 4. Distribution of Honey-buzzards *Pernis apivorus* in Britain, away from known breeding localities, in 2003. Although the bulk of records came from the east and south coasts of England, there was a scatter of records virtually throughout Britain in 2003, one of the better years on record.

Rough-legged Buzzard *Buteo lagopus*

Number of individuals in 2003	Number of individuals in 1974–2003	Year rank	Highest annual maxima 1974–2003			Annual means 1974–2003			
			1994	1998	1988	1974–79	1980–89	1990–99	2000–03
53	1,211	6	255	112	84	10	28	73	35

The best year since 1999 for this sought-after raptor and the sixth-best year since 1974, with 53 new arrivals plus a number of wintering birds first noted in 2002 (which have been excluded from this total). The first winter period proved to be excellent for both wintering birds and passage migrants. At least 11 overwintered, mostly in East Anglia, although two were seen in North Yorkshire and Hampshire. Passage of returning birds became noticeable after this, with a slight increase in the second half of March, followed by at least 15 during the last ten days in April. The last of the spring was at Sloley, Norfolk, on 9th May. Apart from one reported at Pen-rhiw-fawr, Gower, on 8th June, there were no more sightings until one at Moffat, Dumfries & Galloway, on 17th October. A small passage, involving a further ten birds, continued until the end of November. During the second winter period, only one wintering bird was reported, which toured a number of sites in Norfolk from 16th November until the end of the year, while the only other sighting in December was at Burnham Market, also Norfolk, on 29th December.

The British east coast lies at the extreme northwestern edge of the normal winter range of Rough-legged Buzzard; since the main movement is south and east from the breeding grounds, only small numbers would be expected to occur here each autumn. How many of these arrivals overwinter in Britain presumably depends largely on prey abundance here. Larger than normal autumn influxes are thought to reflect a south and westwards shift of the Fennoscandian breeding range when small mammals in northern latitudes are in short supply (Scott 1978). Four have been recovered during autumn/winter in Britain & Ireland, two ringed in Sweden and one each from Norway and Denmark (Wernham *et al.* 2002). In addition, some may arrive later in the winter, driven west by severe weather in more eastern parts of the winter range (Davenport 1982). In turn, the spring passage will tend to reflect the degree to which Rough-legged Buzzards have wintered to the south and west of their normal range.

Spotted Crake *Porzana porzana*

Number of individuals in 2003	Number of individuals in 1986–2003	Year rank	Highest annual maxima 1986–2003			Annual means 1986–2003		
			1995	1989	1988	1986–89	1990–99	2000–03
40	1,125	14	119	84	81	72	60	65

Excluding birds at known breeding sites, a total of 40 Spotted Crakes occurred in Britain in 2003 (fig. 5), although this does include some calling males heard on just one or two evenings in late spring, suggesting that they were passage birds. The first of the year was at Drakelow Wildfowl Reserve, Derbyshire, on 18th–29th March. There were no further records until 24th April, when two arrived at South Cove, Suffolk, and one on Fair Isle, Shetland. An additional ten were discovered at widely scattered locations throughout the country during late April and May, several of which were calling, albeit briefly. After three midsummer records, a total of 23 arrived during the autumn, with the first at Marazion, Cornwall, on 8th August. This was followed by a further six in August, 13 in September and two in October. Passage peaked during the last ten days of September, when eight birds were reported, but declined rapidly after this, with the last of the year at Wintersett Reservoir, West Yorkshire, on 1st–4th November.

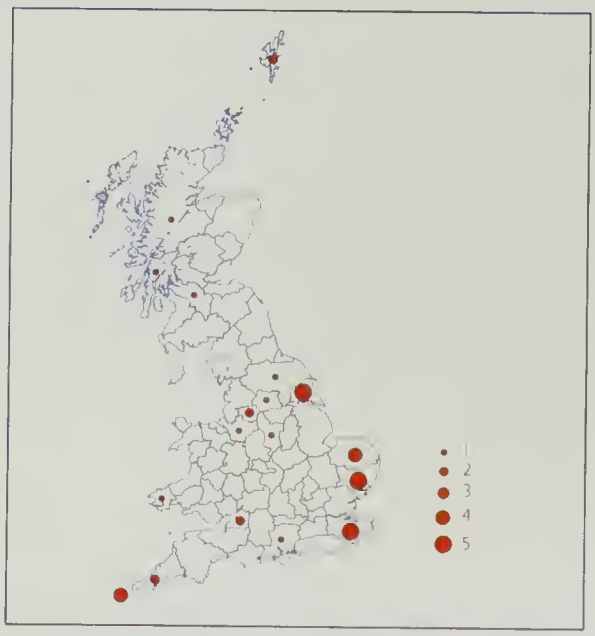

Fig. 5. Distribution of presumed migrant Spotted Crakes *Porzana porzana* in Britain, in 2003.

Common Crane *Grus grus*

Number of individuals in 2003	Number of individuals in 1958–2003	Year rank	Highest annual maxima 1958–2003			Annual means 1958–2003				
			1963	2002	1982	1958–69	1970–79	1980–89	1990–99	2000–03
161	2,512	4	685	259	199	64	19	56	39	155

Since 2000, Common Cranes have been occurring in increased numbers, with 106 in 2000, 259 in 2002 and 161 in 2003. Much of this increase is clearly attributable to the growing numbers turning up in early spring, although dispersal by the growing Norfolk population cannot be entirely ruled out. Although five new birds were reported in January, and three in the first week of February, it was the arrival of three at Norden, Greater Manchester, on 15th February, which heralded the start of the spring passage. By the end of the month, a further 15 widely scattered arrivals had been recorded, from Scalby Lodge Pond, North Yorkshire (nine on 23rd February), to Tortworth, Avon (five on 25th February), and Noss, Shetland (one on 26th February). This excellent start to the spring passage was maintained, with no fewer than 52 in the first three weeks of March, 21 in April and 18 in May, closely approximating to the pattern of occurrence that would be expected of Scandinavian birds returning to their breeding grounds. Eight were found in June, including a party of five at Easington, East Yorkshire, and singles in Perth & Kinross and Shetland. The final tally of spring migrants was bettered only by the 173 in 2002. There were no further reports until 8th September, when nine appeared at Hanningfield Reservoir, Essex, followed by one in Fife the next day. Autumn passage was less striking than spring passage, with just 36 birds up to 14th October, although this did include a group of 14 at Leigh-on-Sea, Essex, on 2nd October.

Hugh Harrop

32. Common Cranes *Grus grus*, Fleck, Mainland Shetland, March 2003, part of an exceptional spring passage of cranes, which peaked during early to mid March.

Kentish Plover *Charadrius alexandrinus*

Number of individuals in 2003	Number of individuals in 1986–2003	Year rank	Highest annual maxima 1986–2003			Annual means 1986–2003		
			1993	1999/91	1996	1986–89	1990–99	2000–03
15	577	18	59	42	39	28	36	21

The sum of 15 Kentish Plovers recorded in Britain in 2003 is the lowest total for this species since national records began, in 1986. Although numbers have fluctuated throughout this period, there has been a marked downward trend since 1999 (fig. 6), when the year-total was 42. Spring passage was particularly poor, with just four reported: at Berney Marshes, Norfolk, on 16th April; at Pegwell Bay, Kent, on 18th April; at Pagham Harbour, West Sussex, on 26th–27th April; and at Dawlish Warren, Devon, on 17th–18th May.

A notable feature of 2003 was the number of midsummer records, presumably relating to post-breeding dispersal from the near continent, rather than active passage. In 2003, records between 1st June and 1st July accounted for nine of the 15 reported during the year. However, few birds remained loyal to particular sites for more than one day, so it is conceivable that there is some duplication of records within East Anglia and southeastern England. Only two were found in the autumn, both at Pegwell Bay, on 10th and 16th August, making this by far the best site in the country for Kentish Plovers in 2003, with a total of five for the year.

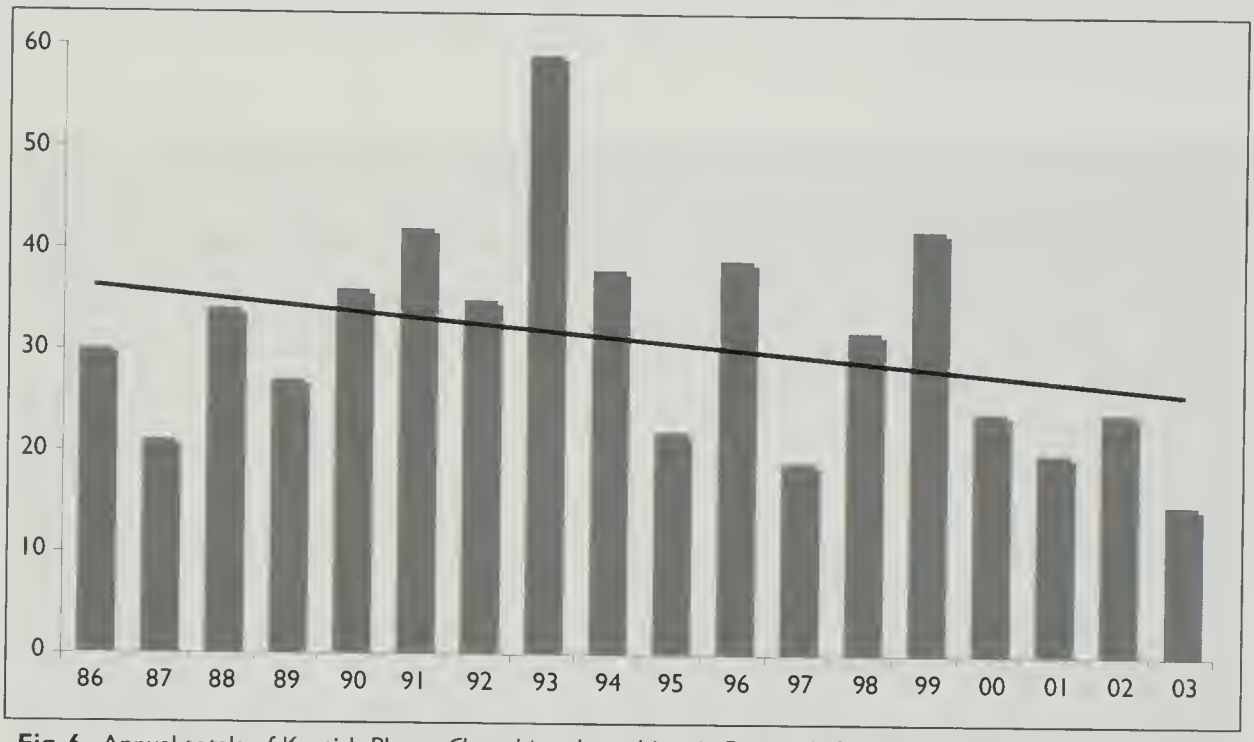

Fig. 6. Annual totals of Kentish Plover *Charadrius alexandrinus* in Britain, 1986–2003. Although the run of data is relatively short, the overall downward trend is still quite obvious.

Temminck's Stint *Calidris temminckii*

Number of individuals in 2003	Number of individuals in 1968–2003	Year rank	Highest annual maxima 1968–2003			Annual means 1968–2002			
			1987	2001	2000	1968–79	1980–89	1990–99	2000–03
80	3,293	26	176	138	129	71	105	95	112

Temminck's Stint is primarily a passage migrant through Britain, with spring arrivals outnumbering those in autumn. This pattern was emphasised in 2003, with 56 sightings during spring migration and 24 in autumn; but numbers were relatively low, making 2003 one of the poorer years on record.

Spring passage was protracted, with the first at Denge Marsh, Kent, on 8th April, and the last at

Blacktoft Sands, East Yorkshire, on 4th June. Most were seen during May, with 13 during both 1st–10th and 21st–31st, and 22 during the middle ten-day period of the month. Just three, presumably failed breeders or non-breeders, were reported between mid June and mid July. Autumn passage was apparent from late July onwards, the first bird being at Grove Ferry, Kent, on 20th July. This was followed by two more in late July, and 16 in August, mostly towards the end of the month. Surprisingly, just three were seen in September, all during the first ten days, and a late migrant was at Cliffe Pools, Kent, on 4th October.

One interesting feature of Temminck's Stint records in Britain is their cyclical pattern. Numbers of migrants peaked in 1977, 1982, 1987, 1992 and 2001, while troughs were apparent in 1971, 1979, 1983, 1990 and 1996. The short-term decline since the last peak, in 2001, is reflected in both passage periods, suggesting that the fluctuations are not weather-related but presumably track the fortunes of the Scandinavian breeding population. Numbers in spring peaked most recently at 101 in 2000, and have declined steadily since then, with 97 in 2001, 76 in 2002 and 56 in 2003. In autumn, 50 appeared in 1999 and 41 in 2001, and there were 24 in both 2002 and 2003.

Pectoral Sandpiper *Calidris melanotos*

Number of individuals in 2003	Number of individuals in 1968–2003	Year rank	Highest annual maxima 1968–2003			Annual means 1968–2003			
			2003	1999	1984	1968–79	1980–89	1990–99	2000–03
170	2,159	1	170	132	130	40	70	57	103

It was the best year on record for Pectoral Sandpipers in 2003; an exceptional autumn influx, from mid August until the end of September, boosted numbers well beyond the previous high of 132 birds in 1999.

Just eight were reported during the spring, with singles in May at Cley, Norfolk (3rd), Catcott Lows, Somerset (5th), Foula, Shetland (11th) and Fair Isle, Shetland (28th). These were followed by further singles in June at Farlington Marshes, Hampshire (3rd–5th) and Hauxley, Northumberland (6th), plus a couple of singles towards the end of the month, which were assumed to be wandering individuals rather than birds on active passage.

Return passage began on 13th July, when the first bird appeared at Loch of Strathbeg, Northeast Scotland, and by the end of the month nine adults had arrived on Shetland, Orkney and at several widely scattered east-coast localities, fitting the established pattern of late-summer arrivals, presumably from Siberian breeding grounds. Passage remained unremarkable during the first half of August, with a further seven at sites along the east coast. The first juvenile was found at Blacktoft Sands, East Yorkshire, on 13th August, suggesting an arrival from the east. The scale of the influx became apparent during the last ten days of August, when 14 were found, and arrivals in the southwest began to predominate. Numbers continued to increase in September, with 29 new birds being found during the first ten days of the month, 44 during the middle ten days, and 36 in the final ten days. By mid September, birds were being found throughout the country, with several inland counties reporting multiple arrivals, although strangely only a handful appeared in Wales. By October, the influx had run out of steam, and just 14 were recorded in that month, the last at Meare, Somerset, on 21st October. This exceptional influx

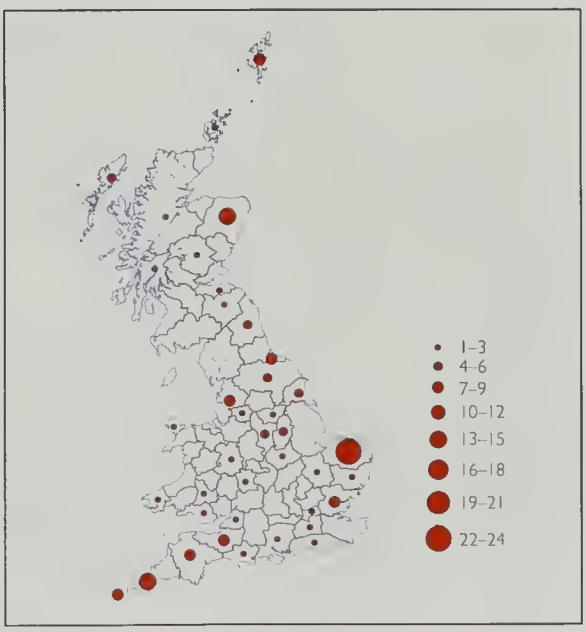

Fig. 7. Distribution of Pectoral Sandpipers *Calidris melanotos* in Britain, in 2003. An exceptional autumn influx made 2003 the best year on record for this species; although the largest numbers were in coastal counties, the number of inland records was particularly notable.

of Pectoral Sandpipers was not confined to Britain, but was also apparent throughout much of western Europe. The patterns of occurrence associated with this influx were analysed in detail by Alex Lees and James Gilroy (*Brit. Birds* 97: 638–646).

Buff-breasted Sandpiper *Tryngites subruficollis*

Number of individuals in 2003	Number of individuals in 1958–2003	Year rank	Highest annual maxima 1958–2003			Annual means 1958–2003				
			1977	1975	2000/1996	1958–69	1970–79	1980–89	1990–99	2000–03
9	629	29	54	48	34	3	21	19	15	15

Another poor year, suggesting that the factors which govern the appearance of Pectoral Sandpipers in Britain do not have the same effect on Buff-breasted Sandpipers. Of the nine seen in 2003, two were in spring, at Aberlady Bay, Lothian, on 7th May, and at Wicken Fen, Cambridgeshire, on 10th–14th May. The remaining seven were in autumn, the first at Dawlish Warren, Devon, on 8th September. This was followed by singles at Davidstowe airfield, Cornwall, on 10th September; Cromer Point, North Yorkshire, on 21st September; Severnside, Avon, on 27th–30th September; and North Ronaldsay, Orkney, from 29th September to 1st October. In addition, one toured Scilly from 22nd to 30th September, being seen on St Agnes, St Mary's and Tresco. The remaining record was of a bird at Skaw, Whalsay, Shetland, on 2nd–23rd October.

Red-necked Phalarope *Phalaropus lobatus*

Number of individuals in 2003	Number of individuals in 1986–2003	Year rank	Highest annual maxima 1986–2003			Annual means 1986–2003		
			1999	1989	1992	1986–89	1990–99	2000–03
23	584	15	71	46	41	36	34	25

With 23 British records in 2003, Red-necked Phalarope is another shorebird suffering a downturn in fortunes here. Perhaps most surprising was the near-complete absence of spring reports, there being none in May, and just one in June, at Conwy, Caernarfonshire, on 8th. A further three were found in late June, of which two in Orkney, on 23rd and 28th, may have been breeding birds dispersing from Shetland. The only July reports, considered here to be early migrants, came from Norfolk, with an adult at Titchwell on 18th, and a juvenile at King's Lynn on 19th–24th. Six were seen in late August, from 23rd onwards, including two at Rye Harbour, East Sussex, on 29th. A further seven were found in September and four in October, the last being a juvenile on the sea at Flamborough, East Yorkshire, on 24th.

Fig. 8. Distribution of Red-necked Phalaropes *Phalaropus lobatus* in Britain, away from known breeding localities, in 2003. A poor year for this species, and most of the records were autumn migrants.

Grey Phalarope *Phalaropus fulicarius*

Number of individuals in 2003	Number of individuals in 1986–2003	Year rank	Highest annual maxima 1986–2003			Annual means 1986–2003		
			2001	1989	1987	1986–89	1990–99	2000–03
167	4,417	9	1,123	366	365	283	168	403

Another relatively good year for Grey Phalaropes in Britain, maintaining the run of above-average years which began in 1995, following something of a trough in 1992–94. There were just three in the first half of the year, at Terrington, Norfolk, on 2nd February, on Islay, Argyll, on 3rd March, and on North Ronaldsay, Orkney, on 25th May. In August, one flew past at Strumble Head, Pembrokeshire, on 25th, followed by five there on 29th, and two past Pendeen, Cornwall, on 31st, when one was also found at sea in sea area Lundy. September produced a further 43, including 14 west at Pendeen in two hours on 22nd. Autumn passage peaked between 22nd September and 21st October, when no fewer than 107 were reported; October proved to be the peak month, with 86 birds noted. Another 20 were found in the first half of November, after which passage dropped off rapidly, there being just three in the second half of November and another three in December.

Sabine's Gull *Larus sabini*

Number of individuals in 2003	Number of individuals in 1968–2003	Year rank	Highest annual maxima 1968–2003			Annual means 1968–2003			
			1987	1997	1988	1968–79	1980–89	1990–99	2000–03
137	4,651	10	710	396	346	51	203	141	151

With no significant autumn influx, 2003 was a fairly typical year for Sabine's Gulls in Britain; numbers were slightly above average, making this the tenth-best year since 1968. Apart from an unseasonal bird at Milford-on-Sea, Hampshire, on 1st January, there were no reports until late May when one was seen at Portland, Dorset, on 29th–30th. The following day, an adult in breeding plumage was found in Lowestoft Harbour, Suffolk, where it remained until 26th August, and proved to be one of the highlights of the summer, being readily attracted to chips. The only other spring/summer bird was seen on a pelagic

Alan Tate

33. Adult Sabine's Gull *Larus sabini*, Lowestoft, Suffolk, June 2003; a popular east-coast attraction right through the summer.

trip off Scilly, on 6th June.

Autumn passage began with two adults seen from the *Scillonian* pelagic in sea area Sole on 10th August. Numbers continued to build throughout August, with 22 noted during the last ten days of the month. Unsurprisingly, September proved to be the best month of the year, with 70 reported, of which 38 occurred in the last ten days of the month. A further 19 were seen during the first week in October, after which passage tailed off quickly; there were ten more records in October and seven in November, the last at Point Lynas, Anglesey, on 29th November.

In 2003, pelagics into sea area Sole provided the best opportunity to connect with Sabine's Gull, with 17 seen. For land-based birders, the north Norfolk coast was the best bet, with 14, followed by Point Lynas, Anglesey with 12, Flamborough Head, East Yorkshire, with 11 and Strumble Head, Pembrokeshire, with nine. For those with no stomach for seawatching, the obliging Lowestoft adult, and an adult inland at Foxcote Reservoir, Buckinghamshire, on 19th October, were the best options available.

Ring-billed Gull *Larus delawarensis*

Number of individuals in 2003	Number of individuals in 1973–2003	Year rank	Highest annual maxima 1973–2003			Annual means 1973–2003			
			1992	1990	1997	1973–79	1980–89	1990–99	2000–03
46	1,525	21	108	94	88	4	47	77	62

Although it is becoming increasingly difficult to separate newly arrived from returning birds, there is little doubt that 2003 was a poor year for Ring-billed Gulls in Britain. With adult and second-winter birds, there is always the danger of duplication if they choose new wintering sites, as they may then be counted as new arrivals. Consequently, a useful measure of new arrivals is the number of first-winter birds found. In 2003, just five first-winters were discovered, compared with 15 in 2002, and 14 in both 2001 and 2000.

Presumed new arrivals were concentrated in the first half of the year, starting with six in January. It seems likely that the early passage of gulls returning to breeding sites brings with it significant numbers of Ring-billed Gulls, possibly birds which have crossed the Atlantic during the previous autumn and wintered elsewhere in southwestern Europe. In 2003, this passage began during the middle of February, bringing with it four Ring-billed Gulls, and continued until the end of March, during which time 18 new arrivals were logged. New arrivals tailed off after this date, with six in April, half during the first ten days of the month. There was just one new bird in May, singles in June and August, then no more until

Steve Young/Birdwatch

34. Adult Ring-billed Gull *Larus delawarensis*, Par, Cornwall, October 2003.

the end of October. The second winter period produced just eight new birds.

The general increase in British records since the first, in 1973, reflects data from North America, which suggests that this species is increasing in both numbers and breeding range (www.mbr-pwrc.usgs.gov/bbs/trend/tf04.html; www.birds.cornell.edu/programs/AllAboutBirds/BirdGuide/Ring-billed_Gull.html). European ringing returns for this species include a chick ringed at Lake Champlain, New York, in June 1980, that was found dead in Ireland in December 1981 (the only British & Irish recovery), while two Norwegian-ringed birds have been tracked in the opposite direction, one controlled in Canada and one shot on passage in Iceland (Grantham 2004b).

European Bee-eater *Merops apiaster*

Number of individuals in 2003	Number of individuals in 1958–2003	Year rank	Highest annual maxima 1958–2003			Annual means 1958–2003				
			1997	2002	1991	1958–69	1970–79	1980–89	1990–99	2000–03
25	871	11	132	104	71	4	6	20	38	45

Twenty-five European Bee-eaters were seen in Britain in 2003, closely matching the numbers seen in 2000 and 2001, but well below the 104 in 2002. All arrivals came during the three months from May to July, the first on 1st May, on Skomer, Pembrokeshire. During May, ten arrivals in total included four sightings of two together, at Drummore, Dumfries & Galloway, on 9th; Bishopston, Gower, on 13th; St Agnes, Scilly, on 14th; and the Fowey Estuary, Cornwall, on 28th, all of which are treated here as different birds. A further eight were found during June, five of these in Wales or the southwest, two singles south over Spurn, East Yorkshire, on 9th and 18th, and one on Rousay, Orkney, which remained from 28th June until 7th July, this being the only bird which stayed for more than one day. July produced another seven, including up to four singles which toured north Norfolk, and the last of the year, at Dingle Marshes, Suffolk, on 28th July.

Hoopoe *Upupa epops*

Number of individuals in 2003	Number of individuals in 1968–2003	Year rank	Highest annual maxima 1968–2003			Annual means 1968–2003			
			1968	1980	1977	1968–79	1980–89	1990–99	2000–03
112	4,262	18	218	188	179	118	133	119	81

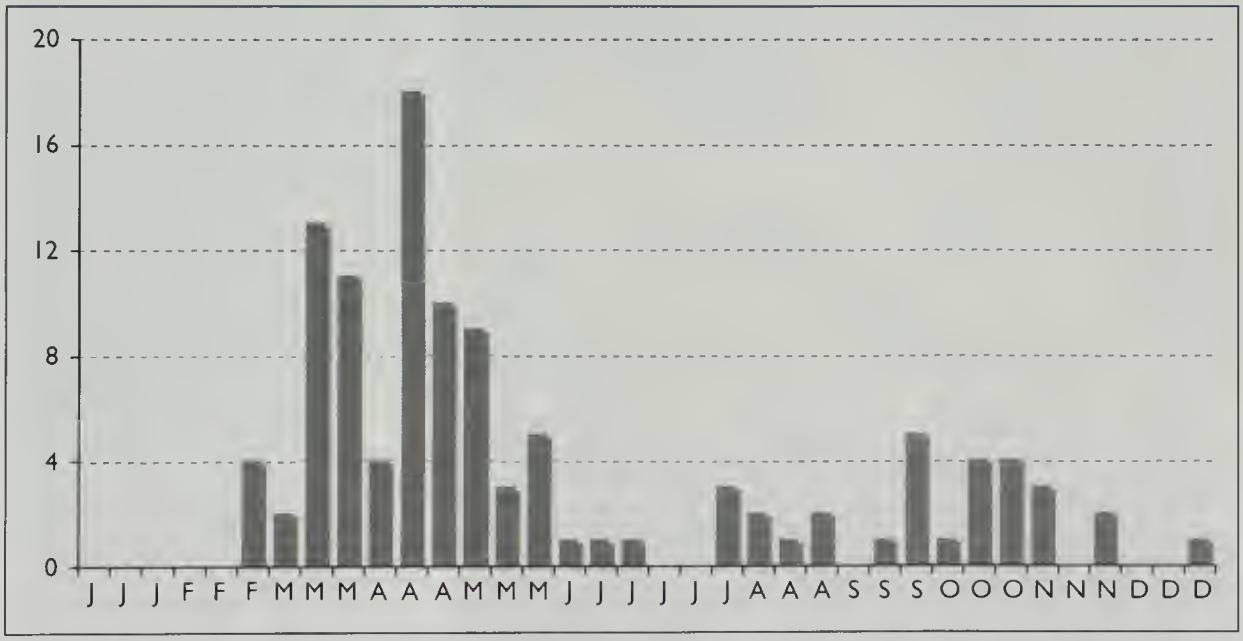

Fig. 9. Numbers of Hoopoes *Upupa epops* in Britain in 2003, showing arrival times of migrants in ten-day periods. A pulse of records in the second half of March and another, larger, burst of records in mid to late April are the main features to note.

It proved to be a fairly average year for Hoopoes in 2003, and there were records in every month except January (fig. 9). Typically, the first arrivals were in the southwest in early spring, with 24 in Scilly and Cornwall between 27th February and 31st March, and four found in coastal Wales north to Anglesey. During this period, one at Hunnington, Worcestershire, on 25th March, was the only inland record. Only six were found in the first half of April, all in the south and southwest apart from a long-stayer at Altnaharra, Highland, on 2nd, which remained until 18th. The second half of the month witnessed the main arrival of the year, with 26 turning up between 14th and 25th April. Most were again in the south and southwest, with only one found in an east-coast county, at Brent Eleigh, Suffolk, on 25th. Just 17 new birds were reported during May, four of these on the east coast, including two in Norfolk and singles in East Yorkshire and Suffolk.

There were six midsummer reports, five in August and six in September, with no obvious pattern to the distribution and time of arrival. A small influx occurred between 14th October and 9th November, when 11 birds were reported, including three in Shetland and a further four in northern Scotland. Just two were seen in the second half of November, in Devon and Cornwall, followed by the last of the year, and the only December report, at Abererch, Caernarfonshire, on 23rd.

Wryneck *Jynx torquilla*

Number of individuals in 2003	Number of individuals in 1986–2003	Year rank	Highest annual maxima 1986–2003			Annual means 1986–2003		
			1998	2002	1987	1986–89	1990–99	2000–03
320	5,037	4	416	385	354	311	259	302

Steve Young/Birdwatch

35. Wryneck *Jynx torquilla*, St Mary's, Scilly, October 2003.

An excellent year, with 320 migrants reported, including 58 in the spring and 262 in autumn. Although this was well below the 346 in the preceding autumn, 2003 was still one of the better autumns on record.

The first of the year appeared at St Germans, Cornwall, on 28th March, followed by four more in the first ten days of April. Passage began to increase from about 11th April, with 20 in the ten days to 20th April, and a further 15 in the last ten days of the month. Nine appeared in the first week in May, but new arrivals dipped markedly after this date, despite a small flurry of records in northern Scotland towards the end of the third week, with five in Shetland and one at Dunain, Highland, on 19th. The last of the spring was on North Ronaldsay, Orkney, on 30th May.

During the summer, an inland bird in Deeside, Northeast Scotland, on 24th June, seems more likely to have been an over-summering bird in search of a mate, rather than an early returning

migrant. Autumn passage proper began in early August, with one on Bardsey, Caernarfonshire, on 6th, followed next day by singles at Portesham, Dorset, and Ludham, Norfolk. There were no further reports until 20th August, which marked the start of an impressive passage, centred on the south and southwest coasts. Between 20th and 31st August, 76 were reported, including an amazing 16 at Portland, Dorset, on 27th, and 17 at various coastal sites in Cornwall on 28th. In contrast, there were just eight on the English east coast, from Cleveland to Essex, and just one in Scotland, on Fair Isle, on 30th. Passage continued unabated during much of September, with 64 in the first ten days of the month, and a further 65 during the middle ten-day period. Records were more widely scattered during this three-week period, with several inland reports, but just five in Scotland (all in Shetland) and four in Wales (three in Pembrokeshire and one in Glamorgan). The south and southwest coastal counties continued to pick up most new arrivals throughout this period. New arrivals declined towards the end of September, with just 38 reported in the last ten days, and another ten in the first week in October. Eight were reported in the last three weeks of October, and the last bird of the year, the only November record, was at Dale Airfield, Pembrokeshire, on 11th.

Acknowledgments

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Conservation research news

Compiled by Norman Ratcliffe, Mark Eaton, Paul Donald and Gareth Fisher

Effects of climate change on North Atlantic Seabirds

Several recent papers show that increasing sea surface temperatures (SST) in the North Atlantic are influencing seabird demography. Frederiksen *et al.* (2004) found that survival rates and productivity of Kittiwakes *Rissa tridactyla* in southeast Scotland were negatively related to SST, and also that the presence of industrial fisheries reduced survival and productivity further. Grosbois & Thompson (2005) found that the overwinter survival rates of adult Fulmars *Fulmarus glacialis* breeding in Orkney were negatively related to SST, complementing their earlier work that found similar trends in productivity. Harris *et al.* (2005) found that Puffin *Fratercula arctica* survival rates at three colonies in the UK were negatively related to SST. In contrast, studies at Hørnoy, in Norway, reveal that survival of Kittiwakes and four species of auks *increased* with SST, while survival (Harris *et al.* 2005) and productivity (Durant *et al.* 2003) of Puffins at Røst in Norway increased with SST. These contrasting observations can be explained by differences in seabird diet between the UK and Norway. In the UK, seabirds feed on sandeels *Ammodytes*, which are adversely affected by increased sea temperatures, whereas seabirds in Norway feed predominantly on juvenile herring *Clupea*, which benefit from increased sea temperatures. These studies show that the effects of climate on seabirds are primarily indirect, via the food chain, and that these effects can vary regionally depending on the key prey species and how these respond to climate variation. Furthermore, Gaston *et al.* (2005) found that productivity of Brünnich's Guillemots *Uria lomvia* in the Canadian Arctic was negatively affected by increasing temperatures in the south of their range but positively related in the north of their range. This was due to ice cover becoming insufficient to support their Arctic Cod *Boreogadus saida* prey in the south of the range, whereas the earlier break-up of ice permitted earlier and more successful breeding in the north. The effects of climate change on seabirds can thus vary with latitude, independently of prey species targeted.

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Identifying global avian hotspots

An important attribute of a good conservationist is the ability to allocate limited resources effectively. Recently, attention has turned to the concept of targeting conservation effort at biodiversity hotspots – regions unusually rich in biodiversity– but there is no consensus on how

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hotspots should be identified. Consequently, Orme *et al.* (2005) assembled a global database of the breeding distributions of all bird species and looked at patterns of biodiversity. The authors identified hotspots – the richest 2.5% of all 1° x 1° grid cells – for each of three aspects of biodiversity: the richness of all species, of threatened species, and of endemic species (the latter were defined as the 25% of species with the smallest breeding ranges). They found that hotspots were aggregated into a relatively small number of biogeographic regions but that there was little agreement between the three measures; of the area covered by the three types of hotspots, only 2.5% was common to all three. Richness hotspots tended to be in mountainous areas of mainland continents, whereas threat and endemism hotspots tended to be on islands.

These findings demonstrate how conservation effort could be directed at completely different areas, depending on how hotspots are identified, and to date there is no consensus on which measure is most appropriate. Orme *et al* identified endemism as potentially the most valuable measure; taken together, 'endemic hotspots' show a wider spread across the globe, and actually contain more threatened species in total than the threatened-species hotspots, and more species than the species richness hotspots. Moreover, the endemic avian hotspots defined by Orme *et al.* appear to match those identified previously for plant and animal richness; of 20 specified endemism hotspots, only two are not on Conservation International's list of hotspots (www.biodiversityhotspots.org).

Keen world birders may be interested to know where the hotspots identified by Orme *et al.* are. The tropical Andean hotspot emerges as by far the richest in the world, whether measured by species richness (2,139 species), threatened species (114) or endemism (483). The rest of South America is well served by avian hotspots too – including the Amazon Basin, Guyana Highlands and the Atlantic Coastal Forests. Elsewhere in the world, the New Guinea and Bismarck Archipelago is the place to go for endemics (205), while sadly the threatened species hotspots in the Philippines, Sumatra and the Himalayas highlight the pressures on the environment in those regions.

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Birds and agriculture – the picture broadens

Almost every birdwatcher knows that farmland birds are in trouble, but two recent papers have developed farmland bird research in novel ways. Haberl *et al.* (2005) cut through all the individual processes of agricultural intensification (hedgerow removal, pesticide use, mechanisation, etc.) to look at the cumulative outcome of such changes, the increase in the proportion of the sun's energy we abstract through agriculture. They found a strong negative relationship between Human Appropriation of Net Primary Production (HANPP) and bird species richness; i.e. in systems where much of the sun's energy goes into making human food, bird species richness was lower. Indeed, HANPP was a better predictor of species richness than habitat heterogeneity, particularly when altitude was also considered. The authors concluded that such production energy indicators provide robust pressure indicators of biodiversity loss.

Balmford *et al.* (2005) have developed the idea of 'land sparing'. A country can produce the same amount of a particular commodity by maximising yields, and so reducing the need to clear new land for agriculture (the 'land sparing' option) or, alternatively, by farming in the least intensive way possible, but using more land (the 'wildlife-friendly farming' option). In practice, the level of intensity used lies somewhere between these two extremes. How wildlife responds depends on the responses of individual species to a gradient from pristine habitat to intensive agriculture. If the majority of species in a region occur in good numbers in a low-intensity farming regime, then this might be the best option; but if the majority of species disappear when pristine habitats are converted to even the least intensive form of agriculture, then farming as intensively as possible over the smallest area may be best. There are clearly many difficulties applying this model to the real world; for example, few countries adhere to established production quotas. However, recent predictions of the increase in land under food

production in developing countries (generally those with the highest biodiversity) show that variation in yield is likely to have a profound influence on future requirements for agricultural land, and so the 'land sparing' model might be a useful way of linking predicted food requirements with plans to protect biodiversity. As agriculture becomes ever more sophisticated, so do the efforts of conservationists working to understand and reduce its impacts on wildlife.

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Intensity of management of grassland and its impact on birds

Grassland comprises over 65% of Britain's agricultural land and the majority is agriculturally improved or semi-improved through reseeding and fertiliser applications. Agricultural intensification over the last 50 years has led to changes in grassland management, such as stocking densities and the switch from hay to silage. Atkinson *et al.* (2005) investigated the effects of intensity of grassland management on the abundance of invertebrate and seed food resources for birds, and on the use of fields by birds for foraging.

The effect of increasing management intensity (defined by the amount of nitrogen fertiliser applied) on potential bird food varied according to the taxa in question. Overall, total seed-head production showed no consistent pattern with increasing nitrogen inputs, though grass seed did increase. The impact on invertebrates was even more complex, with soil surface beetle (Coleoptera) larvae responding positively to more intense management, but larvae of beetles living in the soil finding higher nitrogen levels detrimental. Most foliar invertebrates were less abundant on fields more intensively managed, and showed preferences for tall swards with a diverse flora.

In winter, birds tended to forage more in intensively managed fields, especially large-soil-invertebrate feeders such as corvids, but also species such as Robins *Erithacus rubecula* and Common Starlings *Sturnus vulgaris*. This may relate to the positive impact that higher levels of nitrogen input seemed to have on earthworms (Lumbricidae). In summer, there were no trends between field use by birds and management intensity. In general, field use did not seem to be determined by the abundance of food items; instead, accessibility appeared to be important and birds were seen to avoid taller swards, despite the greater numbers of invertebrates living in them.

The loss of mixed-farming landscapes has been seen as a factor in declining farmland bird populations; and indeed, in this study, an area in Devon which had less arable land than one in Buckinghamshire had lower bird densities. The authors suggest a number of measures that might benefit grassland communities, such as providing field margins and bare patches, which have analogous features in arable systems; this might be another benefit of mixed-farming systems. Structurally diverse swards within fields could benefit invertebrate communities and provide access for birds, and heterogeneity on a whole-farm scale could provide the benefits of fields with different management intensities. However, developing plans for better grassland management is likely to be complicated, and further research is needed.

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Notes

All Notes submitted to *British Birds* are subject to independent review, either by the Notes Panel or by the *BB* Editorial Board. Those considered appropriate for *BB* will be published either here or on our website (www.britishbirds.co.uk) subject to the availability of space.

Spring passage of second-calendar-year Honey-buzzards at the Strait of Messina

During spring migration, it is widely recognised that among long-distance migrants, juveniles migrate later than adults (e.g. Kerlinger 1989). While the majority of second-calendar-year (2nd-cy) Honey-buzzards *Pernis apivorus* spend the northern summer in Africa (Forsman 1999), some individuals do reach Europe (Ferguson-Lees & Christie 2001), although their occurrence is poorly documented. In recent years, observations have established that small numbers of 2nd-cy birds enter Europe via southern Italy. For example, Panuccio *et al.* (2004) observed the passage of tens of juveniles across the central Mediterranean via the island of Ustica, southern Italy. In this region, however, the greatest concentration of migrant Honey-buzzards occurs at the Strait of Messina, between southern Italy and Sicily (Zalles & Bildstein 2000; Agostini 2002). In 2004, a study was undertaken, between 27th April and 31st May, to establish whether 2nd-cy Honey-buzzards were also using this route to enter Europe.

Methods

A suitable observation site was selected along the continental coast of the Strait, where migrating Honey-buzzards would pass sufficiently close to observers to enable the age of each bird to be established. The 35-day study period was divided into seven, five-day periods, during which the numbers and age classes of all Honey-buzzards were noted. Although it was not possible to establish the age of each individual, it was possible to do so for birds passing close to the observation site. The number and percentage of each age class was then estimated by dividing the number counted in the sample of age-established individuals by the total count during each five-day period, following the method used in previous studies (e.g. Agostini & Logozzo 1997, Agostini *et al.* 2004).

Forsman (1999) considered that 'in early summer birds are still mostly in juvenile plumage, although head, mantle and upper breast are largely moulted'. Observations of captive birds led Forsman to observe that 'in 2nd cy summer [captive birds] had a yellow cere with darker spots and the eyes were turning yellow, appearing pale from a distance'. In this study, only those individuals which showed the plumage characters, and both yellow cere and dark iris, where considered to be in their 2nd cy. Other individuals resembling juveniles were excluded where either the yellow cere or dark iris was not visible. These birds were included within a separate group, as the plumage of some adult females can resemble that of juveniles, and some birds can show transitional cere and iris colour (Forsman 1999; this study), and these are shown separately in fig. 1.

Results and discussion

In total, 11,145 Honey-buzzards were counted during the study period, peaking from 7th to 11th May (fig. 1). Of these, it was possible to age 487 birds that passed close to the observation site, of which 469 were adults and 18 showed juvenile plumage along with a yellow cere and dark iris. These birds were considered to be 2nd-cy-spring birds. As fig. 1 illustrates, almost all occurred during the second half of May. An additional 48 birds were considered to be possible 2nd-cy birds. Of these, 32 showed only the plumage features characteristic of this age, while 12 showed both plumage features and yellow cere, and four displayed plumage characters and a dark iris. Of these, nearly all occurred during the last ten days of May (fig. 1).

The late timing of their passage suggests that these birds were not adults, although some may have been 3rd-cy birds. It is interesting to note, however, that two birds considered to be 2nd-cy birds showed a yellow cere and iris, a further two birds had a dark cere and iris, while two adult males also had a yellow cere and iris.

Examination of two Honey-buzzards recovered at the Strait of Messina by E. Grasso (pers. comm.), established that one was killed on 19th June 2003 and one injured on 11th June 2004.The first individual showed a yellow cere and the grey head typical of an adult male (it was not possible to establish the iris colour).

Fig. 1. The occurrence of migrating Honey-buzzards *Pernis apivorus* at the Strait of Messina, southern Italy, between 27th April and 31st May 2004, during the seven five-day periods of the study. The number of birds in each age class was derived using the ratios of accurately aged birds determined in the sample count within each five-day period.

The second bird, however, had yellow cere and dark iris, but also showed distinctly marked remiges. Although individuals with transitional plumage characteristics, and cere and iris colour were noted during this study, the passage of other birds with juvenile plumage, dark iris and yellow cere provides evidence that a small spring passage of 2nd-cy birds occurs at the Strait of Messina. It is interesting to note that Shirihai *et al.* (2000) also reported a late-spring passage of 'non adult' Honey-buzzards through Israel.

These observations are also supported by examination of specimens held in the ornithological collection of Ettore Arrigoni Degli Oddi at the Zoological Museum of Rome. Of 33 individuals captured in Italy between 1864 and 1923, 21 occurred between April and June. Based upon plumage characters, along with the notes of the taxidermist, Dal Nero, who described the iris colour, it was possible to identify six individuals that resembled 2nd-cy birds.

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Moult in an overwintering Willow Warbler in Britain

Willow Warblers *Phylloscopus trochilus* are recorded only rarely in Britain in winter. For example, Brown & Grice (2005) stated that occasional wintering birds are found in England, while Lack (1986) recorded 11 records in Britain in the three winters' fieldwork for the *Winter Atlas*.

On 30th December 2004, I visited Upton-upon-Severn Sewage Farm, in Worcestershire. I had been told that a number of wintering Common Chiffchaffs *Ph. collybita* were present, including some which showed characters of the race *tristis* (one of which is detailed in Dean & Svensson 2005). I had obtained permission from the owners, Severn Trent Water plc, to ring birds at the site. The weather that afternoon was mild, with unbroken blue sky. I quickly saw a couple of Common Chiffchaffs, and was searching for more when, to my surprise, I heard a Willow Warbler in full song. I was later informed (Andy Warr pers. comm.) that this bird was first recorded on 28th December.

On the afternoon of 31st December, I made the first ringing visit, and at around 15.30 hrs trapped a first-winter male Willow Warbler. This individual was recaptured on both 23rd January and 13th March 2005 (I was abroad for most of February). On 23rd January it had just started to moult, having lost the two innermost primaries. By 13th March (the last date on which it was recorded), moult was much further advanced (see fig. 1).

Williamson (1976) described the winter moult of the subspecies breeding in Britain (*Ph. t. trochilus*) as starting in December in West Africa, with many finishing in mid February and only a few late birds continuing their moult into early March. Conversely, the more northerly and easterly breeding *acredula* has a winter moult about three weeks later than that of *trochilus*, finishing as late as the end of March. The Upton-upon-Severn bird was not identified to subspecies in the field, but its moult period more closely fits that of *acredula*.

It is interesting that the weather was sufficiently mild, and insect food sufficiently abundant, for this bird not only to be able to overwinter, but also to be able to survive the physiological stress of moult.

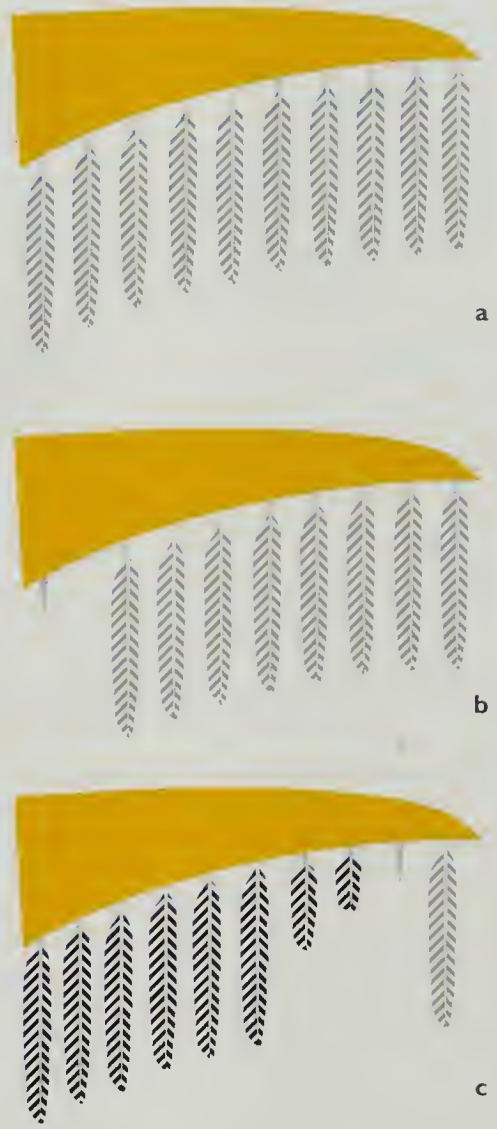

Fig. 1. Schematic diagram to show progress of primary moult of a Willow Warbler *Phylloscopus trochilus* trapped at Upton-upon-Severn, Worcestershire, on 31st December 2004 (a), 23rd January 2005 (b) and 13th March 2005 (c). Old feathers are represented by grey shading, new ones by black shading.

Acknowledgments

I am grateful to Chris du Feu for providing the figure showing the state of moult.

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Reviews

BIRDS NEW TO BRITAIN
1980–2004

By Adrian Pitches and Tim Cleeves. Poyser, London, 2005. 342 pages; many line-drawings, 72 colour photographs. ISBN 0-7136-7022-3. Hardback, £35.00.

The ultimate goal in British bird-finding must be the discovery of a 'First' for Britain; a feat which must, one would imagine, become more and more difficult as the list of possible new species dwindles with every discovery. Yet in the period covered by this new chronicle of additions, extending from March 1980 to the end of 2004, there are details of 76 (really 71) additions to the British List in only a 25-year period. Following on from Sharrock and Grant's *Birds New to Britain and Ireland*, which ended with Forster's Tern *Sterna forsteri* in March 1980 and included no fewer than 83 firsts in a 35-year period, this volume suggests that the boundaries of vagrancy are expanding and the amazing ability of birds to cover enormous distances during their migrations is still poorly understood.

This volume contains accounts of all the accepted additions to the British List within this period, having cleared the hurdles set by both BBRC and BOURC. Some species not yet accepted onto the British List, including the October 2004 Chestnut-eared Bunting *Emberiza fucata* and Rufous-tailed Robin *Luscinia sibilans* double whammy from Fair Isle, are included to make the book as up to date and appealing as possible to the modern-day, instant-access birder. It is surprising just how many of these British 'firsts' were initially found by someone who did not know what it was, or who identified it as something else. But the ultimate prize still goes to the person who confirmed the identification.

Most accounts are taken directly from the original write-ups in *British Birds* or, more recently, *Birding World*. In places, sections have been culled from some of the original finders' accounts, reducing most to a generally comparable length but, in some cases, removing interesting snippets and valuable discussion on the road to identification success. As an example, there is no mention of why the original identification of the 1981 Suffolk 'Collared Pratincole' (later reidentified as Britain's first Oriental Pratincole *Glareola maldivarum*) was questioned and by whom; only the finder's notes on his 'Collared' are presented. The 1990 Skokholm White-throated Robin *Irania gutturalis* has no write-up, just a brief 39-word account explaining why it was suppressed, although there is a nice photograph! Some species have detailed descriptions and discussions, while others are much briefer, like the Barrow's Goldeneye *Bucephala islandica* summary. It is disappointing that the 'Green Warbler' *Phylloscopus trochiloides nitidus* on Gugh, Scilly, in September–October 1983 is not mentioned.

Some of the accounts include details of subsequently accepted firsts which pre-date the published accounts. These include the 1970 Cornish Long-toed Stint *Calidris subminuta* which pre-dated the 1982 'first', and the 1980 Yellow-browed Bunting *E. chrysophrys*, subsequently upstaged by the October 1975 Holkham record. These earlier birds, actually the true firsts, receive less attention than the subsequently accepted record, with no photographs and no actual descriptions provided, which seems somewhat odd. The dogged road to acceptance of the well-photographed Long-toed Stint at Marazion would have made interesting reading for critics and supporters of the various committees.

In addition to the rarity accounts, each year has a distillation of the main rare-bird events for that twelve-month period, and another short account of a birder's year, as seen through the eyes of a 'friend or colleague' of the editors. Some of these are little more than a list of rare birds seen or twitched, while others are more readable accounts and bring out the passion of varying aspects of the rarity-watcher's psyche. I particularly liked Jimmy Steele's description of his Newbiggin local patch 'For all its innumerable faults – the frequent lack of birds, the litter, the psychotic horses, psychotic dogs and psychotic kids – I love my patch.' This is followed by a truly classic sentence: 'The startling reality of birding in the Royston Vasey of Northumberland is watching a rare wheatear perched on a burnt-out Ford Escort'; as they say, you have to be a patch worker to understand.

The photographs, one per species, are grouped together rather than placed with the accompanying account. A high proportion are of the original 'first', but where no images were available, shots of a subsequent British occurrence have been used to fill the gaps. It is a reflection of the ability of rare-bird photographers and the obsession with rarity recording that only ten firsts have no representative image. The choice of photographs does not always include the best available

and the reproduction of some leaves much to be desired. Of particular note is the poor reproduction of Marmora's Warbler *Sylvia sarda*, Long-toed Stint and Hudsonian Godwit *Limosa haemastica*. Restricting images to one per species also excludes instructive photos of pre-dated firsts (again that Long-toed Stint comes to mind).

Being pedantic, the map of site locations seems to have moved Easington up the coast to Hornsea, and Martin Mere has duplicated itself at Donna Nook. And, in some seemingly bizarre decision process, accounts of five species recorded prior to 1980 but after 1900 are included in the year they were elevated to full species status, but those first recorded prior to 1900, such as Pacific Golden Plover *Pluvialis fulva*, are not.

There is an endless fascination amongst birders with rare birds and the rarest of the group spark the most interest. This book has a lot to offer the modern-day birder and will send many tingles of excitement through the older troops who witnessed some of these remarkable birds. As someone who came close with a Pallid Swift *Apus pallidus*, and failed to make the most of the 1981 Hudsonian Godwit, I am not likely to fulfil my old ambition of being among the finders in this book. There is, however, much here to inspire the next generation of rarity finders, and if one bit of advice comes through, it would be to never give up hope and always check odd birds that other people report; you never know what that black-and-blue bird reported by the strange man in the local park may turn out to be, perhaps a Black-throated Blue Warbler *Dendroica caerulescens*!

Packaged in the readily identifiable Poyser plumage, it marks a reference which will stand for another 25 years, until another list of improbable and highly unlikely species have wandered to our well-visited Isles.

Graham Catley

THE GYR FALCON

By Eugene Potapov and Richard Sale. Poyser, London, 2005. 288 pages; 16 pages of colour plates; numerous line-drawings; maps and figures. ISBN 0-7136-6563-7. Hardback, £31.50.

A strong point of this book is that one of the authors is a native Russian, enabling him to exploit what, for most of us, is the inaccessible Russian literature on Gyr Falcons *Falco rusticolus* and their habitats. He has also conducted detailed studies of the species in eastern Siberia and various other parts of its Eurasian range. The book, therefore, contains much information which would otherwise remain unavailable to most readers. The second author is a physicist, who has worked as a glaciologist, writer, photographer and wildlife enthusiast, and who has led numerous expeditions to different regions of the Arctic and elsewhere. Despite their combined efforts, the Gyr Falcon has, for obvious reasons, not been studied in the field in the same depth as some other raptor species featured in the Poyser series (notwithstanding a detailed field study in Iceland by O. K. Nielsen). The authors make up for shortage of some types of field data by emphasising other interesting aspects of Gyr Falcon biology, such as its biogeographical history, systematics and plumage polymorphism, all of which have long fascinated raptor biologists.

As the authors remind us, the Gyr Falcon is one of a group of large falcons inhabiting open landscapes, which also includes the Saker Falcon *F. cherrug*, Lanner Falcon *F. biarmicus* and Lagger Falcon *F. jugger* of the Old World, as well as the more distantly related Prairie Falcon *F. mexicanus* of the New World. Among these species, the Gyr Falcon is most closely related to the Saker, both biogeographically and genetically, and some taxonomists have preferred to group the two together as a single species. Although they are now geographically segregated in the breeding season, the Gyr to the north of the boreal forest and the Saker south of it, their separation is relatively recent. During the last glacial period, before the development of the boreal forest, the ranges of the two species were coextensive, and they probably existed as a single ancestral form occupying much of the cold wasteland of the Eurasian landmass. Little wonder that they are still genetically close and, in captivity, will hybridise freely, producing offspring that are inter-fertile at least to the third generation. The so-called 'Altai Falcon' is regarded by the authors as a colour morph of Saker, which might possibly result from hybridisation between the two species in the alpine zone of the Altai Mountains, where their ranges are most likely to overlap (although further studies are needed). On grounds of precedence, the authors make a case for restoration of the name *F. gyrfalco* for the Gyr Falcon rather than the current *F. rusticolus*.

The Gyr Falcon is noted for its extreme colour polymorphism, ranging from almost white to almost black. The proportions of the different colour morphs vary across the range. In some regions (such as Iceland) the whole population comprises a single 'grey' type, while in other regions more than one type exists, and different morphs can occur even among the young of a single brood. The authors tell us that these colour differences, which are striking to human eyes, are much less marked for those birds and mammals which are sensitive to ultraviolet light.

Our idea of Gyr Falcon distribution, over much of its range, is based largely on early explorer records and museum specimens. The correction of some of these

records by the authors has redrawn the range boundaries in places, and removed some of the former anomalies. As in many other birds of prey, distribution is dependent on a rich food supply and the presence of suitable nest-sites: cliffs over much of the range, or timber-line trees in others, the bird using old nests of other species (especially Common Raven *Corvus corax*) or sheltered cliff ledges. Nesting densities remain much more stable from year to year in coastal populations, which depend on seabirds, than in inland ones dependent primarily on cyclically fluctuating *Lagopus* grouse species.

Population estimates are given for different parts of the range. On the basis of recent information, the Russian-Siberian population is estimated at 3,500–5,000 pairs, and the world population at 8,000–11,000 pairs (my rounding), both of which are considerably higher than previous estimates. Other chapters deal with dispersal and other movements, and with relationships with other species (chiefly Common Raven and other raptors which provide, or compete for, nest-sites). Gyr Falcons sometimes usurp the occupied nests of other species, an activity which the authors call 'facultative interspecific nest-commandeering parasitism'. Let us pray that this phrase does not catch on, and come into general use.

In conclusion, this book provides an interesting synthesis of the information currently available on Gyr Falcons from across their circumpolar range. Much historical information has been subjected to critical reappraisal, especially on distribution, and inaccuracies in previous accounts have been corrected. The book is rather different from previous Poyser volumes in the emphasis given to different topics, but it is a good read, presenting much previously inaccessible information, as well as some interesting insights into some of the most remote and inhospitable places on earth.

Ian Newton

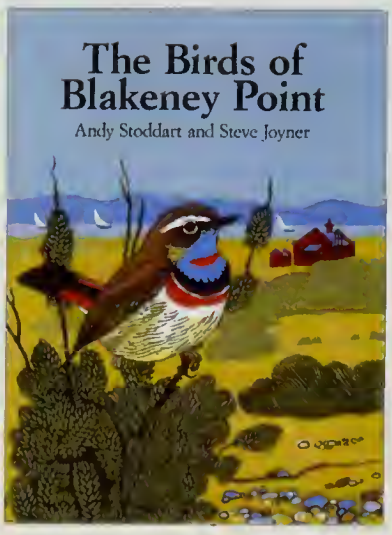
THE BIRDS OF BLAKENEY POINT

By Andy Stoddart and Steve Joyner. Wren Publishing, Sheringham, 2005. 239 pages; 30 colour photographs, many diagrams and line-drawings. ISBN 0-9542545-2-X. Hardback, £25.00.

I guess that for every hundred birders who have visited Cley – often described as the Mecca of British birdwatching – only one or two have ever bothered to walk out along the shingle to Blakeney Point. Indeed, a single unrewarding visit can really put people off going again, as Andy Stoddart himself found, until the fortunate discovery of a Subalpine Warbler *Sylvia cantillans* motivated him to undertake a systematic survey. He and Steve Joyner, who have now spent over 1,500 days on the Point between them, have given us a most welcome and fascinating addition to the literature of Norfolk's birdlife.

Blakeney Point is unique. Unlike most other bird observatories, it is not easy to access, and either a four-mile hike each way along the shingle beach, or a brief boat trip across Blakeney Harbour at high tide is necessary. Accommodation has been either non-existent or frugal, in contrast to that available at other migration hotspots such as Fair Isle, the Isle of May and Dungeness. Because of this, there is often a magical sense of solitude and isolation. On the other hand, ringing has been much less of a feature than in many places; on the May, for instance, the first bird observatory was set up in 1934, twenty years before Richard Richardson began a brief three years of trapping on the Point. Field observation and 'bush-bashing' account for the great bulk of records, this having been the case ever since the nineteenth-century gunners realised the potential for collecting rarities here and the colonies of breeding terns *Sterna* attracted attention.

The first 61 pages of this book are devoted to the ornithological history of the Point, its physical features, migration, a survey of breeding birds, and several accounts of memorable days. The section on migration is both fascinating and instructive. As the authors note 'The bird-watcher's year on the Point is totally dominated by the phenomenon of migration', and they give a penetrating analysis of the effect of weather systems in relation to arrivals of regular migrants and rare birds, illustrated with many charts.



The main part of the text consists of 160 pages of species accounts, which go into considerable detail in many cases and pay particular attention to the subspecies involved. Over 300 species have now been recorded from this narrow stretch of shingle and sand dunes, and these interesting and thoroughly researched accounts are an invaluable benchmark for future workers. The book is extremely well produced, the colour photos are of a high quality, the text is enhanced with many lively drawings by James McCallum, and an evocative linocut of a Bluethroat *Luscinia svecica* by Robert Gillmor adorns the jacket. I can thoroughly recommend it to anyone who has birded on this very special stretch of coast.

Martin Woodcock

FUGLER OG FUGLAFOLK PÅ UTSIRA

By Bjorn Olav Tveit, Geir Mobakken and Ove Bryne. Utsira Fuglestasjon, 2004. 285 pages; many colour photographs. ISBN 82-996967-0-4. Hardback, €50.00. Available post-free from Utsira Fuglestasjon, Postboks 93, NO-5547, Utsira, Norway; www.fugler.utsira.no

This book is about the birds and birdwatchers of Utsira, the Norwegian equivalent of Fair Isle. It is wholly in Norwegian, although a language key (unhelpfully hiding at the end of the systematic list) helps English speakers to navigate through some of the more frequent terms. In fact, it's not too difficult to distil basic information from the individual species accounts, and from a detailed checklist which provides English, Norwegian and scientific names, a month-by-month chart, and breeding codes. The book is well produced, and generously illustrated with colour photographs of the island, birdwatchers down the years and the birds themselves, including an impressively high proportion of the rarities (although the general quality of the bird photos is less impressive). A book for observatory/island aficionados.

Roger Riddington

FROM DAWN TILL DUSK

By Darren Woodhead. Langford Press, Peterborough, 2005. 156 pages; colour illustrations throughout. ISBN 1-904078-19-2. Hardback, £35.00.

It's always the same, you wait ages for a Laughing Gull *Larus atricilla* to come along and when one eventually does, it's followed by a whole chuckle of them! The same can be said of quality wildlife art books. Luckily this has happened and both events have had a positive outcome. In terms of the books, what is intriguing is that one publisher, Langford Press, has brought out two at the same time. An administrative error surely? Well no, one is Chris Rose's *In a Natural Light* and the other Darren Woodhead's *From Dawn till Dusk*. A quick delve into both will immediately show that the only similarity between the two is the publisher's name – there could not be a wider contrast in their styles. The first deals with Chris Rose's near Pre-Raphaelite picture-making, mostly studio-based with a built-in wow factor, while Darren Woodhead's book delves into his instinctive approach to field painting.

You may already know of Darren's spontaneous approach to expressing his creative talent through the Wildlife Art Society and the Artists for Nature Foundation's publications. This is, however, the first time that his work has appeared in his own forum. Langford Press needs to be congratulated on their high-quality production standards: a large and spacious format combined with high-quality paper and printing have created a fine canvas on which to present Darren's work. Every page is alive with images drawn or painted on the spot – no matter what the weather conditions are like – and are accompanied, where appropriate, by relaxed and absorbing texts.

The beauty of a book like this is that everyone will have his or her own favourites. I love the series of studies involving the group of Common Goldeneye *Bucephala clangula* and the displaying Long-tailed Ducks *Clangula hyemalis*. But the paintings made purely using a brush and watercolour with no compositional pencil lines are astonishing. For example, on page 150 imagine trying to recreate that bustling mass of Pink-footed Geese *Anser brachyrhynchus* and Northern Lapwings *Vanellus vanellus* armed only with a brush, paints, a blank piece of paper and no rubber!

There is no question that Darren is a master of in-the-field interpretation and it will be a delight to see where he will take his skills next – maybe some studio-based works for the next book?

Dan Powell

RAPTORS AND OWLS OF GEORGIA

By R. A. Galvez, L. Gavashelishvili and Z. Javakhishvili. Published by the Georgian Centre for the Conservation of Wildlife, Tbilisi, 2005. 128 pages; many colour illustrations and maps. ISBN 99940-771-8-X. Paperback, £14.99.

The first in a series of bird guides by the young and adventurous Georgian Centre for the Conservation of Wildlife (GCCW), of which they can be justly proud. Whilst there are useful introductory sections – concentrating mostly on conservation issues – it is the illustrated species accounts which form the bulk of the book. In these, I was surprised, and pleased, at the depth of knowledge of raptor breeding populations. The text is accurate and the illustrations perfectly adequate; those of birds in flight are perhaps a little small. Because of the book's size, and its coverage of virtually all raptors occurring in Europe, it is a particularly handy pocket guide for more widespread use.

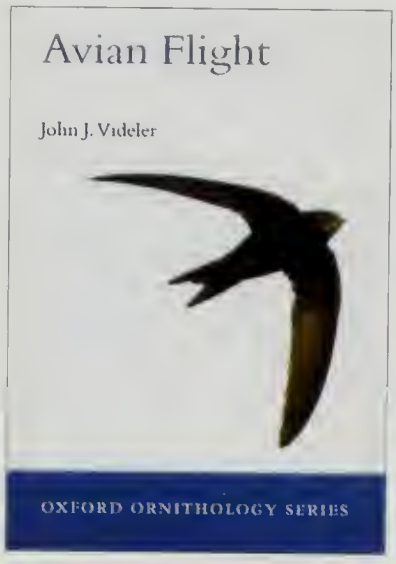
Being in Georgian (hurrah!) as well as English, this book can hopefully encourage the country's budding birders.

Richard Porter

AVIAN FLIGHT

By John J. Videler. OUP, Oxford, 2005. 258 pages; black-and-white line-drawings throughout.
ISBN 0-19-856603-4.
Hardback, £55.00.

This book forms part of the prestigious 'Oxford Ornithology Series' and covers the biology, mechanics and evolution of avian flight. Nine self-contained chapters together go into detail about the morphology of wings and feathers, the musculature of birds, energy metabolism, aerodynamics and related subjects. Experimental procedures and results are described in detail, and there are numerous line-drawings.



In general, the book is lucidly written, with clear explanations of the issues involved, and with complex equations set apart in text boxes. Nevertheless, in line with the rest of the series, this is a serious book, written at undergraduate level, and the interested casual reader will find it rather intense. There is a thought-provoking discussion about the evolution of flight, particularly concerning the possibility that early birds used their feathered wings to help them to skip over the surface of water or mudflats in the manner of a modern *Basiliscus* ('Jesus Christ') lizard. Most people would perhaps want to dip into this book, or keep it for reference, than to read it straight through. Think you know what the alula feather is for? Think again.

Martin Collinson

BIRD NESTS AND CONSTRUCTION BEHAVIOUR

By Mike Hansell. Cambridge University Press, 2005. 280 pages; numerous line-drawings; 22 black-and-white photographs; micrographs.
IBSN 0-521-01764-5.
Paperback, £23.99.

The text and illustrations in this paperback edition are identical to those of the earlier hardback edition. The author was, until very recently, senior lecturer in the Division of Environmental and Evolutionary Biology at the University of Glasgow, with a long-standing interest in all aspects of animal architecture, both vertebrate and invertebrate. He has chosen an evolutionary approach to the subject of this book, a subject which has been rather neglected by recent researchers. I quote 'Bird nests are an extension of parental care and bird reproduction cannot be understood without consideration of the nest, nor the nest without reference to its contents.' Within nine chapters, the author discusses building materials, nest construction and siting, stressing that the nest is a means of changing the environment. Each chapter begins with an introduction, which is followed by headed sections and subsections, making for easy reading.

Chapter three provides a standardised method of nest classification to give a profile for that species. For example, nest shape has eight mutually exclusive categories: cup, dome, dome and tube, and plate all above ground; bed, scrape and mound on the ground and burrow under the ground. Similarly, nest-site is also characterised in eight possible ways and the nest is described as consisting of four zones: attachment, outer decorative layer, structural layer and lining. Finally, the materials used are discussed.

In chapter four, construction is considered in detail. The author points out that birds build what are probably the most complex structures, other than those built by ourselves, and yet do so with no special anatomical tools. Birds sculpt, assemble, mould and sew using only bill or feet. Spider silk is analogous to Velcro when used to entangle vegetation, while the Common Tailorbird *Orthotomus sutorius* uses the equivalent of pop-rivets! The cost of nest-building is considered in the sixth chapter and also the cost of nest reuse, while in chapter seven, nest-site selection is covered. In this chapter the author also discusses the interaction of nesting birds with arthropods, usually insects, which, in the tropics especially, can be quite complex.

Chapter eight diverges somewhat from the main theme, in that it deals with bowers and the assessment of mate quality. The author justifies this by quoting Darwin's proposal that these elaborate structures are the result of sexual selection through female choice. The final chapter deals with the evolution of nest-building and compares the taxonomic characters derived from nests with phylogeny derived by DNA studies The interpretation of this has proved to be complex.

The book concludes with a comprehensive list of references running to 28 pages and covering one and a half centuries, the most recent referring to the year 2000. There are full indices to authors, species and subjects. The numerous pen-and-ink illustrations, many by Raith Overhill, are both attractive and informative. In conclusion, as a compulsive nest-finder, I found this a fascinating book, full of new facts and stimulating ideas and I can thoroughly recommend it.

David Warden

News and comment

Compiled by Adrian Pitches

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

Wildlife research centres axed in Government cutbacks

Climate change, mass extinction, seabird breeding failure: crucial research topics at three widely respected centres, all of which will be shut down to save just £1m a year. The closure of Monk's Wood in Cambridgeshire, Winfrith in Dorset and Banchory in Northeast Scotland, in a reorganisation of the Centre for Ecology and Hydrology, will cost no less than £45m! And with that loss of world-renowned research centres will go one third of CEH staff (200 jobs) as the Government's Natural Environment Research Council (NERC) moves away from wildlife research. NERC, whose responsibilities range from geology and oceanography to the Antarctic, has decided to spend less of its money on ecology. Wildlife specialists are poorly represented on NERC's 18-strong governing council; the chief executive, Professor Alan Thorpe, is an atmospheric physicist. The council has now concluded that wildlife science has been getting too big a slice of the cake.

'This is an absolute disaster for British wildlife,' said Martin Warren, chief executive of Butterfly Conservation. 'At the very time when such research is increasingly important, they are savagely cutting back on it. It beggars belief.' RSPB director of conservation, Mark Avery, said: 'The proposed cuts will deal a body blow to the UK's reputation for wildlife science.' Britain's best-known naturalist, Sir David Attenborough, who has featured research at Monk's Wood and its sister stations in his latest BBC TV series, *Life in the Undergrowth*, told *The Independent* that the closure plans were 'very disturbing indeed'. Reducing fundamental science on cost-cutting grounds was nonsense, especially at a time when the Government was committed to halting losses in biodiversity, he said.

Among the key research projects carried out at Banchory was Steve Redpath's study of the interaction between Hen Harriers *Circus cyaneus* and Red Grouse *Lagopus lagopus* on managed grouse moors, and current research at the centre includes work on our troubled breeding seabird populations by some of Europe's foremost marine ornithologists. Monk's Wood made its mark with the study that proved that organochlorine pesticides such as DDT were poisoning the entire food chain, culminating in the mass die-off of Britain's raptors. Latterly, its work on phenology has underlined the pace of climate change and its impact on the natural world. The earlier onset of spring has been recorded in nesting birds, flowering plants and emerging insects. And Winfrith made headlines worldwide in 2004 when Dr Jeremy Thomas and his team used rates of decline among British birds, butterflies and wild flowers to suggest that we are on the verge of a mass extinction of global wildlife – the sixth mass extinction in the history of life on Earth but the first caused by humans.

After a series of overruns on its budget of about £35m – the last one, in 2004/05, was for £1.2m – CEH has been ordered by the NERC council to cut its cost base. 'These agencies are run on a shoestring, and cost overruns are a sign that they need more resources, not less,' said Tony Juniper, executive director of Friends of the Earth. 'To spend £45m to save £1.2m a year is the economics of the madhouse.' CEH's 600 scientific staff are at present split across nine sites; the money-saving plan is to rationalise these to four: Bangor in North Wales, Edinburgh, Lancaster and Wallingford, in Oxfordshire. Monk's Wood, Winfrith and Banchory would disappear, as would the CEH laboratory at Oxford and the current CEH HQ at Swindon. Besides the concerted opposition of environmental groups, the Conservatives and Liberal Democrats have joined forces to oppose the cuts in Parliament. Public consultation on the CEH proposals ends on 15th February. To register your disapproval in the strongest possible terms, fill in the online consultation form at www.nerc.ac.uk/consult/ceh

Seabirds hammered in Scotland

JNCC has confirmed that last year's breeding season for seabirds on the Atlantic coast of Scotland was catastrophic. Following a disastrous breeding season in 2004 on the *east* coast of Britain, the Seabird Monitoring Programme report for 2005 describes widespread seabird starvation in *western* Britain. On St Kilda, one of the UK's largest seabird colonies and a designated World Heritage Site, Puffin *Fratercula arctica* chicks starved to death in their burrows as their parents failed to find sufficient food for them. Kittiwakes *Rissa tridactyla* raised only a handful of chicks from a colony of 1,000 pairs on the Isle of Canna in the Inner Hebrides; this was the lowest number reared during the 37 years of seabird study carried out on the island.

Predictably enough, this mass starvation reflected a widespread shortage of Lesser Sandeels *Ammodytes marinus*. This energy-

rich fish is the staple diet of many seabirds, and is the key to their breeding success and survival. But in 2005, shoals of this usually abundant species were largely absent from the seas around western Scotland. While other fish were taken as an alternative, few provide sufficient energy to raise growing chicks. In contrast, seabird colonies along North Sea coasts that failed to raise any young in 2004 fared better in 2005, although many still produced fewer chicks than usual. It appears that in many parts of the North Sea, sandeels were still in short supply, since those birds that bred successfully supplemented their chicks' diet with other fish not normally taken. See the JNCC report on the web: www.jncc.gov.uk/pdf/pub05_ukseabirdsin2005.pdf

And seabirds hammered in Greenland

On the Atlantic fringe of Europe, seabirds have seen dramatic population declines, rather than a couple of poor breeding seasons. The situation in Greenland, which is administered by Denmark, is more likely a result of hunting pressure than sandeel shortages. Researchers from the Danish Ornithological Society revisited western Greenland 80 years after seabird census work by an earlier Danish ornithologist and found that some populations had plummeted.

From 1905 to 1920, Alfred Bertelsen documented 210 breeding sites for 32 species in the Uummannaq District of Greenland, a land area of about 12,000 km². In 2000, 207 of these sites were resurveyed. For ten species reported by Bertelsen as common and for which he had quantified numbers at his locations, nine had declined. Comparing the total observed population numbers (birds present) between Bertelsen's and the 2000 survey, only one species remained about the same or had slightly increased (Fulmar *Fulmarus glacialis*). The species with the most dramatic declines were Brünnich's Guillemot *Uria lomvia* (from eight sites and over 500,000 pairs to zero), Kittiwake (27 sites and 268,000 birds to 7 sites and c. 1,100 birds), Razorbill *Alca torda* (17 sites to 3), Common Eider *Somateria mollissima* (26 sites to 16), and Gyr Falcon *Falco rusticolus* (28 sites to 7). Great Cormorant *Phalacrocorax carbo* and Great Black-backed Gull *Larus marinus* were the only species for which number of breeding sites had increased (1 to 12 and 0 to 4 sites, respectively). Population declines appear to be caused by a combination of human persecution and human-caused reduction in prey and habitat quality. Unless further conservation measures are taken, continued avian declines are probable.

Burnham, W., Burnham, K. K., & Cade, T. J. 2005. Past and present assessments of bird life in Uummannaq District, West Greenland. *Dansk Orn. Foren. Tidsskr.* 99: 196–208.

Puffins face new threat

As if the shortage of sandeels *Ammodytes* was not enough for nesting Puffins on Scottish islands to cope with, there is a new threat from an alien invader. CEH researchers from the soon-to-be-axed Banchory research centre have discovered that Tree Mallow *Lavatera arborea* is choking Puffin breeding sites. The plant, which grows mainly in Mediterranean countries, was once confined to just a few UK outcrops but has now begun to spread, as a result of global warming.

According to CEH's Dr René van der Wal, the plant has already covered a couple of islands so thickly that Puffins have been prevented from nesting. On Craigleith, near North Berwick, Lothian, the numbers of burrows in which Puffins breed plunged from 28,000 in 1999 to 14,000 in 2004 and the drop continued in 2005: 'This is now the most dramatic example of an alien plant invader affecting wildlife in Britain,' he told *The Observer*.

There are several hundred thousand pairs of Puffins in the UK, but half that population is restricted to only a handful of sites, making it vulnerable to environmental threats such as the advance of Tree Mallow. First Craigleith succumbed to the plant, now nearby Fidra – said to be the island on which Robert Louis Stevenson based *Treasure Island* – has begun to acquire a thick, impenetrable layer of Tree Mallow. At present, only Puffins have been affected by the Tree Mallow's spread, but other ground-nesting seabirds could soon be affected, including Herring *Larus argentatus* and Great Black-backed Gulls and Great Cormorants. Getting rid of the plant may be tricky, although scientists do have a cunning plan – to import neutered Rabbits *Oryctolagus cuniculus*. 'Islands with Rabbits do not have Tree Mallow. Rabbits rip up their shoots before they can take proper root. And Rabbits and Puffins get on pretty well. However, too many rabbits could cause real damage and erosion – so we would neuter them first,' said Dr van der Wal.

Birdfair update

It was a record-breaking Birdfair in 2005. The organisers have announced that more than 18,000 people attended the British Birdwatching Fair at Rutland Water and £200,000 was raised for *Saving Gurney's Pittas and their forest home*. This year's Birdfair – the eighteenth – will raise funds for parrot conservation in the South Pacific. *Saving the Pacific's parrots* will focus on five countries that are home to endangered psittacines: Samoa, Cook Islands, French Polynesia, Fiji and New Caledonia. Among their number is the Kuhl's (or Rimitara) Lorikeet *Vini kuhlii* of French Polynesia, a gorgeous red-and-green parrot whose global population is probably below 2,000 individuals (the poster bird for last year's Birdfair was the equally gaudy Gurney's Pitta *Pitta gurneyi* of Southeast Asia). The 2005 Birdfair proceeds will help to establish a national park in the forests of Myanmar, where the pitta is found. Funds raised by the Birdfair since 1989 now total an impressive £1,500,000. This year's event will take place during the weekend of 18th–20th August, at Rutland Water as usual.

Ships force out Shelduck at Bathside Bay

You win some, you lose some. After the Government rejected plans for a new container port at Dibden Bay, Hampshire, in 2004, it has now approved plans for a similar development in Essex. Bathside Bay at Harwich, on the Stour Estuary, will be Britain's second-largest container port. (The largest is Felixstowe, just across the water in Suffolk.) In winter, about 3,000 birds use Bathside Bay as a safe roost (including Oystercatcher *Haematopus ostralegus*, Ringed Plover *Charadrius hiaticula*, Red Knot *Calidris canutus* and Dunlin *C. alpina*), and around 1,300 birds are reliant on it for food (including 'Dark-bellied' Brent Geese *Branta bernicla bernicla* and Common Shelduck *Tadorna tadorna*). Bathside has been designated as a SSSI for its feeding and roosting birds, and the site is a recent addition to the Stour and Orwell Estuaries SPA, which has a wintering population of more than 60,000 birds.

Dr Mark Avery, RSPB's head of conservation, said: 'It seems that the Government has decided that construction of the port is the price of progress. It will squeeze wildlife out of an important estuary. The RSPB accepted at the public inquiry in 2004 that the compensation site at Little Oakley, at nearby Hamford Water (put forward by Hutchison Ports, and agreed with the Government's environmental agencies), would fully compensate for the destruction of 69 ha of intertidal mudflats and saltmarsh caused by the building of the port. Dr Avery added: 'We will now seek to continue to work constructively with the company to ensure the habitat compensation scheme provides a safe home for the birds that will be displaced by the construction of the new port.'

Defeat at Bathside Bay follows victory at Dibden Bay in April 2004 (*Brit. Birds* 97: 309). There, a container terminal was proposed in the Southampton Water SPA (and New Forest National Park), which is a wintering ground for 50,000 wildfowl and waders. Background information on all current port proposals can be found on the Portswatch website www.foe.co.uk/campaigns/transport/portswatch

And waders are evicted from Saemangeum

Another estuary 'reclamation' project has global conservation implications. In a massive blow for conservation and wildlife, the Seoul High Court has decided that the South Korean Government can resume the Saemangeum wetland reclamation. The 40,000-ha Saemangeum project, on South Korea's west coast, has generated enormous controversy, as the area is one of the most important wetland sites for migrating waterbirds in Asia, with around 400,000 waterbirds passing through or staging in the wetlands each year. Headline species include Spoon-billed Sandpiper *Eurynorhynchus pygmeus*, Nordmann's Greenshank *Tringa guttifer* and Great Knot *Calidris tenuirostris*. The wetlands also support the highest fish diversity in Korea, and are a vitally important spawning ground. The livelihoods of 25,000 Korean fishermen depend on them. Richard Grimmett, head of BirdLife's Asia Division said: 'The Saemangeum project will have one of the biggest environmental impacts of any construction project in Asia over the coming decade.'

The project to reclaim Saemangeum for rice growing, by building a 33-km sea wall across the estuary, began in 1991. It met with local and international opposition that resulted in a one-year suspension in 2001, before resumption and then a second suspension in 2003. However, by that time around 90% of the sea wall had already been completed. The Korean Government's own expert panel advised that the quality of the reclaimed land would be too poor for agricultural use. Historical precedents reinforced their doubts – the Shihwa reclamation, completed in 1994, cannot be used for agriculture because of water pollution.

South Korea is a signatory to the Ramsar Convention on Wetlands and will host the Conference of the Parties to the Ramsar Convention in 2008. Ramsar's mission statement reads: 'The Convention's mission is the conservation and wise use of all wetlands through

local, regional and national actions and international co-operation, as a contribution towards achieving sustainable development throughout the world.' Ironically, by the time the conference takes place, the Korean Government may have overseen the destruction of one of the world's great wetlands. Campaigners are now seeking an injunction in the Korean Supreme Court to halt the resumption of work on the Saemangeum sea wall. So the accumulation of data from detailed shorebird monitoring that begins this spring (*Brit. Birds* 99: 47–48) has even greater urgency.

Anna Poyser

There can be few *BB* readers who do not have several 'Poysers' on their bookshelves. The classic white dust-jackets are synonymous with quality publishing. Sadly, Anna Dorothy Poyser (the 'AD' of T & AD Poyser) died in Norfolk on 8th December at the age of 81. Trevor and Anna, who were married for 57 years, started their book publishing company in 1972. They continued to run it as a 'two-man' team until they sold it to Harcourt Brace when they retired in 1989. The imprint is now part of the A&C Black stable.

During this time they published 50 titles and new editions, several of which had their origins in *British Birds*, including *Flight Identification of European Raptors*, *Gulls: a guide to identification*, *Birds New to Britain and Ireland* and *Rare Birds in Britain and Ireland*. Trevor and Anna had a special relationship with their authors, many of whom became close friends, often visiting them at their home in the Peak District, where they were royally entertained – Anna was a wonderful hostess. Before life as a publisher, Anna was first a nurse and then medical editor of Cassels and of Baillières. As well as having a wide-ranging interest in natural history, especially wild flowers, moths and butterflies, she was also a fine botanical artist, an excellent cook and an accomplished pianist.

(*Contributed by Richard Porter*)

Richard Porter

36. Anna Poyser and friend, Spain, 2002.

Suffolk's Dartford Warblers reach their century

It would have seemed barely credible just a decade ago but the recolonisation of Suffolk's heaths by the Dartford Warbler *Sylvia undata* reached a new milestone in 2005, with more than 100 pairs breeding in the county for the first time. After an absence of more than 60 years, Dartford Warblers returned to breed in Suffolk as recently as 1996, although it is possible that a pair bred in 1995. Since then they have increased, and expanded their range away from the National Trust's Dunwich Heath reserve, where they first returned. No fewer than 113 pairs bred in Suffolk in 2005, including 36 pairs on RSPB reserves on the coast (this compares with 77 pairs breeding in the county in 2003 and 91 pairs in 2004). The population core is around the RSPB's Minsmere reserve, Dunwich Heath and Westleton Heath NNR. Being a resident rather than migratory warbler, the species is vulnerable to prolonged cold weather, and it is highly likely that recent mild winters have been a major factor in Dartford Warblers doing so well in Suffolk.

Birds in the Channel Islands

Glyn Young has written in to say that the updated list of Birds of the Channel Islands can now be found on the following websites: www.jerseybirds.co.uk; www.geocities.com/mplawlorgue/Guernseybirdnews.html

Cley Marshes celebrates its 80th

Monday 6th March should be circled on all birders' calendars. It marks the 80th anniversary of the sale of Cley Marshes in north Norfolk to Dr Sydney Herbert Long, a Norwich physician. Dr Long was concerned about the intensive shooting on Cley Marshes, and when 400 acres were put up for sale in 1926, he saw his chance to create one of Britain's first bird 'sanctuaries'. However, he needed the colossal sum of £5,160 (around £500,000 at today's prices) to buy the reedbeds and saltmarshes now so familiar to generations of birders. He persuaded a consortium of a dozen subscribers to put up the money and the marshes were saved. The new owners then handed the land over to the newly formed Norfolk Naturalists' Trust, Britain's first county wildlife trust.

Cley has been an iconic birding location for 80 years now because of its association with rare birds and their watchers. Bird artist Richard 'RAR' Richardson, the 'guardian spirit of the East Bank', inspired a generation of birdwatchers during his time at Cley from the 1940s to the 1970s.

The reserve was celebrating its 50th anniversary when I made my first visit in September 1976 as a callow 13-year-old. Sadly, I never met RAR (who died the following year) but like many young birders of limited means I soon encountered the irascible warden Billy Bishop as he patrolled the hides in search of interlopers who had failed to buy an entrance ticket. Thirty years on, has Cley lost some of its lustre? There have been no outstandingly rare birds for several years and there is a widespread perception that the reserve could be better managed. A smart new visitor centre is under construction but perhaps those funds could have been better spent on managing the reedbeds, constructing new scrapes or repairing the hides around the rim of the reserve.

In 1926, the big news was the General Strike; in 2006, the big news is climate change. With sea-level rise there will be more-frequent breaches of the shingle ridge along the shore and more floods such as the dramatic one in 1996. A new clay bank will hold back the tide for now – but the freshwater marshes of the twentieth century may become more brackish as the twenty-first century develops. We can only hope that the future management of Cley Marshes helps the reserve to regain its pre-eminent position as the birders' Mecca.

Murder on Fair Isle

A thinly disguised Cley Marshes was the setting for the first thriller by Ann Cleeves, *A Bird in the Hand*. It launched a new literary genre – birder murder. In 1986, *BB* gave the novel a glowing review (*Brit. Birds* 79: 600). Ann has now written nearly 20 murder mysteries and this month sees the publication of her latest book, *Raven Black*. It's set on Fair Isle and is launched in Shetland at the conclusion of the *Up Helly A'a* festival on 3rd February. *Raven Black* is the first of four Shetland-based mysteries, each set in a different season. The detective who sets out to solve the murder(s) in *Raven Black* is Jimmy Perez. It doesn't sound like a Shetland name but Ann has woven into the story a fascinating chapter of Fair Isle history.

Long before Eagle Clarke discovered Fair Isle's magnetism for rare birds, another group of windblown waifs and strays made landfall there. The year was 1588 and they were the 300-strong crew of *El Gran Grifon*, the flagship of the Spanish Armada that was wrecked on Fair Isle after fleeing the English Navy. And Jimmy Perez is a descendant of those first Spanish visitors to Shetland... Ann's books have woven in birders and murders in many familiar locations, including Hilbre Island, Spurn, even High Island in Texas. Although an avowed non-birder, she has an enviable British List (including American Kestrel *Falco sparverius*, Bimaculated Lark *Melanocorypha bimaculata*, Siberian Rubythroat *Luscinia calliope*), which shows that her time as cook at Fair Isle Bird Observatory wasn't entirely wasted. And she did meet her future husband, Tim Cleeves. But that's another story. Visit her website, www.anncleeves.com

Richard Chandler

Observant readers may have noticed a small change inside the front cover of *British Birds*. Richard Chandler is no longer chairman of BB 2000 Limited, having retired as a director. That might seem a small change, but in 2000, at the time of *BB*'s editorial and financial problems under its previous owner, Richard led the team that took over *BB* and restored it to health. More than that, until Roger Riddington was appointed editor, Richard took on a large part of the editorial burden. Without his tireless efforts, there would be no *BB* today and the end of his term of office seems an appropriate moment to acknowledge his outstanding contribution. We are delighted that he will continue as chairman of *BB*'s Editorial Board and will remain as a trustee of the British Birds Charitable Trust.

Eds

Rarities Committee news

Chris Bradshaw and Martin Garner join BBRC

The BBRC is pleased to announce that Chris Bradshaw, from Kent, and Martin Garner, presently living in South Yorkshire, have been appointed as the next members of the Committee, with effect from 1st April 2006 (see *Brit. Birds* 98: 606). The vacancies arose with the retirement of two of the longest-serving members, John McLoughlin and Jimmy Steele. Both Johnny and Jimmy have been stalwart members of the Committee; both will doubtless use their new-found freedom to find more rarities and watch seabirds and mediocre football teams.

Although we are delighted to have two such able individuals joining the Committee, we were disappointed that, once again, there was no election. In 2007, two more BBRC members will be retiring. Although it is normal for only one member to retire each year, owing to a combination of unusual circumstances in 1997 four new members joined in a 12-month period and we felt it appropriate to allow a significant change in the make-up of BBRC once again. If you are at all interested, we would welcome informal approaches to the chairman or other BBRC members before we request nominations in the late summer. See *Brit. Birds* 98: 606 for the prime qualifications of candidates.

BBRC to come to the northwest for AGM

BBRC will be in Greater Manchester, at the Hope Carr Environmental Centre at Leigh, for their AGM during 3rd–5th March 2006. In common with all BBRC AGMs, we will hold an open house for local birders on the Saturday night (4th March) at the Centre. All attending BBRC members will be there to socialise and discuss records if people want. All local birders are welcome, although we ask that you let us know in advance because of catering arrangements.

'Baltic Gulls'

The Dutch Rarities Committee (CDNA) has recently undertaken an investigation on the diagnosability of 'Baltic Gull' (Lesser Black-backed Gulls *Larus fuscus* of the race *fuscus*) and, as a result, has accepted only those records of known provenance, which usually means birds which have been ringed as chicks on the breeding grounds. Consequently, all but three records have been removed from the Dutch National Record (see www.dutchbirding.nl). BBRC has decided to adopt the same approach. Baltic Gull is on the British List on the basis of a Finnish bird ringed as a chick in July 1978 and recovered in Suffolk in October 1981. Baltic-ringed birds have also been found in France in recent years (see *Ornithos* 12: 269–282). From now on, only those records which involve confirmed ringing recoveries of Baltic Gull will appear in the BBRC report.

Canada Geese

Following the splitting of Canada Goose into two species, Greater *Branta canadensis* and Lesser Canada Goose *B. hutchinsii* (*Ibis* 147: 821–826), BBRC feels that it should now consider well-documented records of vagrant races of the 'new' species (i.e anything except *B. c. canadensis*). However, we do have concerns that this could open the gates to a flood of records. Consequently, BBRC will consider claims only if:

1. they are accompanied by photographs that portray most if not all of the features in the description;
2. the observer has attempted to establish both the species and the subspecies identity of the bird concerned (though we acknowledge that absolute precision in subspecies identification is difficult); and
3. the observer has made enquiries to ensure that the record does not refer to a known escape, even for birds in wintering goose flocks, ideally in co-operation with the County Recorder.

BBRC is happy for County Recorders and records panels to screen these submissions first but will understand if they also choose to pass on this task. However, because of their local knowledge, we would find any comments from Recorders on likely provenance of individual birds extremely helpful.

The British Birds Rarities Committee is sponsored by Carl Zeiss Ltd.
Chairman: Colin Bradshaw, 9 Tynemouth Place, Tynemouth, Tyne & Wear NE30 4BJ
Secretary: M. J. Rogers, 2 Churchtown Cottages, Towednack, St Ives, Cornwall TR26 3AZ

Obituary

Richard Sidney Richmond Fitter (1913–2005)

For birdwatchers in the Britain of 1952, a newly published bird guide by Richard Fitter, and illustrated by Richard Richardson, came as a revelation. It introduced many innovations, the most obvious of which was to have paintings of lookalike birds together on the same page, with the outline of a sparrow to give a quick idea of scale. The text was a mine of information, there were keys to aspects of appearance, behaviour and habits, and a useful migration table; and all in a book which would actually go in the pocket. It brought the author's and illustrator's names before a national audience, but Richard Fitter was not one to rest on his laurels, and became a prolific author and conservationist.

Richard was born in London, and was sent to school at Eastbourne College, where he was lucky to have the well-known naturalist E. C. Arnold as a master and mentor. From an early age he developed the practice of making detailed notes and lists of the plants and birds he saw, and his observations led quickly to contacts with other leading naturalists such as Max Nicholson and James Fisher. Somewhat surprisingly, he went to the London School of Economics, and then, deciding on a career as a social scientist, took up a position with the Institute of Political and Economic Planning, where he had much practice in writing reports. This must have honed his natural ability to digest a mass of detail and summarise it in simple language, so evident in his later field guides.

His initials – R. S. R. F. – became familiar to many people well before the War, for he was a tireless contributor of notes, letters and papers to such journals as *The London Bird Report* and *British Birds*, and also the *London Naturalist* where he became the editor. As a naturalist living in London, he was able to put his skills to good use in writing one of the first volumes in the Collins *New Naturalist* series. I bought *London's Natural History* soon after it was published, and it was both a revelation and an inspiration to a young birdwatcher living in the suburbs. I still think it is one of the most original books in the series, with its blend of history, nature, literary allusions, and urban ecology. The publication of this book marked a watershed, for Richard left London for Oxfordshire, and devoted himself to writing about country matters, initially as deputy editor of *The Countryman*, and in a column for *The Observer* newspaper.

While in London he had taken particular interest in the Black Redstart *Phoenicurus ochruros*, and following his first note about it in *BB* in 1941, he went on to document its status in Britain in that journal for the next 35 years. He also read a paper about the spread of the Black Redstart in Britain at the IOC, in Basel, in 1954. Another subject that he took a great interest in was the Black Woodpecker *Dryocopus martius* as a British bird, and published a meticulously researched series of papers about its purported occurrences here in *Bull. BOC* in 1959.

He published his first contribution to *BB* in 1931, and the last in 1998 – probably one of the

Tom McIlroy

37. Richard Fitter (left) with Robert Gillmor, in Norfolk in 2002.

longest spans of any contributor in its then 90-year history. Some of these give an insight into his enthusiasm and the value of his notes. For instance, in one of his last notes in *BB*, in 1996, he commented on a report about abnormal song in the Common Whitethroat *Sylvia communis* by referring to notes he had made in 1948. A similar observation about Common Chiffchaff *Phylloscopus collybita* song in *BB* in 1957 stemmed from an observation made in 1942, when he heard what I think might well have been an Iberian Chiffchaff *Ph. ibericus* in Ken Wood, Middlesex (curiously, the first accepted record of this species in Britain was in the same county, at Brent Reservoir, exactly 30 years later). I have traced over 40 contributions to *BB*, appropriately recognised by his being made an Honorary Subscriber in 2000.

The *Pocket Guide to British Birds*, published by Collins six years after his first book, was the forerunner of many field guides marked by succinct information and many innovative ideas. The companion guide to wild flowers, which he co-authored with David McClintock in 1956, was the first really user-friendly book on the subject, and was later followed by the hugely successful bird and flower guides illustrated by Hermann Heinzel and Marjorie Blamey. These led to many revised or expanded editions, and there were many other books on natural history

Some of Richard Fitter's many wildlife books.

and conservation.

Richard was a committed conservationist on an international level; he was the Honorary Secretary of the Fauna Preservation Society for many years, its journal *Oryx* being edited by his wife Maisie, and he was a leading figure in the IUCN and the Council for Nature. He became Chairman of the British Ornithologists' Club in 1965, the year in which I was appointed Honorary Secretary, and I saw a good deal of him over the next four or five years. We had many discussions about how and where to put on an exhibition of Richard Richardson's work, of which he was a great admirer, and he was delighted when this was eventually achieved by Moss Taylor, to celebrate the publication of Moss's book on the birder-artist, exactly 50 years after the *Pocket Guide* appeared. Although not well at the time, he was determined not to miss the launch of the book in Cley church in 2002, when for the first time many of Richardson's paintings, including the original plates for the *Collins Guide to Nests and Eggs*, were shown together.

At the age of 91, and with his carer away for three weeks, Richard drove himself up to his beloved north Norfolk coast for a short break. He called in for tea, and soon took a piece of Common Sea-lavender *Limonium vulgare* out of his pocket, to discuss what colour he should call it in a forthcoming book (at 91!). We had a long and entertaining talk about the names of colours, and many other things, and he then offered to inscribe my copy of *London's Natural History*, noting below his signature 'nearly sixty years too late'. He was an ardent field-man (I remember him in the 1950s getting a name for chasing crakes in Wales) and, latterly, when he couldn't walk very far, he told me of an expedition to find an orchid – Irish Lady's-tresses *Spiranthes romanzoffiana* – when he managed to get 200 m, only to find it underfoot by the car when he got back.

His wife Maisie, to whom he was married for 58 years, died in 1996. They had a daughter and two sons, both naturalists, one of whom, Alistair, collaborated with Richard on the many editions of the wild-flower guide which originally appeared in 1974. Richard died in Cambridge on 3rd September 2005, at the age of 92, leaving a unique name and legacy in the history of nature guide books.

Martin Woodcock

Monthly Marathon

Photo no. 217: Black-headed Bunting

James Lidster

38. Female Black-headed Bunting *Emberiza melanocephala*, Lesvos, Greece, May 2004.

Monthly Marathon photo number 217, reproduced here as plate 38, clearly shows a relatively small passerine with a finely streaked mantle. From first impressions alone we can rule out most families, based upon the combination of leg colour, heavy-looking (seed-eater's) bill, streaked mantle and crown, and clean underparts. Furthermore, we can eliminate other families of 'streaky-brown' passerines which lack the contrasting tertial pattern, longish primary projection and the yellow wash to the underparts. Taken together, these features enable us to rule out larks (Alaudidae), finches (Fringillidae) and sparrows and petronias (Passeridae), leaving us with weavers (Ploceidae) and buntings and North American sparrows (Emberizidae) as the most obvious suspects, although some New World icterids (Icteridae) can bear a passing resemblance. Of the weavers, only Village *Ploceus cucullatus* and Streaked Weaver *P. manyar* have been recorded in the Western Palearctic in a wild state. Village Weaver in all plumages differs from our mystery bird by its darker upperparts, stronger yellow wash on the flanks and yellowish, rather than white, tips to the greater and median coverts, while Streaked Weaver can be safely eliminated by the lack of underpart streaking.

With its apparently pointed bill, washed-out underparts and contrasting greater coverts and tertials, our bird could suggest a female or first-winter male Baltimore Oriole *Icterus galbula*. This resemblance is, however, superficial as this species should not show such prominent streaking on the crown and mantle, and would also show bluer or greyer legs.

Given that no species of North American sparrow shows unmarked yellow flanks, this group is also readily eliminated, leaving just one family, the buntings. Many buntings which have occurred in the Western Palearctic can also be ruled out by the combination of clean, unmarked underparts and poorly marked mantle. The yellow wash to the underparts could suggest female or immature Yellow-breasted *Emberiza aureola* or Chestnut Bunting *E. rutila*, but both show conspicuous dull brown flank-streaking and, in the case of Yellow-breasted Bunting, an obvious pale central crown stripe. Chestnut Bunting would also show a less contrasting tertial pattern with warm brown rather than whitish fringes.

By now the species selection is becoming extremely limited.

39. 'Monthly Marathon'. Photo no. 219. Seventeenth stage in thirteenth 'Marathon'. Identify the species. Read the rules (see page 112), then send in your answer on a postcard to Monthly Marathon, c/o The Banks, Mountfield, Robertsbridge, East Sussex TN32 5JY, or by e-mail to editor@britishbirds.co.uk, to arrive by 31st March 2006.

Cinereous Bunting *E. cineracea* of the eastern form *semenowi* shows a distinct yellowish wash to the unmarked flanks and this is a possibility. In fact, the fine, dark mantle-streaking and white tips to the median and greater coverts might suggest for a moment that this is our mystery bird. However, the sharply defined tertial edgings, conspicuous yellow suffusion to the undertail-coverts and the lack of prominent white tail-corners are all at odds with this conclusion. In practice, most people will have realised quite quickly that we are dealing with one of the trickier species pairings: Black-headed *E. melanocephala* and Red-headed Buntings *E. bruniceps*. Not long ago I was in the fortunate position of being able to examine many skins of these two species with Brian Small and other members of BBRC at the British Museum (Natural History), Tring. One thing that soon became apparent was that their separation was best achieved using a suite of features to make a positive identification. An oft-quoted feature when separating females and first-winter birds is the primary projection. On our bird it looks quite long (perhaps five primary tips are visible beyond the tertials); but in fact, this feature seems to be variable, with both species showing between four and six visible primary tips. The intensity of the yellow on the underparts is quite strong (particularly on the undertail-coverts), and there is no streaking visible, so I assume that our bird is an adult female, perhaps supported by what look like fairly broad, rounded tail feathers. One feature that seemed consistent on skins and photos examined was bill length. Many Black-headed Buntings were noticeably longer-billed than Red-headeds; our bird does look long-billed, but as it has moved its head, the bill is rather blurred – this feature is much easier to see when you have two specimens in the hand side by side! The upperparts also look quite warm-toned, and the streaking is relatively neat; again, not diagnostic features on their own but, in conjunction with the other features, surely point towards Black-headed.

One final feature that seemed to separate the two species consistently was the spacing of the primary tips. On Black-headed, the three innermost primaries (P8–10, primaries numbered ascendantly) are tightly bunched, P7 lies slightly further apart, and P4–6 are quite widely spaced. Conversely, on Red-headed Bunting the inner four primaries (P7–10) are bunched, P6 and P5 are well spaced, but P5 falls close to the wing-tip (consisting of P2–4). I think this is just visible in the photo, although interpreting this from the primaries on show is difficult.

Using this combination of characters we can safely identify our bird as a Black-headed Bunting, which is fortunate because that is what I thought it was when I photographed it with a male Black-headed Bunting on Lesvos, Greece, in May 2004!

James Lidster

This particular puzzle proved more difficult than the preceding Yellow-browed Bunting (photo no. 216) – this time, 61% of entrants voted correctly, with the majority of the remainder voting for Red-headed Bunting. Yet again, none of the current leaders of the thirteenth 'Marathon' slipped up, so Mark Edgeller, Jon Holt, Andy Rhodes, Jakob Sunesen and Peter Sunesen remain as joint leaders, each with a series of nine correct answers.

Eds

Monthly Marathon Rules

1. Only current individual subscribers to *British Birds* are eligible to take part. Entrants should give their name, address and *BB* reference on their entry. Only one entry per person each month.
2. Entries must be sent either by post, each one on a separate postcard, or by e-mail and be received at the British Birds Editorial Office (Monthly Marathon, British Birds Editorial Office, The Banks, Mountfield, Robertsbridge, East Sussex TN32 5JY; e-mail: editor@britishbirds.co.uk) by the stated closing date. Every care will be taken, but, even if negligence is involved, no responsibility can be accepted for non-delivery, non-receipt or accidental loss of entries.
3. All *BB* subscribers are eligible, except members of the Editorial Board and staff of *British Birds*, Directors and members of staff of SUNBIRD/WINGS Holidays, and Directors and members of staff of our printers. (Members of the *BB* Notes Panel, the Rarities Committee, and other voluntary contributors – including bird-photographers, even if one of their photographs is used in the competition – are eligible unless proscribed above.)
4. To win, a *British Birds* subscriber must correctly identify the species shown in ten consecutive photographs included in this competition. The Monthly Marathon will continue until the prize has been won.
5. In the event of two or more *BB* subscribers achieving the ten-in-a-row simultaneously, the competition will continue each month until one of them (or someone else!) achieves a longer run of correct entries than any other contestant.
6. In the event of any dispute, including controversy over the identity of any of the birds in the photographs, the decision of the Editor of *British Birds* is final and binding on all parties.
7. No correspondence can be entered into concerning this competition.
8. The name and address of the winner will be announced in *British Birds*.
9. The prize for the next winner of Monthly Marathon will be £1,500 towards the SUNBIRD holiday of their choice.

Recent reports

Compiled by Barry Nightingale and Anthony McGeehan

This summary of unchecked reports covers early December 2005 to mid January 2006.

Blue-winged Teal *Anas discors* North Bull island (Co. Dublin), long-stayer to at least 11th January. Redhead *Aythya americana* Tiree (Argyll), 14th December to 11th January. Ferruginous Duck *Aythya nyroca* New Hythe Gravelpits (Kent), 11th December to 8th January; Craigavon (Co. Armagh), 30th December to 8th January; Belvide/Chasewater and other local sites (Staffordshire), long-stayer to 28th December; Elstow (Bedfordshire), long-stayer to 11th January. Lesser Scaup *Aythya affinis* Lochwinnoch (Clyde), 10th December; Lewis (Western Isles), at least 15th–20th December; Roadford Reservoir (Devon), 29th December to 9th January; Reclamation Pond (Cleveland), 7th–12th January; Hornsea Mere (East Yorkshire), long-stayer to 8th January; Kilbirnie Loch (Ayrshire), long-stayer to 11th January; Drift Reservoir (Cornwall), long-stayer to 11th January. Barrow's Goldeneye *Bucephala islandica* Quoile Pondage (Co. Down), long-stayer to 14th January.

Cattle Egret *Bubulcus ibis* Pagham Harbour (West Sussex), 16th December to 5th January, with two 6th and three 7th–9th January; Britford Water (Wiltshire), two, 24th December to 12th January; Piddinghoe, Newhaven (Sussex), eight, 2nd–11th January; Warblington (Hampshire), 9th–12th January. Great White Egret *Ardea alba* Chichester (West Sussex), 23rd December, presumably same, Pagham Harbour, 24th December.

American Golden Plover *Pluvialis dominica* Northam Burrows (Devon), 20th–22nd December. Sociable Lapwing *Vanellus gregarius* Rainham Marshes (Greater London), long-stayer to at least 20th December. Long-billed Dowitcher *Limnodromus scolopaceus* Hayle (Cornwall), long-stayer to 12th January. Lesser Yellowlegs *Tringa flavipes* Clonakilty (Co. Cork), long-stayer to at least 31st December.

Laughing Gull *Larus atricilla* Fence House, 10th December, same or another Whitburn, 14th December, and Houghton-le-Spring, 30th December (all Co. Durham); Dingle (Co.

Marc Read

40. Adult 'Black Brant' *Branta bernicla nigricans*, Holkham, Norfolk, December 2005.

John Carter

41. Male Lesser Scaup *Aythya affinis*, Drift Reservoir, Cornwall, December 2005.

Kerry), 15th December; Westport Lake (Staffordshire), 17th December; Ayr (Ayrshire), 19th December; Polgigga/Land's End (Cornwall), two, 19th–21st December, presumably two of those reported in November, one to 27th December, and one Hayle, 30th December, perhaps one of same; Blennerville (Co. Kerry), 1st–2nd January; Crosby Marine Park (Lancashire), 2nd January; Barnstaple (Devon), 5th and 9th–10th January; Campbeltown (Argyll), 11th–12th January; St Mary's (Scilly), three long-stayers to 14th December; North Bull island, long-stayer to 3rd January; Theale Gravel-pits (Berkshire), long-stayer to 9th January; Brixham (Devon), long-stayer to 9th January; Porthcawl (Glamorgan), long-stayer to 11th January; Porthmadog (Gwynedd), long-stayer to 11th January; Nimmo's Pier (Co. Galway), long-stayer to 13th January. **Franklin's Gull** *Larus pipixcan* Douglas Estuary (Co. Cork), 22nd December. **Bonaparte's Gull** *Larus philadelphia* Lunan Bay (Angus), 3rd January. **Ross's Gull** *Rhodostethia rosea* Cley, 31st December to 1st January, also Blakeney Point, 31st December (both Norfolk); another, Lowestoft (Suffolk), 6th and 8th–12th January. **Forster's Tern** *Sterna forsteri* Ballycotton (Co. Cork), 11th January; wintering bird at Nimmo's Pier throughout.

Brünnich's Guillemot *Uria lomvia* Bressay (Shetland), long-stayer reported on 15th and 20th December.

Buff-bellied Pipit *Anthus rubescens* Wyberton Marsh (Lincolnshire), 5th–13th December. **Waxwing** *Bombycilla garrulus* The largest flocks

Alan Tate

42. Sociable Lapwing *Vanellus gregarius*, Rainham Marshes, Greater London, December 2005.

Paul Hackett

43. Adult Laughing Gull *Larus atricilla*, with Black-headed Gull *L. ridibundus*, Porthmadog, Gwynedd, December 2005.

Kevin Elsby

44. Adult Ross's Gull *Rhodostethia rosea*, Cley, Norfolk, December 2005.

Tony Collinson

45. Hume's Warbler *Phylloscopus humei*, Filey, North Yorkshire, December 2005.

Marc Read

46. Penduline Tit *Remiz pendulinus*, Rainham Marshes, Greater London, December 2005.

were in Scotland and northern England: Edinburgh (Lothian), 150 in mid December; Port Clarence (Cleveland), 80 in mid December; Leeds (West Yorkshire), 70 in mid December; Saltholme Pools (Cleveland), 105, 13th December; Eskbank (Lothian), 50, 29th December; Sheffield (South Yorkshire), up to 90, early January. 'Black-throated Thrush' *Turdus ruficollis atrogularis* Curload (Somerset), 24th December to 4th January.

Hume's Warbler *Phylloscopus humei* Filey (North Yorkshire), 7th–30th December; Weybourne (Norfolk), 11th December; Portreath (Cornwall), 8th–11th January; Holkham (Norfolk), 8th–9th January. Radde's Warbler *Phylloscopus schwarzi* Basingstoke (Hampshire), 7th December.

Penduline Tit *Remiz pendulinus* Up to four, Rainham Marshes, 18th–28th December; Stodmarsh (Kent), 11th–12th January. Arctic Redpoll *Carduelis hornemanni* Aberlady Bay (Lothian), 23rd December to 11th January; Icklingham (Suffolk), 31st December to 4th January, with up to three 5th–9th January. Little Bunting *Emberiza pusilla* Morston/Stiffkey (Norfolk), long-stayer to 9th January.

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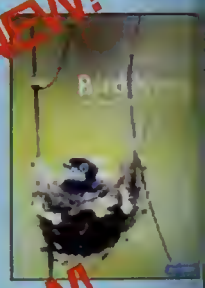

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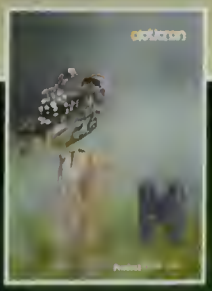

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Daniel G. Duff

47. Common Buzzard *Buteo buteo*. *Günter Bachmeier*

ABSTRACT Juvenile Honey-buzzards *Pernis apivorus* exhibit a striking resemblance to Common Buzzards *Buteo buteo*, even though the two species are not closely related. Both species, but particularly Honey-buzzards, rather frequently fall prey to Northern Goshawks *Accipiter gentilis* on their Western Palearctic temperate-forest breeding grounds. The author suggests that the juvenile plumage of Honey-buzzard may have evolved to resemble the plumages of the better-defended and more abundant Common Buzzard, in response to this predation pressure. Data in support of this hypothesis are presented and discussed here. These relationships are placed in the context of previously proposed mimicry relationships involving *Pernis* species.

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The similarity in appearance of Honey-buzzards *Pernis apivorus*, particularly juveniles, to Common Buzzards *Buteo buteo* has often been described in the literature (more recently by, for example, Cramp & Simmons 1980, Porter *et al.* 1981, Gensbøl & Thiede 1997, Beaman & Madge 1998, Svensson *et al.* 1999 and Ferguson-Lees & Christie 2001). Forsman (1999) even called juvenile Honey-buzzards 'probably the most often misidentified raptors in Europe'. Indeed, juvenile Honey-buzzards show a close, almost uncanny resemblance to Common Buzzards in many ways, in plumage as well as to some extent in structure, across a whole range of plumage morphs (dark to pale) in both species. Human observers can usually distinguish the two species on account of subtle differences in the manner of flight, structure and plumage, as described in the texts cited above. Nonetheless, there exists, in principle, a possibility that this similarity in appearance represents an adaptive evolutionary strategy, a case of 'Batesian mimicry' – the name given to the situation where a harmless or edible prey species evolves to resemble a toxic or otherwise harmful species, so that predators avoid it (Bates 1862). This, for example, is presumed to be the case with the wasp *Vespula*-like patterning shown by many species of insect, such as hoverflies (Syrphidae). One alternative possibility would be a purely coincidental resemblance, perhaps resulting from the genetic relationship (albeit distant) between the two raptor species. Raptors tend in any case to share a rather limited range of typical plumage feature types across the different families. A second explanation could be convergent evolution on account of the different species 'responding' similarly (but independently) to shared environmental pressures. A plausible mechanism for this latter possibility is not obvious, however. The hypothesis presented and discussed here is that this resemblance of juvenile Honey-buzzard to Common Buzzard is a sophisticated example of Batesian mimicry, and that evolution has conferred upon the relatively harmless juvenile Honey-buzzard a degree of protection against predation by Northern Goshawk *Accipiter gentilis*. These two raptors, and Common Buzzard, are sympatric over a large area of Western Palearctic temperate forest (Cramp & Simmons 1980; Hagemeijer & Blair 1997). Such relationships cannot be proven with certainty and must remain by their nature speculative, but this article examines some arguments for this hypothesis. Ferguson-Lees & Christie (2001) referred to plumage mimicry by various honey-buzzards (and other raptors) in their individual species texts, and both they and their contributor, Dr Carl Edelstam, cited a paper by Edelstam & Ben King as 'in preparation', but unfortunately that has still not been published. These workers suggest that Honey-buzzards mimic a range of different raptor species on their wintering grounds, Common Buzzards not being mentioned as a model species.

Honey-buzzards and Common Buzzards are of approximately similar size and shape and share certain plumage features, most notably rather uniform brown upperparts and typically a rather similar pattern of pale and darker areas on the underwing, usually including obvious dark carpal patches. In particular, juvenile Honey-buzzards show a range of features which are different from those of adult Honey-buzzards, but which resemble corresponding features of Common Buzzards. The descriptions in the above-mentioned identification literature, as well as the photographs in Porter *et al.* (1981) and Forsman (1999), yield the following, possibly *Buteo*-mimicking, features of juvenile Honey-buzzard which differ from those of adult birds:

i underparts often streaked rather than broadly barred (cf. juvenile Common Buzzard);
ii underwing-tips more extensively dark;
iii underside of flight-feathers more densely barred (4–5 strong bars instead of 1–3);
iv this barring petering out in strength across outer primaries resulting in a plainer whitish area between carpal markings and primary tips;
v generally more uniform and less prominently striped underwing-coverts;
vi tail-barring less pronounced and more even;
vii cere yellow instead of grey;
viii eye dark instead of bright yellow;
ix slightly shorter inner primaries and tail.

Some of these features are, however, shared by many juvenile raptors, making it difficult to distinguish coincidental from adaptive effects. Nonetheless, the sum of these features (together with the other features that both juvenile and adult Honey-buzzards share with Common Buzzards) results in a striking similarity between these two only distantly related taxa.

48. Captive Rough-legged Buzzard *Buteo lagopus*, showing the 'hooded eye' – a combination of shadow and slightly darker feathering – typical of *Buteo* species to good effect; from Heinroth & Heinroth (1926), plate 153.

49. Captive juvenile Honey-buzzard *Pernis apivorus*. Compare the shape of the dark feathering around the eye of this typical-morph bird with that of the *Buteo* in plate 48; the dark eye-mask may mimic the 'shaded eyes' of Common Buzzard *B. buteo* and lend the young Honey-buzzard a more typically raptorial facial appearance. From Heinroth & Heinroth (1926), plate 153.

50. A young Honey-buzzard *Pernis apivorus* recently moulted out of juvenile plumage has largely lost the 'mask' of darker feathering around the eye (which is now pale), and the 'pigeon/cuckoo-like' jizz is developing. Common Buzzard below for comparison; captive birds from Heinroth & Heinroth (1926), plate 153.

51. Honey-buzzard *Pernis apivorus* (above) has the eyes set marginally further back in the head than Common Buzzard (below), which has the eyes comparatively closer to the bill; captive birds from Heinroth & Heinroth (1926), plate 153.

52. A pale (captive) juvenile Honey-buzzard *Pernis apivorus* showing a striking 'mask effect'. Does the mask have an additional effect in suggesting that the eye is further forward in the head than it really is? From Heinroth & Heinroth (1926), plate 153.

One aspect which is particularly interesting is the presence of an area of dark feathering through the eye of juvenile Honey-buzzard, which for human observers can even be used as a distinguishing feature from Common Buzzard. However, close inspection of photographs of perched birds of both species (e.g. Heinroth & Heinroth 1926, Bijlsma 1993) reveals that this feature resembles in form the combination of shadow and slightly darker feathering around the eye of Common Buzzard, although somewhat exaggerated in juvenile Honey-buzzard (see plates 48 and 49 in particular). The rather uniformly convex head shape and lack of projecting raptorial brows of Honey-buzzard lead otherwise to a lack of shadow in this area and a rather different, cuckoo-like facial expression, most striking in adult males with their uniform grey head plumage. The dark eye-mark may thus mimic the shaded eyes of Common Buzzard and lend the young Honey-buzzard a more typically raptor-like facial appearance.

The resemblance between the two species extends across a range of plumage morphs of both species. Ferguson-Lees & Christie (2001) described a total of seven plumage morphs of juvenile Honey-buzzard – dark brown, rufous, buff, melanistic, olive-brown, light and whitish, the first four of which they noted as having rather similar counterparts among young *Buteo* species. In addition, the identification literature confirms that the light and whitish phases show significant resemblance to pale juvenile and adult plumages of nominate Common Buzzard.

Possible reasons for mimicry-based similarity of juvenile Honey-buzzards and Common Buzzards

If mimicry is indeed occurring, which raptor is imitating which? Mimicry is predicted to be most effective when a scarce species imitates a commoner one (see www.britannica.com, entry for 'mimicry'). In the present case, Honey-buzzard is currently much the scarcer of the two species, the estimated European population (excluding Russia and Turkey) being 41,200–48,677 breeding pairs compared with 370,933–472,444 for Common Buzzard (Hagemeijer & Blair 1997). Data from the near-primeval habitats within Białowieża forest, Poland, suggest that Common Buzzard may also have been the more abundant species in prehistoric times, although not by the large margin suggested by the current total European population estimates. Recent breeding population densities for Common Buzzard and Honey-buzzard within these habitats have been recorded at around 0.5 and 0.2–0.3 breeding pairs per km^2 respectively (Tomiałojć & Wesołowski 2005; W. van Manen *in litt.*; L. Tomiałojć *in litt.*). Honey-buzzard is also a comparatively poorly defended species, possessing a relatively weak bill, and claws which are adapted primarily for digging and walking rather than for subduing and killing prey (Glutz von Blotzheim *et al.* 1971); Common Buzzards are stronger and fiercer. This would suggest that the evolutionary pressure for the mimicry is likely to be the avoidance of predation by a third species, Honey-buzzard having evolved such that its juvenile plumage mimics the plumage of the more aggressive Common Buzzard (and not vice versa).

Clues as to the possible identity of this third predator are provided by recent literature from western and central Europe. For example, data from The Netherlands during the period 1990–2004 showed that predation by Northern Goshawks affected up to 30.8% and 33% of Honey-buzzard nests in study areas in the Veluwe and Drenthe respectively, the data being averaged over five-year periods (Bijlsma 2004). These losses involved nestlings, fledglings and/or adults. This phenomenon has been increasing sharply in The Netherlands over the last 30 years, a trend ascribed partly to concur-

rent declines in the hawk's major prey species, such as pigeons (Columbidae) and Rabbits *Oryctolagus cuniculus*. In addition, Bijlsma (2004) described his observation of a nearly fledged, 41-day-old Honey-buzzard nestling being partly eaten by a juvenile female Goshawk, the young Honey-buzzard dying shortly after the hawk had been flushed off. In the German federal state of North Rhine-Westphalia, predation of nestlings by Northern Goshawk was the most frequent single recorded cause of breeding losses over the years 1972–98 in a state-wide monitoring programme for Honey-buzzard (Arbeitsgruppe Greifvögel Nordrhein-Westfalen der NWO 2000). The authors even went on to suggest that recent population increases in Northern Goshawk may be partly implicated in the observed decline in Honey-buzzard productivity over the same period. Their study recorded 346 unsuccessful nesting attempts out of 1,227 monitored, but in only 38 of these was it possible to establish the reason for failure. Undetected predation of adult birds may be the reason behind a proportion of the unattributed nesting failures. The study examined breeding success in terms of numbers of young to fledge, and so predation of fledged young may also have gone unrecorded.

A further indication of the status of Honey-buzzard as a prey species may be the head shape, which, as already discussed, lacks the hooded eyes, i.e. pronounced, projecting brows, of typical raptors. The eyes are positioned pigeon-like on a rather convex head surface and thus honey-buzzards must have better all-round vision than most raptors. A photograph of an adult male in Bijlsma (1993) shows that both eyes are visible simultaneously when the head is viewed from above, which is not the case with most other raptors. Extra vigilance must be especially important when digging out wasp nests on the ground, when the birds must be particularly vulnerable to attack (van Nie 2002). A fright-moult (shock-moult) reaction, in which an attacked bird instinctively sheds grasped feathers to allow it to escape, has also been described from adult Honey-buzzards, for example in response to Northern Goshawk attack. Honey-buzzard is so far the only raptor species known to exhibit this particular adaptation to predation pressure (van Nie 2002).

For the mimicry hypothesis to be valid, Common Buzzards must be less at risk of Northern Goshawk attack than are Honey-buzzards, owing to their being recognised as a well-defended species and so more likely to injure predators during an attack. Here, the available data are rather unclear. Glutz von Blotzheim *et al.* (1971) referred to numerous incidences of Northern Goshawks killing incubating *adult* raptors, including other Northern Goshawks and 'buzzards', with smaller raptors, such as Eurasian Sparrowhawk *A. nisus*, being even more regularly caught. A German study of Northern Goshawks during 1980–94, in an area of the border between the federal states of North Rhine-Westphalia and Lower Saxony (Krüger & Stefener 1996), recorded 13 instances of Northern Goshawk predation of fledged young and adult Common Buzzards (age not distinguished), compared with only one of Honey-buzzard from an analysis of 5,167 plucked prey remains (these statistics do not include downy nestlings, which are normally taken straight to the nest without being plucked; O. Krüger pers. comm.). However, the ratio of the German breeding populations of the two species is about 20:1 in favour of Common Buzzard (Hagemeijer & Blair 1997), and the study area concerned possesses a relatively low Honey-buzzard population density, at least on the North Rhine-Westphalian side of the state border (Arbeitsgruppe Greifvögel Nordrhein-Westfalen der NWO 2000). Ignoring the small sample size for a moment, we can conclude that even a ratio of 1:13 would represent an over-proportional take of Honey-buzzards. An update of these predation statistics for the period 1981–2002 (7,973 prey items; O. Krüger *in litt.*) yields an almost unchanged ratio of 2:25. In contrast, for a population of Northern Goshawks in the Dutch province of Drenthe, three Honey-buzzards and four Common Buzzards were reported among 3,286 pluckings, which clearly points towards Honey-buzzards being targeted preferentially by Northern Goshawks (Bijlsma 1993). The statistics of the predation frequency will, of course, be influenced in turn by the success of the mimicry adaptation and any protective behavioural strategies!

In support of the proposed difference in vulnerability, newly fledged Common Buzzards left alone by their parents are often highly vocal, whereas Honey-buzzards at this age are usually less so (Arbeitsgruppe Greifvögel Nordrhein-Westfalen der NWO 2000), being in general rather secretive and quiet. Bijlsma (1993)

described how young Honey-buzzards often remain in the vicinity of the nest between fledging and migrating: 'They behave in this phase of the breeding cycle, in contrast to when younger, very quietly. Even the arrival of a food-carrying parent initiates only little begging response. This type of behaviour has clear survival value, as both parents are away from the nest for long periods and the young are hardly capable of defending themselves against predators such as the Northern Goshawk' [my translation]. In contrast to this, Glutz von Blotzheim *et al.* (1971) described a vociferous behaviour of fledged juvenile Honey-buzzards. This seems, however, to refer specifically to birds in flight, perhaps accompanied by the parents (i.e. begging flights; Arbeitsgruppe Greifvögel Nordrhein-Westfalen der NWO 2000). The evidence for the vulnerability difference presented so far may not be conclusive but, taken as a whole, and despite the paucity of data and unavoidable circularity of the argument, it points towards Honey-buzzards being intrinsically rather more at risk of predation by Northern Goshawk than are Common Buzzards.

Whether or not a visual mimicry will be effective obviously depends on the predator responding to visual signals. Attacking other medium to large raptor species must be a risky action for a Northern Goshawk. For example, a Common Buzzard alerted to the attack could quite feasibly inflict an incapacitating injury on the hawk, resulting in eventual death from starvation. This means that an attacking hawk will have to execute a split-second decision: whether to carry through its attack or whether to pull out, if seen by its prey. This is in marked contrast to its tactics when attacking its more usual prey species, which are only capable of fleeing and not of self-defence. On the other hand, other raptor species must be relatively easy to approach unawares from behind, possessing relatively forward-facing eyes (though less so in Honey-buzzard) and often concentrating on locating their own prey (and especially vulnerable when sitting on the nest). It is likely that a perched Common Buzzard or Honey-buzzard, noticing the approach of the Northern Goshawk at the last moment, will open their wings and, if possible, try to turn their underside and talons toward the attacker. A flying bird is also likely to present talons. The strikingly Common Buzzard-like underwing, undertail and underbody pattern of juvenile Honey-buzzard may help to encourage the Northern Goshawk to pull out of the attack rather than press through with it, fearing a greater chance of injury than the Honey-buzzard is actually capable of inflicting. Observations of captive young birds confirm that fledged juvenile Honey-buzzards partially spread their wings when threatened (Heinroth & Heinroth 1926). Northern Goshawks often approach their prey from below using the ground as cover (Glutz von Blotzheim *et al.* 1971) and, during such an approach, a signal provided by the underparts patterning of a fleeing bird might prove an effective deterrent. In addition, captive fledged juvenile Honey-buzzards have been described as emitting a 'drawn-out, Common Buzzard-like mew' when agitated (Heinroth & Heinroth 1926), a tentative indication of a possible aural reinforcement of the visual signals upon being attacked.

Bijlsma, quoted in Arbeitsgruppe Greifvögel Nordrhein-Westfalen der NWO (2000), reported cases where adult Honey-buzzards have not been able to repel an attacking Northern Goshawk, even when aware of the attack, confirming that, in the case of Honey-buzzard at least, Northern Goshawks will sometimes take the risk of pressing home an attack on an alerted adult raptor. In many other cases, however, adult Honey-buzzards were seen to be successful in driving off attacking Northern Goshawks from themselves and/or their nestlings.

A persistent vulnerability of fledged Honey-buzzard juveniles to predation by Northern Goshawk, documented by Bijlsma (2004), despite their close resemblance to Common Buzzard, does not invalidate the mimicry hypothesis. Even if Northern Goshawks are not always taken in by the resemblance, the mimicry may lead in some cases to a momentary hesitation in the hawk's attack, allowing the young Honey-buzzard to escape. It is also feasible that a plumage mimicry which evolved in the distant past has persisted, although the Northern Goshawk in the meantime has evolved an ability to distinguish the two species and the subterfuge is currently rarely effective. In contrast with many of the classic cases of Batesian mimicry, the mimicked species does not exhibit an obvious warning (aposematic) coloration, so the effectiveness of the strategy is dependent on the Northern Goshawk carrying out a sophisticated (but fallible) assessment of

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53. Juvenile Honey-buzzard *Pernis apivorus* of the frequent dark/warm brown morph, Finland, September 2001. Note the overall similarity in plumage to that of the Common Buzzard *Buteo buteo* in plate 54, and the aquiline facial expression conferred by the dark mask.

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54. Second-calendar-year Common *Buzzard Buteo buteo*, Israel, April 2000.

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55. Juvenile Honey-buzzard *Pernis apivorus* of the frequent dark/warm brown morph, Sweden, September 2004. Note the striking similarity in underwing pattern, particularly the distribution of barring across the flight feathers, to that of the Common Buzzard in plate 56.

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56. Second-calendar-year Common Buzzard *Buteo buteo*, Greece, March 2005.

potential prey before attacking. The protective effect is obviously not so pronounced that young Honey-buzzards can afford to behave conspicuously!

Mimicry relationships in other Pernis *species*

Del Hoyo *et al.* (1994) and, in rather more detail, Ferguson-Lees & Christie (2001) and references cited therein describe various examples of plumage similarities in raptor species not closely related to each other, some thought to be coincidental, others adaptive. Intriguingly, Crested [Oriental] *P. ptilorhyncus* and Barred Honey-buzzards *P. celebensis*, the eastern counterpart species of *P. apivorus*, are thought to show mimicry relationships with hawk-eagles *Spizaetus*. In these cases, the direction of the mimicry is not clear, i.e. whether the hawk-eagle is mimicking the honey-buzzard with the advantage of appearing innocuous to its prey, or whether the honey-buzzard is feigning greater ferocity in order to deter potential predators. Van Balen *et al.* (1999) proposed the following mimic pairs within the Oriental region: 'Malaysian Crested Honey-buzzard' *P. p. torquatus* (adult dark morph) and Blyth's Hawk-Eagle *S. alboniger*; Malaysian Crested Honey-buzzard (adult 'normal' morph) and Wallace's Hawk-Eagle *S. nanus*; 'Javan Crested Honey-buzzard' *P. p. ptilorhyncus* (immature) and Javan Hawk-Eagle *S. bartelsi* (immature); Barred Honey-buzzard *P. c. steerei/winkleri* (adult and immature) and Philippine Hawk-Eagle *S. philippensis*; and 'Barred Honey-buzzard' *P. c. celebensis* (adult and immature) and Sulawesi Hawk-Eagle *S. lanceolatus*. Ferguson-Lees & Christie (2001) reached similar conclusions, and additionally referred to the broad mimicry-related similarity of *P. ptilorhyncus* subspecies to a group of Indo-Malayan *Spizaetus* spp. To the list of mimic-model pairs could tentatively be added 'Siberian Crested Honey- buzzard' *P. p. orientalis* and Mountain Hawk-Eagle *S. nipalensis* of the race *orientalis* (see for example Williams 2000), which are currently sympatric during the breeding season in Japan at least. These eastern *Pernis* taxa differ from *P. apivorus* by their larger size, prominent crest (in many cases), presence of a gular stripe and lack of an obvious carpal patch on the underwing. The similarities within the species pairs are described as extending to flight silhouette, presence or absence of crest, breast and belly coloration and tail pattern.

Mimicry on the wintering grounds

To what extent the *Buteo*-like plumage characteristics of juvenile Honey-buzzards confer any protection on the African wintering grounds is unclear. Here, the genus *Buteo* is represented above all by wintering eastern Common Buzzards ('Steppe Buzzards') *B. b. vulpinus* (Cramp & Simmons 1980), as well as by wintering Long-legged Buzzards *B. rufinus* and the African species Red-necked Buzzard *B. auguralis* (del Hoyo *et al.* 1994). Many juvenile Honey-buzzards show rather more rich, rufous-brown underbody coloration than western Common Buzzards (Forsman 1999), which might just possibly increase the protective effect in sub-Saharan Africa, the above-mentioned buzzard taxa having more rufous-coloured body plumage than does Common Buzzard. Steppe Buzzard is also, of course, sympatric with Honey-buzzard during the breeding season and this might be of significance in the evolution of this feature. The rufous tail of *vulpinus* (and *rufinus*) is not mimicked, however. An open question would be how much certain plumage features of darker juvenile Honey-buzzards – such as the dark secondaries and resulting contrast between inner and outer parts of the underwing, the often rather uniformly dark and/or rufous underbody and indeed even the dark eye-patch – have been influenced by the abundant presence of well-marked, juvenile Black Kites *Milvus migrans parasitus* on the wintering grounds.

The rather less *Buteo*-like appearance of adult Honey-buzzard could be consistent with the reduced vulnerability of adults and their need to advertise territories and find mates, thus favouring more unambiguous species recognition. Indeed, particularly for adult males of many species, conspicuousness often evolves as an advertisement of fitness, despite an obvious negative survival value. In comparison, in the eastern *Pernis* species it is often the adult plumages which are thought to exhibit mimicry. In only one of the above-mentioned *Pernis/Spizaetus* mimicry pairs proposed by van Balen *et al.* does the effect extend only to the 'immature' plumages (of both species in this case).

Edelstam & King (in Ferguson-Lees & Christie 2001) proposed a different hypothesis, namely that the enormous variability of (mainly adult) plumages of Honey-buzzard mimics a range of different raptor species on

the wintering grounds. According to Edelstam & King, the various plumage morphs mimic specific plumages of more powerful raptors, thus allowing Honey-buzzard to achieve protection from its enemies, the relative scarcity of each of the raptor models involved having caused the mimic to split into a number of morphs. Ferguson-Lees & Christie (2001) wrote of Honey-buzzard: 'Each morph of this relatively weak insectivorous kite corresponds to an age class or a colour morph of one or more mainly Afrotropical raptors, including six hawk-eagles, seven snake-eagles and two large Accipiters'. They mention in this regard Booted Eagle *Aquila pennata*, Short-toed Eagle *Circaetus gallicus*, Wahlberg's *Hieraaetus wahlbergi* and Long-crested Eagles *Lophaetus occipitalis*, Ayres's *H. ayresii* and Cassin's Hawk-Eagles *Spizaetus africanus*, together with the African breeding Snake-Eagles *Circaetus* spp., African Goshawk *Accipiter tachiro* and Great Sparrowhawk *A. melanoleucus*. Quite possibly, different evolutionary strategies are followed with respect to the highly variable adult and the rather more stereotyped juvenile plumages of Honey-buzzard.

The identity of potential predators in Africa south of the Sahara which might discriminate between *Buteo* and *Pernis* is unknown. However, the proposed mimicry of mainly Afrotropical small eagles described above suggests that predation pressure is significant and that survival benefits can be gained by mimicry on the wintering grounds. The fact that the insectivorous *Pernis* species spend much more time in their wintering than in their breeding ranges will, as pointed out by Edelstam & King, favour the development of mimicry of models present in winter. Nonetheless, this must be set against the intrinsically greater vulnerability of newly fledged birds on the breeding grounds. In contrast to the situation for European Honey-buzzard, there is relatively little overlap with the ranges of *Buteo* species on the wintering grounds of Crested [Oriental] Honey-buzzard, since *B. b. japonicus* winters only in the north of this area (Ferguson-Lees & Christie 2001). The fact that young European Honey-buzzards are accompanied in winter by *Buteo* models may have allowed the *Buteo* mimicry to develop in *Pernis apivorus* and not in *P. ptilorhyncus*. This, combined with the absence of *Spizaetus* eagles in the breeding areas of European Honey-buzzard, and the comparative lack of those eagles in the wintering grounds, may well have led to the divergent appearance of European Honey-buzzard compared with its eastern relatives.

Conclusion

The hypothesis that juvenile Honey-buzzards have evolved to mimic Common Buzzards is distinctly plausible on several counts. Given the present state of knowledge, all that can be attempted here is a plausibility analysis. The available field data are not extensive, while experimental evidence, comparing survival rates of two populations of Honey-buzzards, one *not* exhibiting mimicry of a better-armed species, is not available. Clearly, more data on Northern Goshawk predation rates of Honey-buzzard and Common Buzzard, differentiating if possible between adult, fledged young and nestling, and whether taken on or away from the nest, would contribute to the debate, as would further field observations and experiments with mounts (cf. Krüger 2002). Nonetheless, the hypothesis that mimicry has played a key role in the evolution of the juvenile Honey-buzzard's appearance stands up to the evidence currently available.

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57. Common Buzzard *Buteo buteo.*

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Report on scarce migrant birds in Britain in 2003

Part 2: Short-toed Lark to Little Bunting

Peter A. Fraser and Michael J. Rogers

This is the second part of this, the ninth annual Scarce Migrants report, which covers the passerine species from Short-toed Lark *Calandrella brachydactyla* to Little Bunting *Emberiza pusilla*. Part 1 of the report, which dealt with non-passerines, has already been published (*Brit. Birds* 99: 74–91).

Of particular interest in 2003 was the simultaneous arrival and record totals of two exciting *Phylloscopus* warblers from Siberia. Yellow-browed Warbler *Ph. inornatus* arrived throughout much of September and October, while a three-figure flood of Pallas's Leaf Warblers *Ph. proregulus* in October brightened up many patches of east-coast woodland. Also from the east, but arriving from late spring

Table 1. These data show the relative abundance of each species in 2003, by ranking the number of individuals recorded during 2003 in the context of previous annual totals. Note that the number of years of comparable data varies according to species. This table thus highlights in more detail which species were recorded in relatively high or low numbers in 2003 (for example 2003 was the best year on record for both Pallas's Leaf *Phylloscopus proregulus* and Yellow-browed Warblers *Ph. inornatus*).

Species	No. in 2003	Year rank	Years of data
Pallas's Leaf Warbler *Phylloscopus proregulus*	303	1	46
Yellow-browed Warbler *Phylloscopus inornatus*	853	1	36
Rose-coloured Starling *Sturnus roseus*	63	3	46
Ortolan Bunting *Emberiza hortulana*	91	3	36
Great Grey Shrike *Lanius excubitor*	157	4	18
Common Rosefinch *Carpodacus erythrinus*	170	4	46
Richard's Pipit *Anthus richardi*	129	7	46
European Serin *Serinus serinus*	59	10	46
Woodchat Shrike *Lanius senator*	21	12	46
Little Bunting *Emberiza pusilla*	24	12=	46
Red-breasted Flycatcher *Ficedula parva*	103	13=	36
Barred Warbler *Sylvia nisoria*	161	14	36
Red-backed Shrike *Lanius collurio*	158	14	18
Marsh Warbler *Acrocephalus palustris*	33	16	18
Golden Oriole *Oriolus oriolus*	77	18	36
Short-toed Lark *Calandrella brachydactyla*	13	23	46
Aquatic Warbler *Acrocephalus paludicola*	20	23	46
Tawny Pipit *Anthus campestris*	22	25	46
Icterine Warbler *Hippolais icterina*	62	27	36
Bluethroat *Luscinia svecica*	64	28=	36
Melodious Warbler *Hippolais polyglotta*	18	32	36

onwards, came the third-highest total of Rose-coloured Starlings *Sturnus roseus*; and the third-highest total of Ortolan Buntings *Emberiza hortulana*, most of which were in the autumn. Common Rosefinches *Carpodacus erythrinus* and Great Grey Shrikes *Lanius excubitor* both appeared in good numbers, unlike many Scandinavian night migrants. Arrivals from southern Europe generally fared poorly, with relatively few Short-toed Larks, Tawny Pipits *Anthus campestris* or Melodious Warblers *Hippolais polyglotta*.

It is only by annual monitoring of these species, based upon records submitted to, and accepted by, local or regional records committees, that short-term anomalies and long-term trends can be detected. Readers are referred to the introduction to Part 1 of this report for fuller details of the nature of the records it contains. Additional data for each species may be found on the 'Scarce Migrants' website at http://www.scarce-migrants.org.uk

Short-toed Lark *Calandrella brachydactyla*

Number of individuals in 2003	Number of individuals in 1958–2003	Year rank	Highest annual maxima 1958–2003			Annual means 1958–2003				
			1996	1994	1999	1958–69	1970–79	1980–89	1990–99	2000–03
13	636	23	45	39	31	5	11	13	27	18

It is necessary to go back as far as 1988 to match the poor showing of 13 Short-toed Larks reported in 2003. An overwintering bird at Cowbar, Cleveland, present from 4th to 12th January, was extremely unusual but not unprecedented. Spring passage got underway on 23rd April, when there was one at Conwy Morfa, Caernarfonshire, followed by singles on Fair Isle, Shetland, on 26th, and Scolt Head, Norfolk, on 29th. A further three appeared in May, at Skern, Devon, on 8th, on Lundy, Devon, on 12th, and on Blakeney Point, Norfolk, on 30th; while the last of the spring arrived on North Ronaldsay, Orkney, on 9th June.

Just five were seen in autumn, between 17th September and 11th October, the first being at Loch of Spiggie, Shetland, on 17th–18th September. Singles at North Warren, Suffolk, on 18th, and at Trevose Head, Cornwall, on 24th, were the only other September reports. The other two both appeared on 11th October, but at opposite ends of the country: at Virkie, Shetland, and at Treen, Cornwall.

Examination of the pattern of occurrence of Short-toed Larks in Britain reveals that, typically, autumn records have outnumbered those found during the spring. In recent years, however, the number of autumn migrants has declined dramatically, and the five in autumn 2003 represent a particularly poor showing. Indeed, Short-toed Lark seems to be returning to its former status as a national rarity. The generally high numbers seen between 1991 and 2000 have been followed by a steady decline in reports in Britain during 2001–03 (although the present numbers remain higher than the annual totals found during and prior to the 1970s).

Although several European breeding populations, in particular the important Turkish one, were stable or increased during 1990–2000, other sizeable populations in Spain and Russia declined (and overall, the status of this species as a breeding bird in Europe is evaluated as 'Declining'; BirdLife International 2004). Are these population trends reflected in the British numbers? A dearth of autumn migrants is most likely to reflect problems in populations of a more easterly origin (see *Brit. Birds* 97: 651–652).

Richard's Pipit *Anthus richardi*

Number of individuals in 2003	Number of individuals in 1958–2003	Year rank	Highest annual maxima 1958–2003			Annual means 1958–2003				
			1994	2001	1995	1958–69	1970–79	1980–89	1990–99	2000–03
129	3,351	7	353	175	160	34	51	65	130	120

A good autumn passage ensured that 2003 was a good year for Richard's Pipit in Britain (fig. 1), the

seventh-best since 1958. At the beginning of the year, two overwintering birds were found at inland localities: at Birley Edge, South Yorkshire, from 14th January to 18th March; and at Langford, Nottinghamshire, from 16th February to 29th March.

Spring passage was unexceptional, with just four reported, three of which arrived during 21st–25th April: at Sennen, Cornwall, on 21st April; at the King's Fleet, Suffolk, on 22nd–24th April; and on St Martin's, Scilly, on 25th–26th April. The other spring bird was seen at Beeston Bump, Norfolk, on 7th May.

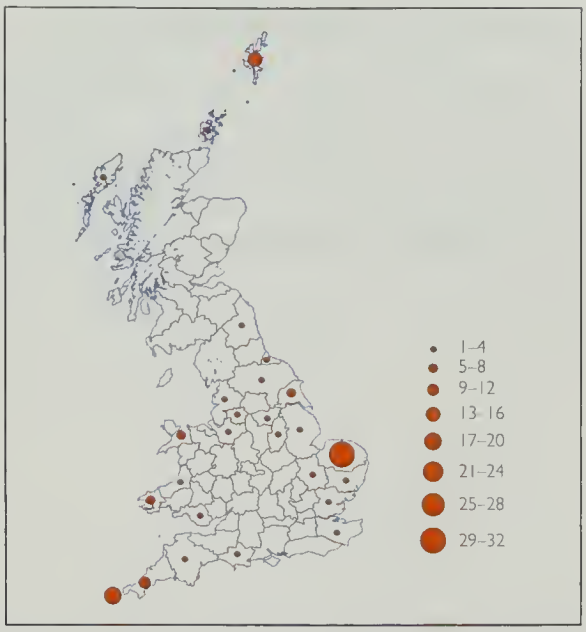

Fig. 1. Distribution of Richard's Pipits *Anthus richardi* in Britain in 2003, when Norfolk, Scilly and Shetland were clearly the most important counties for this species.

The first of the autumn was at Spurn, East Yorkshire, on 6th September, an exceptionally early date. There were no further records until 20th September, when an influx began, bringing 17 birds to widely scattered locations, from Shetland to Cornwall, before the end of the month. Norfolk, with seven, and Shetland, with five, enjoyed the bulk of this early influx. Typically, October proved to be the best month, with fresh arrivals occurring almost daily, 16 being found in the first ten days, 34 in the middle ten-day period, and a further 30 during 21st–31st. Arrivals continued daily, albeit in reduced numbers, into November, with 20 new birds appearing in the first half of the month, including four on Bardsey, Caernarfonshire, on 5th–6th. Thereafter, passage dried up, and just four more were discovered: three on 21st–22nd November, and one on 30th. At the tail end of the year, a wintering bird was discovered on 5th December at Llanilid, Glamorgan, which remained until the end of the year.

Rebecca Nason

58. Richard's Pipit *Anthus richardi*, St Mary's, Scilly, October 2003.

Tawny Pipit *Anthus campestris*

Number of individuals in 2003	Number of individuals in 1958–2003	Year rank	Highest annual maxima 1958–2003			Annual means 1958–2003				
			1992	1983	1993/77	1958–69	1970–79	1980–89	1990–99	2000–03
22	1,128	25	57	56	45	13	27	36	29	15

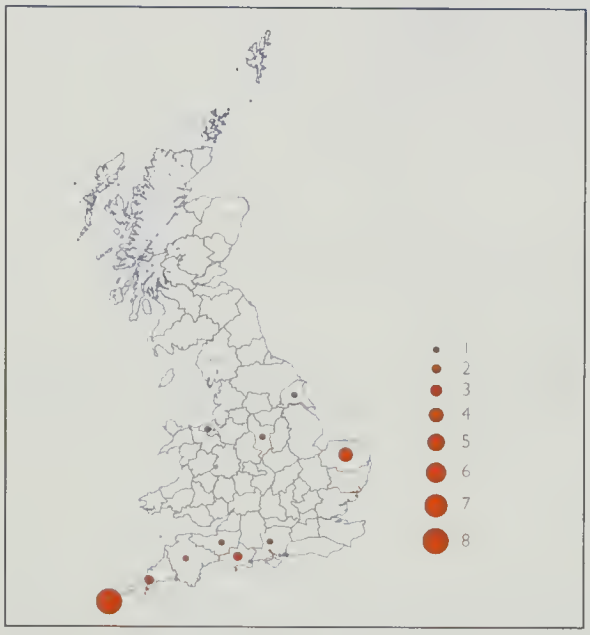

Fig. 2. Distribution of Tawny Pipits *Anthus campestris* in Britain in 2003.

This proved to be the best year for Tawny Pipits in Britain since 1997 (when 27 were seen), and a considerable improvement on three of the four years from 1999 to 2002, when fewer than ten were reported. In 2003, five spring migrants was just equal to the ten-year rolling average since 1994, but the 17 in autumn was a good showing, in fact the best since 19 in 1997.

Of the five spring reports, the first was at Hemsby, Norfolk, on 26th, the bird then moving to nearby Winterton dunes on 27th where it remained until 3rd May. Another appeared at Beeston Bump on 1st May, followed by singles at Spurn on 3rd–4th May, on Blakeney Point on 16th–17th May, and at Point of Ayr, Flintshire, on 9th–10th June.

In autumn, Scilly was the place to be to find Tawny Pipit; there were no fewer than eight records there and another six in the southwest counties (see fig. 2). The first of the autumn was on Bryher, Scilly, on 24th August, this being closely followed by another August record, on 26th at Nanjizal, Cornwall. Eleven turned up in September, all in the southwest with the exception of singles at Weybourne, Norfolk, and at Barton-on-Sea, Hampshire, both on 27th. Just four were found in October, but this did include one at Aston-on-Trent Gravel-pit,

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59. Tawny Pipit *Anthus campestris*, St Mary's, Scilly, October 2003.

Derbyshire, on 5th–7th, the first county record and a great bird to find inland. The last of the year was on St Mary's, Scilly, on 22nd October.

Sharrock (1974) suggested that the relatively small numbers which occur in spring, compared with other species with a similar breeding distribution (such as Hoopoe *Upupa epops* and Golden Oriole *Oriolus oriolus*), imply that Tawny Pipits are less prone to overshooting than these other species. He also interpreted the south/southeast bias in the distribution of autumn records, with few along the east coast north of Norfolk, as reflecting a species well equipped to avoid lateral displacement in adverse weather, something perhaps to be expected in a diurnal migrant. As for Short-toed Lark, the conservation status of Tawny Pipit in Europe is Declining (BirdLife International 2004) so, assuming that weather conditions are unlikely to play a major role in arrival patterns in Britain, the prospects for 2003 being the beginning of an upturn in fortunes may not be good.

Bluethroat *Luscinia svecica*

Number of individuals in 2003	Number of individuals in 1968–2003	Year rank	Highest annual maxima 1968–2003			Annual means 1968–2003			
			1985	1981	1993	1968–79	1980–89	1990–99	2000–03
64	4,541	28=	622	333	267	98	186	116	85

It remains something of a mystery why 2003 was an excellent year for some species thought of as Scandinavian night migrants – such as Wryneck *Jynx torquilla* – yet it was a dreadful year for others – such as Bluethroat. With just 63 reported, 2003 was the one of the poorest years since 1968 for this attractive species.

Two 'White-spotted' Bluethroats *L. s. cyanecula* were found in 2003, both on typically early spring dates: on Gugh, Scilly, on 21st–22nd March, and on Unst, Shetland, on 2nd April. There were no further reports until 4th May, when 'red-spotted' males appeared at Geosetter, Shetland, and at Hadleigh, Essex. These proved to be something of a false dawn, however, as there were no further arrivals until one on Bardsey on 15th. This heralded the start of the main influx of the spring, with 28 arriving in the second half of May (Shetland alone accounted for 24 of these, while neighbouring Orkney could muster just two, both on North Ronaldsay). Away from the Northern Isles, the only other May reports came from Ingol, Lancashire & North Merseyside, on 25th, and Newtonmore, Highland, on 30th. Four more arrived in June.

Autumn records again showed a strong northern bias, with Shetland being responsible for 17 of the total of 27. The first of six on Fair Isle was found on 12th September, followed by another six elsewhere in the county to the end of the month. Just four were seen on Orkney, all on North Ronaldsay. Away from the Northern Isles, singles were at Girdleness, Northeast Scotland, on 20th; on Tresco, Scilly, on 24th–25th; and on Brownsman, Northumberland, on 27th. Shetland continued its domination into October, accounting for five of the eight records; elsewhere, one was at Saltfleet, Lincolnshire, on 1st, while singles at Blackdog, Northeast Scotland, on 22nd and on St Mary's on 23rd were the last reports of the year.

There are a number of ringing recoveries involving Bluethroats trapped in Britain. Two extraordinary records of birds retrapped at the same ringing site at Slapton, Devon, suggest that not all British migrants are weather dependent, and that some follow an established migration route: one ringed on 17th May 1958 was retrapped on 5th May 1963; while another ringed on 1st September 1968 was retrapped at the same site on 14th September 1970 (Grantham 2005a).

Aquatic Warbler *Acrocephalus paludicola*

Number of individuals in 2003	Number of individuals in 1958–2003	Year rank	Highest annual maxima 1958–2003			Annual means 1958–2003				
			1976	1991	1972	1958–69	1970–79	1980–89	1990–99	2000–03
20	1,221	23	102	62	61	10	40	23	42	15

With 20 records, 2003 was the best year for Aquatic Warbler in Britain since 1999, reversing the downward

Fig. 3. Annual totals of Aquatic Warblers *Acrocephalus paludicola* in Britain, 1958–2003, showing arrival times of migrants in ten-day periods. This figure emphasises the extent to which autumn passage is concentrated into the three-week period in mid to late August.

trend that has been apparent since 1997, although still falling well short of the total of 46 in that year.

Typically, autumn passage was confined largely to the counties bordering the English Channel and Bristol Channel, extending along the south coast from Sussex to Cornwall and Scilly. In total, 15 were seen in these south/southwest coastal counties, while in August three others were found in South Wales: at Gwent Levels, Gwent, on 6th and 18th, and at Kenfig, Glamorgan, on 14th. In addition, single birds trapped on Orfordness, Suffolk, on 14th and 15th August were exceptional, being only the sixth and seventh records for the county, and the first since 1987.

The first of the year was at Gwent Levels on 6th August, and a further nine were found up to 15th of that month. Three others were seen in the second half of August, four during the first half of September and three in the second half, the last being on St Mary's on 27th September. Pett Level, in Sussex, with a total of five birds, proved to be the best site for Aquatic Warblers in 2003.

Aquatic Warbler is on the Global IUCN Red List Category as 'Vulnerable' (BirdLife International 2004). The small European population decreased substantially during 1970–90, and, even though key populations in Belarus and Ukraine fluctuated during 1990–2000, the species continued to decline in many other areas; this decline is predicted to continue, as a result of ongoing habitat loss. A conference in May 2003 in Minsk, Belarus, attended by representatives of 12 countries, pledged to restore habitat for breeding Aquatic Warblers, including 720,000 ha of drained peatland in Belarus (http://www.birdlife.org/news/news/2003/05/aquatic_warbler.html). Ringing is an extremely important source of information about this species in Britain, and ringing effort thus has an impact on the number of records each year. There is little information from recoveries, but two Polish birds ringed as nestlings and with consecutive ring numbers were trapped within an hour of each other on 25th August 1990, one at Chew Valley Lake, Avon, the other at Helston, Cornwall (Wernham *et al.* 2002). Other nestlings from that same Polish breeding site in 1990 were trapped in France (two) and Belgium in August of that year (Grantham 2004).

Marsh Warbler *Acrocephalus palustris*

Number of individuals in 2003	Number of individuals in 1986–2003	Year rank	Highest annual maxima 1986–2003			Annual means 1986–2003		
			1992	1994	1997	1986–89	1990–99	2000–03
33	912	16	106	75	63	32	61	44

Although Marsh Warbler is a common breeding bird in adjacent regions of continental Europe, its fortunes in Britain continue to decline. This is reflected in the number of migrants reaching Britain, which, in 2003, numbered just 33, making it the third-worst year since 1986. Marsh Warbler is one of the latest migrants to return to the breeding grounds, and few arrive in northwest Europe before mid May. In 2003, the first was at Quendale, Shetland, on 21st May, this being followed by a further five in May, eight during 1st–10th June, five during 11th–20th June and then a late flurry of three on 27th June. Eight of the 22 were in Shetland, while Norfolk and Suffolk together accounted for a further seven; the remainder were reported from widely scattered localities from Scilly to Kent and north to Northumberland. Apart from one at Viewforth, Orkney, on 1st July, there were no further reports until 24th August when one appeared on Fair Isle. During the autumn as a whole, Shetland accounted for six of the ten records, others in September being found at Spurn on 19th and at Clachan Farm, Western Isles, on 30th. Most appeared towards the end of September, five birds being found between 26th September and 1st October. The last records of the year were on North Ronaldsay and at Pett Level, both on the rather late date of 17th October.

One ringed as a nestling in 1985 in the now-extinct breeding colony in Worcestershire was found in Greece in October of the same year (Wernham *et al.* 2002). This reflects the known autumn migration route of Marsh Warblers in the west of their range: birds initially head east-southeast into the Middle East before continuing down into East African winter quarters via the Red Sea.

Icterine Warbler *Hippolais icterina*

Number of individuals in 2003	Number of individuals in 1968–2003	Year rank	Highest annual maxima 1968–2003			Annual means 1968–2003			
			1997	1992	1995/77	1968–79	1980–89	1990–99	2000–03
62	3,660	27	286	281	173	79	104	139	71

With just 62 reported, 2003 was overall a disappointing year for Icterine Warblers in Britain. However, 30 were reported during the spring, making this the eighth-best spring since 1968. Spring passage began on 16th May with one at Vidlin, Shetland; thereafter, a concentrated arrival produced a further 23 during that month, 19 of them in Shetland. Elsewhere, two were at Flamborough Head, East Yorkshire, on 26th May, followed by singles there on 29th and 31st. A further five were found during the first eight days of June (one on Brownsman, Northumberland, on 1st, two in Shetland, both on 2nd, and singles at Herston, Orkney, and on Bardsey, both on 8th June), while a late bird was seen on Fair Isle on 5th July.

This good spring was followed by a disappointing autumn – with just 32 records, the poorest since 1968. The first appeared at Weybourne on 10th August, and marked the start of a small but steady arrival throughout the month, when 15 were scattered between Orkney and the Western Isles (remarkably, none was seen in Shetland) south to Kent, Pembrokeshire and Scilly. The trickle of migrants continued during September, when three on 10th, two on 14th and three on 22nd–23rd were the only multiple arrivals, although the distance between them suggested that there was no common factor affecting their arrival. The only October record was one on St Mary's on 11th–14th October.

Melodious Warbler *Hippolais polyglotta*

Number of individuals in 2003	Number of individuals in 1968–2003	Year rank	Highest annual maxima 1968–2003			Annual means 1968–2003			
			1981	1996	1983	1968–79	1980–89	1990–99	2000–03
18	1,143	32	60	59	54	29	39	30	26

Since the collation of national records began, in 1968, there have been fewer Melodious Warblers in only three years: 1999 (14), 1971 (13) and 1969 (11). Of the 18 in 2003, just three arrived in spring: on St Mary's on 4th May; at South Gare, Cleveland, on 31st May (the first county record); and on Sanday, Orkney, on 11th June. The Orkney bird was trapped, and was relocated the following day on Foula, Shetland, where it remained until 15th.

One on St Mary's on 25th July, was the only report in that month, but this was followed by seven in both August and September. Eleven of the 15 were, predictably, in the southwest, while others were seen at Porth Meudwy, Caernarfonshire, on 2nd August; and on North Ronaldsay, one on 18th–24th August, and a second on 10th September. The last of the year, and perhaps the most unexpected record of the autumn, was on Barra, Western Isles, during 1st–12th October.

Most breeding populations of Melodious Warblers in Europe were thought to be increasing or stable during 1990–2000 (BirdLife International 2004). However, the sizeable population in France declined during that time, and no trend data were available for the Spanish population, and this might help to explain the generally unremarkable numbers in Britain since 1990 (with the exception of 1996).

Barred Warbler *Sylvia nisoria*

Number of individuals in 2003	Number of individuals in 1968–2003	Year rank	Highest annual maxima 1968–2003			Annual means 1968–2003			
			2002	2001/1994	1997	1968–79	1980–89	1990–99	2000–03
161	5,184	14	296	238	219	144	108	158	199

All 161 Barred Warblers reported in 2003 occurred during the autumn, with the first at Vidlin on 7th August, followed by one on Fair Isle the following day. Subsequently, the number of new arrivals increased steadily through August, when c. 22 were found in total. Arrivals continued during September, which was the peak month, with c. 97 new birds found, the last ten days being the peak period for new birds turning up. Another 15 appeared in early October, 16 during 11th–20th of that month and seven in late October. Remarkably, three were found in early November (including two as far north as Shetland in the first week of the month), and these were followed by an exceptionally late bird at Aberlady Bay, Lothian, on 20th November.

Shetland enjoyed a good year, with at least 91 birds, of which Fair Isle alone picked up at least 22, while Orkney accounted for a further 18 and the Western Isles for 6. The entire east coast, from Northeast Scotland to Essex, mustered a total of 37, the south coast from Sussex to Scilly picked up eight, and there was just one in Wales, at Strumble Head, Pembrokeshire, on 12th September.

Pallas's Leaf Warbler *Phylloscopus proregulus*

Bill Baston

60. Pallas's Leaf Warbler *Phylloscopus proregulus*, Southwold, Suffolk, October 2003.

Number of individuals in 2003	Number of individuals in 1958–2003	Year rank	Highest annual maxima 1958–2003			Annual means 1958–2003				
			2003	1997	1994	1958–69	1970–79	1980–89	1990–99	2000–03
303	1,783	1	303	171	161	3	9	39	83	110

In 2003, this species enjoyed an outstanding autumn and a record year, accolades shared with Yellow-browed *Ph. inornatus* and Hume's Warblers *Ph. humei*. For four weeks in October and November, many birders found one or more of these three delightful warblers at favourite patches of migrant cover right the way down the east coast. What made the influx of Pallas's Leaf Warblers all the more impressive was the sheer scale and impact of the arrival (fig. 4). The first, at Talmine Bay, Highland, on 11th October, gave no indication of what was about to follow. The deluge began on 13th when 14 appeared, followed by 33 on 14th, 25 on 15th, 19 on 16th, 20 on 17th and 18 on 18th. Arrivals continued on a daily basis throughout October, with 11th–20th accounting for a minimum of 140 birds, while 21st–31st brought a further 101 new arrivals. The influx continued on a smaller scale into November, with 49 during 1st–10th, and ten more during 11th–20th. The end of November saw just two new birds, on 21st and 25th, while the last of the year was at Loe Pool, Cornwall, on 14th December.

What was particularly interesting about this influx was the simultaneous appearance at widely scattered locations throughout Britain. For example, on 13th October, the first day of the influx, birds appeared from Shetland south to Lincolnshire, while the next day they extended further south still, with arrivals from Norfolk to Kent, and reached Cornwall by 15th. The vast majority were reported from the east-coast counties between Cleveland and Suffolk, Norfolk alone accounting for a minimum of 60, while 53 appeared in East Yorkshire, of which no fewer than 21 were at Flamborough Head alone. Many county record totals were broken. Although several appeared in the southwest counties, only one reached Wales – on Bardsey on 27th October.

While it seems likely that there is some duplication of records here, with birds moving between sites, it is equally likely that many more were overlooked.

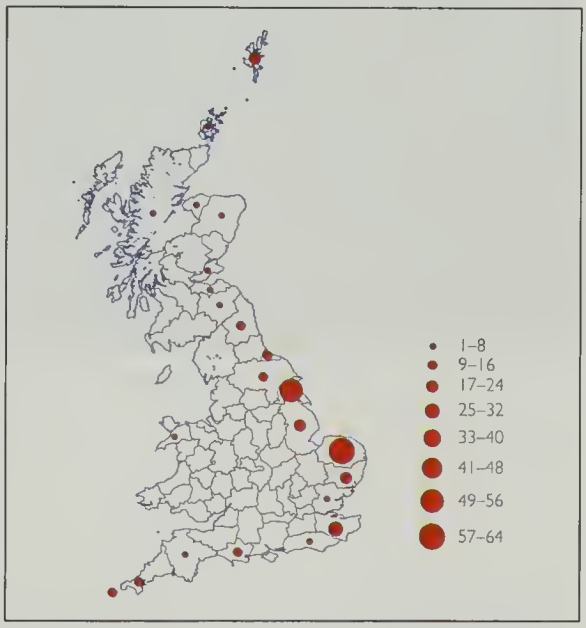


Fig. 4. Distribution of Pallas's Leaf Warblers *Phylloscopus proregulus* in Britain in 2003. Unprecedented numbers were recorded in autumn 2003 and, predictably, the North Sea coastline was the place to be to find your own Pallas's Warbler.

Yellow-browed Warbler *Phylloscopus inornatus*

Number of individuals in 2003	Number of individuals in 1968–2003	Year rank	Highest annual maxima 1968–2003			Annual means 1968–2003			
			2003	1988	1985	1968–79	1980–89	1990–99	2000–03
853	9,093	1	853	739	542	72	322	328	434

As with the previous species, 2003 proved to be the best year on record for Yellow-browed Warblers in Britain (fig. 5). The year started with an overwintering bird at Stiffkey, Norfolk, present from autumn 2002 and last reported on 25th March, while another midwinter bird was seen at Helston on 4th–5th January. There were no further reports until the first of the autumn appeared at Chapman's Pool, Dorset, on 1st September, an exceptionally early date for a south-coast site. Just two more appeared during the first week of September, including another unexpected record, an inland bird at Carsington Water, Derbyshire, on 7th. More typically, the first influx began on 11th September, with reports from

Rebecca Nason

61. Yellow-browed Warbler *Phylloscopus inornatus*, Fair Isle, Shetland, September 2003.

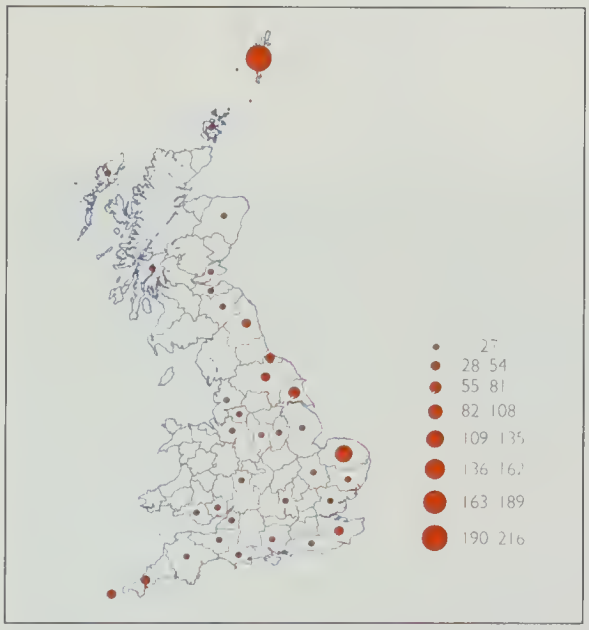


Fig. 5. Distribution of Yellow-browed Warblers *Phylloscopus inornatus* in Britain in 2003. A record year for Yellow-browed Warbler, but it is interesting to compare the map with that of Pallas's Leaf Warbler *Ph. proregulus* (fig. 4), and the extent to which Yellow-browed Warblers penetrated inland, while Pallas's apparently stayed close to the coast.

Shetland and Northumberland. Thereafter, new arrivals appeared on an almost daily basis throughout September, the vast majority in Shetland, although birds reached Norfolk from 15th, and one was on Lundy, Devon, on 23rd. Arrivals increased and became more widespread during the last ten days of September, when a minimum 153 were reported, most from 26th onwards. There was a slowdown in early October, despite at least 60 new birds being reported during 1st–10th, but a second major influx became apparent from 12th. During the middle ten-day period in October, a whopping 260+ Yellow-browed Warblers were reported, and another 130+ in the last ten days of the month. Consequently, October 2003 became the best month ever for Yellow-browed Warblers in Britain, with c. 460 new arrivals. Inevitably, numbers declined into November, although a further 62 were found in the first half of the month, most of these during the second week. New arrivals continued throughout late November and much of December, with no obvious pattern in distribution, although many were in the southwest. It seems likely that most were earlier arrivals filtering through to potential wintering areas, although few were seen on more than one day. Despite the scale of this influx, only a handful reached Wales and the northwest coast of England.

Red-breasted Flycatcher *Ficedula parva*

Number of individuals in 2003	Number of individuals in 1968–2003	Year rank	Highest annual maxima 1968–2003			Annual means 1968–2003			
			1984	1976	2002	1968–79	1980–89	1990–99	2000–03
103	3,367	13=	196	174	138	75	115	88	108

A small arrival in late May and early June 2003 brought singles to Vidlin on 30th–31st May, Blakeney Point and Fair Isle, both on 7th June, and Lundy, Devon, on 11th June. There were no further reports until the first of the autumn arrived on Whalsay, Shetland, on 22nd August. Just four were found in the first half of September, but a more widespread arrival took place from 20th September onwards, when a total of 47 were found along the east coast between Shetland and Suffolk. Of these, Shetland accounted for 20, East Yorkshire eight, Orkney seven and Norfolk five. Just nine new arrivals were reported during the westerly dominated weather of early October, but a second influx during 11th–16th brought another 24 birds. A further ten were found in the second half of October, but just three in November, while the last of the year was reported from Horseshoe Plantation, Sussex, on 16th December.

Golden Oriole *Oriolus oriolus*

Number of individuals in 2003	Number of individuals in 1968–2003	Year rank	Highest annual maxima 1968–2003			Annual means 1968–2003			
			1994	1992	1997	1968–79	1980–89	1990–99	2000–03
77	3,100	18	235	184	157	48	84	132	90

Away from known breeding areas, 77 Golden Orioles were reported in 2003, making this a below-average year. The pattern of spring passage was fairly typical, stretching from 25th April to 21st June. After the first, at Frostenden, Suffolk, a further nine were reported in April, most of these being in the southwest and Pembrokeshire, although there was another bird in Suffolk, at Minsmere on 30th. Another 24 were found during the first three weeks in May, but the last ten days of that month brought at least 27 new arrivals, including ten in Scilly, five in Shetland, and others in Avon, Cornwall, Derbyshire, Devon, Hampshire, Kent and Norfolk, as well as an unusual record at Taynish, Argyll. Migrants continued to turn up through the first week of June, a further seven being reported to 7th. Following a few blank days, six more were found between 12th and 16th, while the last of the spring was reported from Stoke Beach, Devon, on 21st June. There was just one autumn report, from Severnside, Avon, on 30th August.

The status of Golden Oriole as a breeding bird in Europe is 'Secure' (chiefly because the populations in the eastern part of its European range are stable), but during 1990–2000 the species apparently declined in Denmark, Germany, Belgium and France, as well as Britain (BirdLife International 2004). Given that British migrants are chiefly spring overshoots from neighbouring countries, the generally downward trend of annual numbers shown in this report over the past decade or more is perhaps not unexpected (fig. 6).

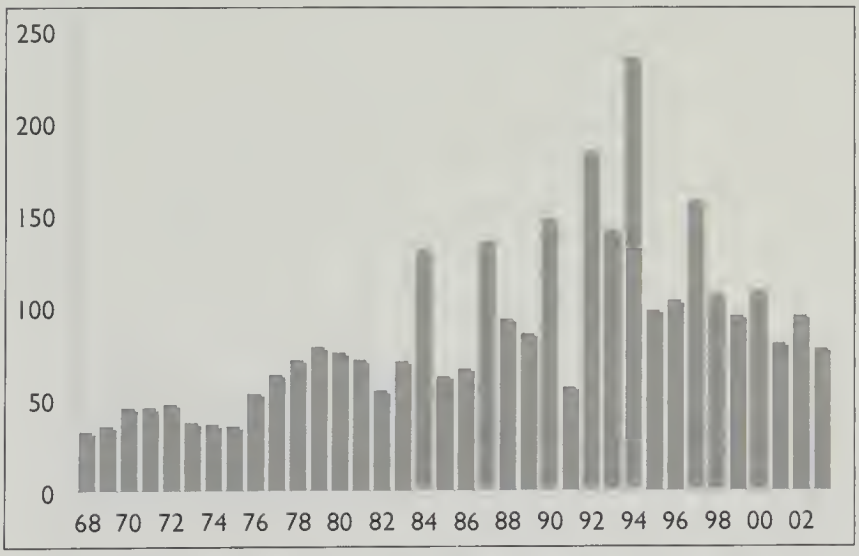


Fig. 6. Annual totals of migrant Golden Orioles *Oriolus oriolus* in Britain, 1968–2003. Numbers have generally declined since the early 1990s.

Red-backed Shrike *Lanius collurio*

Number of individuals in 2003	Number of individuals in 1986–2003	Year rank	Highest annual maxima 1986–2003			Annual means 1986–2003		
			1988	1998	1992	1986–89	1990–99	2000–03
158	4,102	14	423	374	366	256	231	191

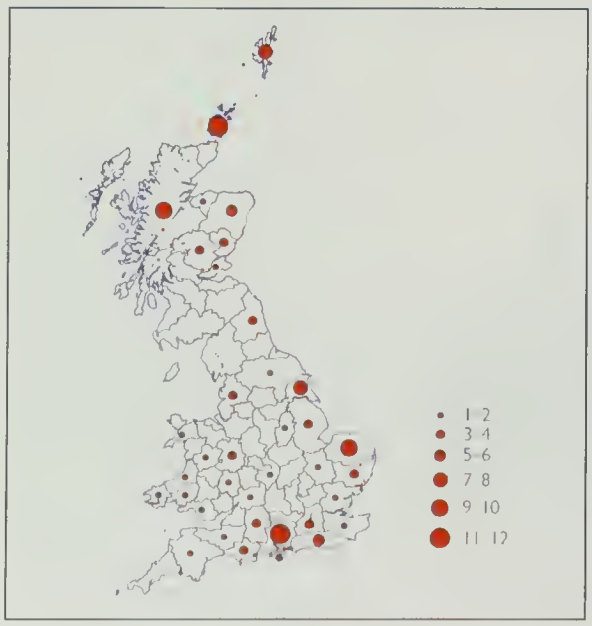
With 99 birds reported during spring passage, numbers at this season were not substantially lower than in the previous five years, although well down on some springs in the late 1980s and 1990s. The first birds appeared on 12th May, with one on Whalsay, two on Fetlar and two on Unst (all Shetland), and one at Birsay, Orkney. Subsequently, new arrivals were reported almost daily throughout May, although the vast majority were in the Northern Isles, and no fewer than 64 in Shetland. In contrast, one at Winterton, Norfolk, on 27th May was the first to be reported in England. Another 11 appeared during the first week in June but spring migrants tailed off markedly thereafter, with just seven more records, the last on North Ronaldsay on 18th.

One July report, a male at Marham Fen, Norfolk, on 6th, probably relates to a dispersing bird rather than an early migrant. In contrast to the spring, autumn passage was particularly disappointing, with just 58 birds reported – the worst autumn on record since 1986, when compilation of national totals began (and making this a poor year overall). The first was seen on Foula on 12th August, and 16 others followed before the end of the month. The trickle continued through September, the 18 new birds in the first ten days of the month constituting the autumn's 'peak'. Another 14 in September preceded eight in early October and the last of the year was at Eccles-on-Sea, Norfolk, on 2nd November.

The migration route of Red-backed Shrikes is neatly illustrated by several ringing recoveries, all of which date back to a time when the British breeding population was in better shape: a nestling ringed in Surrey on 6th July 1958 was recovered on Kos, in the Aegean Sea, in September 1958; a nestling ringed in 1960 was recovered in Germany the same year; and a first-year male ringed in Northumberland on 28th August 1954 was recovered in Sicily on 24th September the same year. European breeders loop round the eastern end of the Mediterranean in autumn before heading south through Egypt to their southern African wintering grounds (Wernham *et al.* 2004).

Great Grey Shrike *Lanius excubitor*

Number of individuals in 2003	Number of individuals in 1986–2003	Year rank	Highest annual maxima 1986–2003			Annual means 1986–2003		
			1998	1991/90	2003	1986–89	1990–99	2000–03
157	2,243	4	238	160	157	132	128	110



The grand total of 157 new birds gave 2003 the fourth-highest total of Great Grey Shrikes reported in Britain since 1986. Several wintering birds which arrived in 2002 remained into 2003, and these are excluded from the totals here. Nonetheless, there was still a good spread of new arrivals (or new discoveries) in the early part of the winter, including 16 in January and eight in February, at locations throughout the country. Spring passage, detectable by the number of one-day birds reported, commenced around 18th March, 11 birds being reported to the end of the month and a further ten in April, the last being two in East Yorkshire on 24th, at East Newton and Flamborough Head. Two

Fig. 7. Distribution of Great Grey Shrikes *Lanius excubitor* in Britain in 2003.

Paul Gale

62. Great Grey Shrike *Lanius excubitor*, Roydon Common, Norfolk, March 2003.

others were seen in May, at Urafirth, Shetland, on 20th–21st May, and on Skomer, Pembrokeshire, on 30th–31st May. The former was presumably just a late migrant, but perhaps the Welsh bird was more likely a wandering, non-breeding individual.

Surprisingly, the first of the autumn was a returning bird, back on its regular wintering territory at Elveden, Suffolk, on 10th October. The following day heralded the start of the main east-coast arrival, at least 46 being reported during 11th–20th October. A further 15 arrived during 21st–31st October, 15 during 1st–10th November, while another 17 before the month's end brought November's total to a respectable 32. Smaller numbers of new arrivals were discovered through to the end of the year.

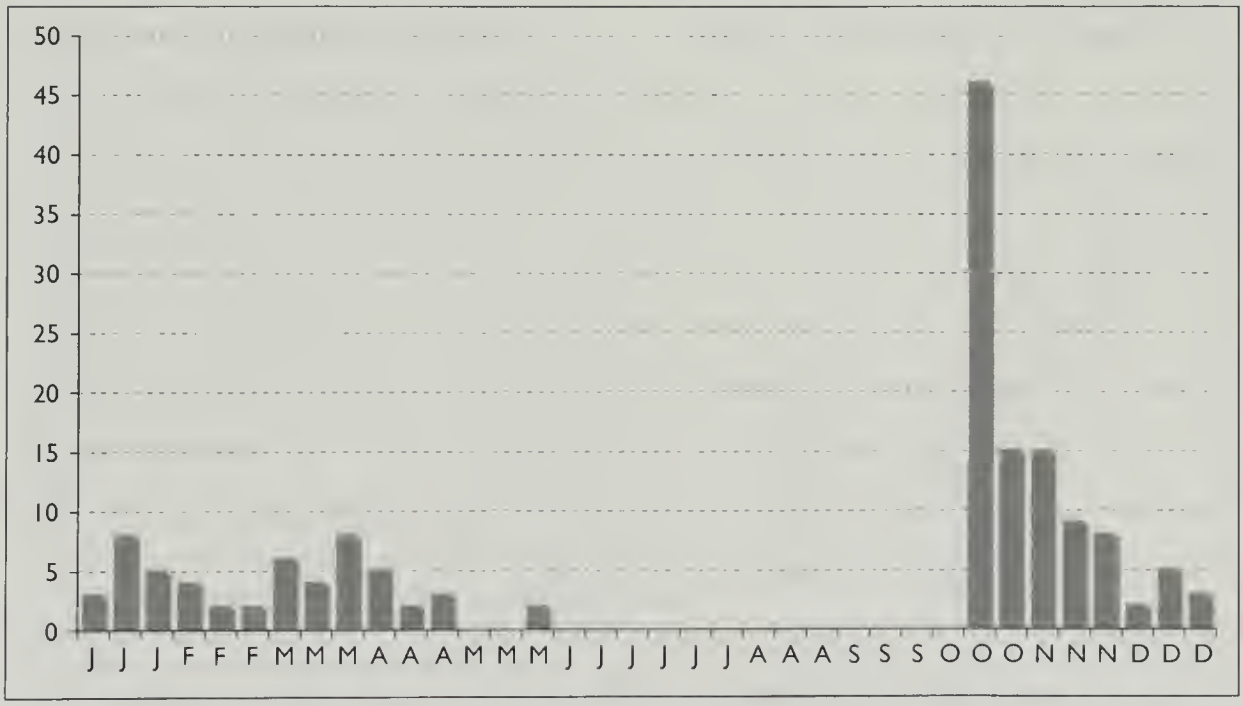


Fig. 8. Numbers of Great Grey Shrikes *Lanius excubitor* in Britain in 2003, showing arrival times of migrants in ten-day periods. Note that spring migrants (as opposed to newly discovered or newly arrived wintering birds) started to pass through in mid to late March. Clearly, the numbers of spring migrants were greatly surpassed by autumn arrivals, notably a substantial pulse in mid to late October.

Woodchat Shrike *Lanius senator*

Number of individuals in 2003	Number of individuals in 1958–2003	Year rank	Highest annual maxima 1958–2003			Annual means 1958–2003				
			1997	2002	1988	1958–69	1970–79	1980–89	1990–99	2000–03
21	717	12	36	32	26	12	13	16	21	20

With 15 spring migrants and six during the autumn, 2003 was a fairly typical year for Woodchat Shrikes. The 'southwestern peninsula', from Dorset to Scilly, accounted for 13 of the 21 reports, while, in line with recent years, the east coast fared poorly, with just two in spring: at Minsmere, Suffolk, on 29th May and on the Isle of May, Fife, on 3rd June.

An exceptionally early bird was on Tresco on 30th–31st March, but there was just one other reported before the beginning of May, from Land's End, Cornwall, on 17th–20th April. Three were found in the first week of May, including two on Scilly, and an inland bird at Langley, Berkshire, on 1st–3rd. The peak arrival period was 22nd May to 4th June, when eight birds were discovered, five of these in the southwest. Single birds in Cornwall and Sussex in mid June completed the spring passage. Autumn migrants appeared between 5th August and 1st October, with two in Cornwall, one in Dorset, and singles in Shetland, Orkney and the Western Isles.

One interesting ringing record concerns a female, ringed on Skokholm, Pembrokeshire, on 3rd June 1976, which was subsequently controlled at Walberswick, Suffolk, on 20th June of the same year, presumably a spring overshoot that was in the process of reorienting (Grantham 2005b).

Rose-coloured Starling *Sturnus roseus*

Number of individuals in 2003	Number of individuals in 1958–2003	Year rank	Highest annual maxima 1958–2003			Annual means 1958–2003				
			2002	2001	2003	1958–69	1970–79	1980–89	1990–99	2000–03
63	723	3	193	66	63	3	6	8	18	92

With 63 reports in 2003, Rose-coloured Starling continued the recent sequence of exceptionally good years, as the table above and fig. 9 show. The leap in the annual means between 1990–99 and 2000–03 is extraordinary.

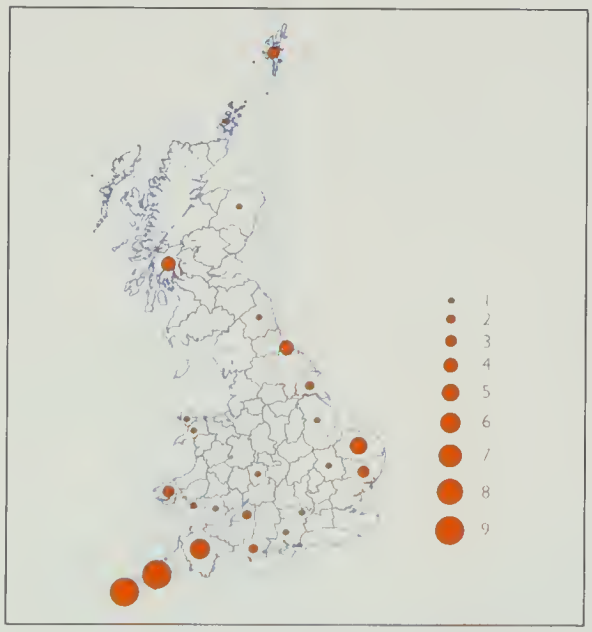


Fig. 9. Distribution of Rose-coloured Starlings *Sturnus roseus* in Britain in 2003, showing good numbers along the east coast of England, but also that the 'southwest peninsula' was responsible for a disproportionate number of sightings.

Two wintering birds in Cornwall, included in the 2002 report, remained into 2003, but another was discovered on 6th January at Perranporth, also Cornwall, where it remained until 23rd. The first of the spring appeared at Redcar, Cleveland, on 20th April but this early date, well before the return of birds to breeding colonies in eastern Kazakhstan, suggests that it too may have been an overwintering bird on passage rather than an arrival from the east. Just two were reported in May, both in Argyll, at Kilmelford on 21st–23rd and at Seil from 27th May to 8th June. Arrivals became widespread from 1st June, with ten during 1st–10th, and seven during 11th–20th. Subsequently, just one was found in the last week of June and three in the first week of July.

In autumn, one on Anglesey on 7th August was the first, followed by one at Weybourne the next day; two more were discovered in the last week of August, and three in early September. New arrivals were widespread from 15th September, however, with eight in the week that followed, five in the last week of the month, and six during 1st–10th

Steve Young/Birdwatch

63. Rose-coloured Starling *Sturnus roseus*, Rhos-on-Sea, Conwy, July 2003.

October. With the exception of one at Gibraltar Point, Lincolnshire, on 13th–14th October, there were no more until four in the last ten days of October, and three on 1st November. There were just three more in November, all in the southwest between 14th and 18th, while the only December report came from RAF Marham, Norfolk, on 16th December.

Throughout the year, records were biased towards the southwest, with Cornwall and Scilly (each with nine) being the two most favoured counties; in the east, Norfolk and Suffolk managed a combined total of eight.

European Serin *Serinus serinus*

Number of individuals in 2003	Number of individuals in 1958–2003	Year rank	Highest annual maxima 1958–2003			Annual means 1958–2003				
			1996	1994	1997	1958–69	1970–79	1980–89	1990–99	2000–03
59	1,560	10	99	82	75	8	19	37	68	54

There were two records in the early part of the year, one at Newhaven, Sussex, on 16th February (a bird which remained until 9th March) and one at Dungeness, Kent, on 12th March. No others were reported until one was found at Trevose Head, Cornwall, on 4th April. Three more turned up during 5th–6th April, which preceded six during 9th–20th and nine during 21st–30th. New arrivals continued into early May, six being discovered in the first week, but then few others were reported until 24th May, and a small flurry of five in the last week of the month. Three were found in June, the last at Portland, Dorset, on 29th. The south coast, from Kent to Scilly, accounted for the vast majority of spring records, but there were also three in Norfolk, singles in Caernarfonshire, Pembrokeshire, Somerset, Suffolk and East Yorkshire, and one in Cambridge on 27th May, further from the sea than most.

With single birds in July and August, and none in September, the early autumn was quiet. There were five in October, nine in November and four were found on St Agnes, Scilly, on 9th–10th December; a pattern which largely conformed to the well-established picture whereby autumn records show a peak in late October and early November (fig. 10). As in spring, autumn records were concentrated along the south coast of England, with just two exceptions: one at Rainham, Greater London, on 3rd August, and one on Skokholm, Pembrokeshire, on 23rd November. All in all, a better than average

Alan Tate

64. European Serin *Serinus serinus*, Holkham, Norfolk, May 2003.

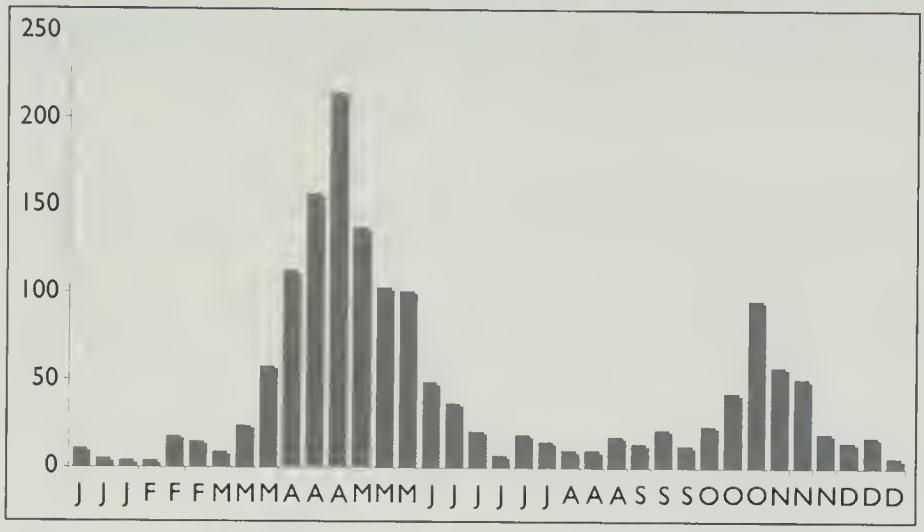


Fig. 10. Numbers of European Serins *Serinus serinus* in Britain, 1958–2003, showing arrival times of migrants in ten-day periods. The spring and autumn migration peaks are shown clearly in this graph, the main passage being in spring, and peaking in late April, while a smaller passage in autumn peaks towards the end of October.

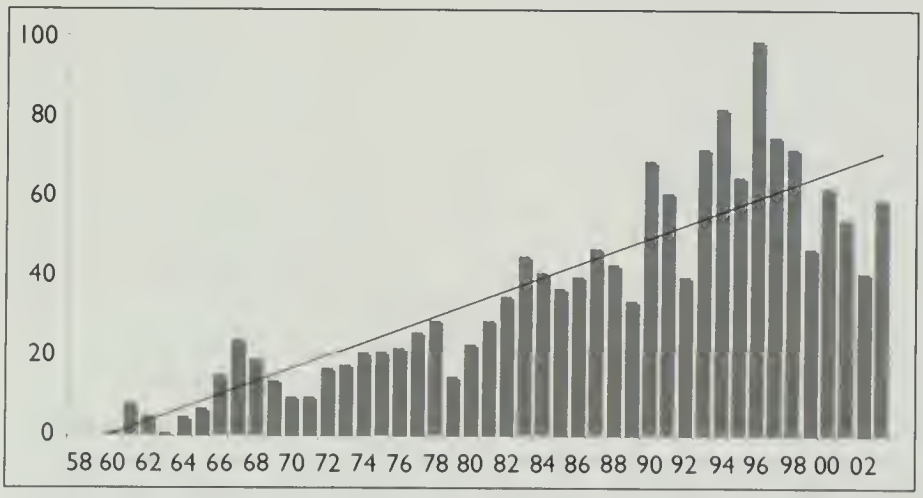


Fig. 11. Annual totals of European Serins *Serinus serinus* in Britain, 1958–2003. The upward trend in number of migrants reaching Britain over the past 46 years is clear, although no correction for observer effort is possible.

showing, and the tenth-highest total on record since 1958.

Serins were confined to the Mediterranean at the start of the nineteenth century, but from the middle of that century spread dramatically north and west into Germany, France (reaching the French Channel coast by 1950), the Low Countries and eventually Fennoscandia (reaching Finland by 1967; Vinicombe & Cottridge 1996). The European population increased during 1970–1990, and although there were declines in France and Malta in 1990–2000, populations elsewhere increased or remained stable (BirdLife International 2004): a generally rosy picture which helps to explain the overall pattern of British records since 1958 (see fig. 11).

Common Rosefinch *Carpodacus erythrinus*

Number of individuals in 2003	Number of individuals in 1958–2003	Year rank	Highest annual maxima 1958–2003			Annual means 1958–2003				
			1992	1995	2000	1958–69	1970–79	1980–89	1990–99	2000–03
170	3,338	4	248	180	173	10	37	76	151	144

It proved to be another excellent year for Common Rosefinches, continuing the run of good years that the species has enjoyed since 1992, when the record year-total of 248 was posted. In 2003, spring passage was somewhat underwhelming, the 42 records well below those for many years in the 1990s, when colonisation as a regular breeding species seemed a real possibility. In contrast, the 126 found during the autumn constituted the second-highest total on record, bettered only by 157 in 2000.

The first of the spring was on North Ronaldsay

Hugh Harrop

65. Common Rosefinch *Carpodacus erythrinus*, Fair Isle, Shetland, October 2003.

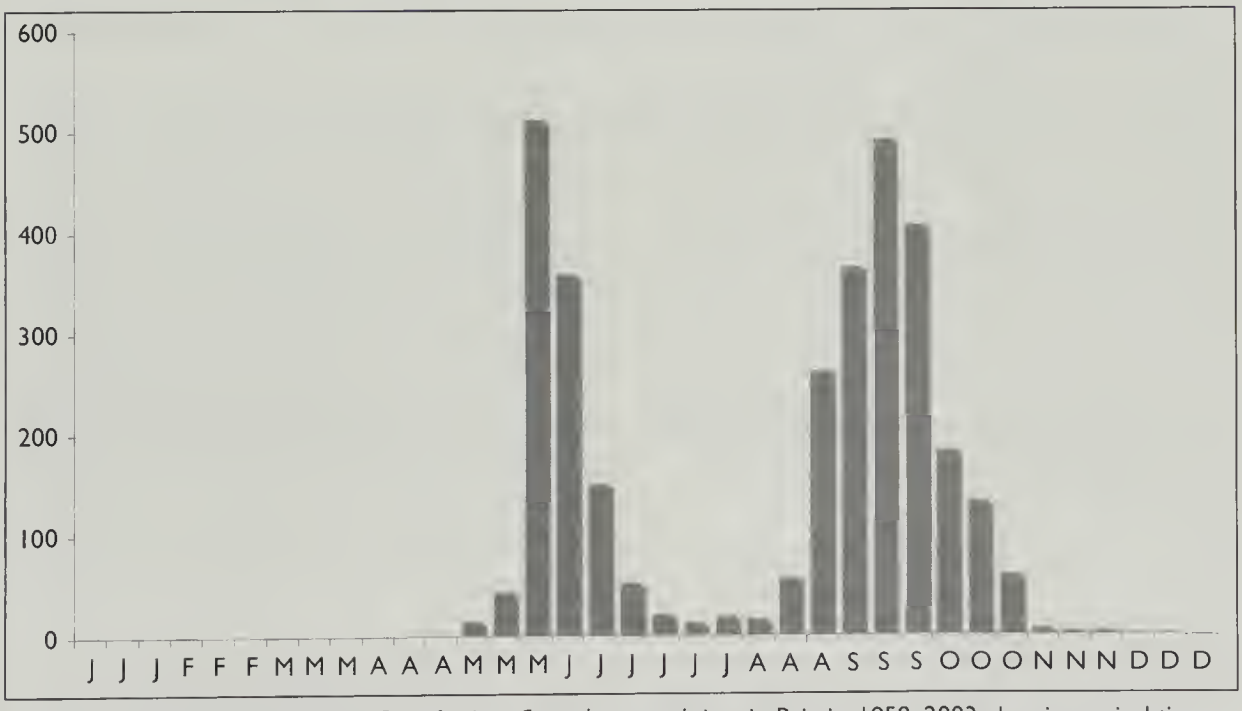


Fig. 12. Numbers of Common Rosefinches *Carpodacus erythrinus* in Britain, 1958–2003, showing arrival times of migrants in ten-day periods. Compared with the pattern for Serin Serinus serinus shown in fig. 10, the numbers of spring and autumn migrants are much more comparable; peak spring passage is in late May, and peak autumn passage in mid September.

on 17th May, and was followed by a further 21 birds to the end of May. Of these, 15 were in Shetland, while two in Pembrokeshire (on Skokholm on 25th and Strumble Head on 29th–30th), and one on Blakeney Point on 29th were the only reports away from northern Scotland. A further 20 were found in June, half of these in the first ten days of the month, and these showed a greater geographical spread: ten in the Northern Isles, others along the south and east coasts of England, two in Wales and one well inland, at Uppertown, Derbyshire, on 21st.

After two on Fair Isle in early July, no others were reported until 1st August, when the first returning migrants were reported from Unst (two) and Fair Isle, followed by one at Fortuneswell, Dorset, on 2nd. Two more reports came from Shetland, on 13th and 19th, but it was the last week of August before passage picked up significantly, with 13 in Shetland and three in Orkney. New arrivals increased during September, with 84 new birds logged during the month. Shetland again was responsible for the bulk of the sightings (56), backed up by 15 on North Ronaldsay; a mere 13 were seen away from the Northern Isles. In October, numbers declined, 17 being reported in the first half of the month, but at least the stranglehold of the Northern Isles was finally broken, as new birds appeared throughout the country from Shetland to Cornwall. The last three of the year were all on Orkney: singles on South Ronaldsay on 20th October, North Ronaldsay on 1st November and Rendall on 23rd November.

Ortolan Bunting *Emberiza hortulana*

Number of individuals in 2003	Number of individuals in 1968–2003	Year rank	Highest annual maxima 1968–2003			Annual means 1968–2003			
			1996	1969	2003	1968–79	1980–89	1990–99	2000–03
91	2,163	3	119	114	91	53	57	72	61

Overall, 2003 proved to be the third-best on record for Ortolan Bunting, despite the fact that just two were recorded during the spring (the worst spring on record!): at Scatness, Shetland, on 1st–2nd June, and at South Stack, Anglesey, on 2nd June. By contrast, the autumn passage was the best on record, beating the previous record of 82 set in autumn 1992. The distribution of records in 2003 is shown in fig. 13.

The first of the autumn was at Combe Haven, Sussex, on 10th August, but numbers did not start to pick up until the last week of the month, when 15 were recorded, bringing the month's total to 23. The influx continued into September, with 35 in the first ten days and 61 during the month as a whole. New arrivals tailed off rapidly in early October, just five being reported between 1st and 18th, the last at Fife Ness, Fife, on 18th–19th October.

Not surprisingly, the 'southwest peninsula' fared well, at least 67 being reported from Dorset to Scilly and north to Somerset. Several localities reported multiple sightings; for example, there were six at Portland between 29th August and 5th September, and, in Cornwall, four at Porthgwarra on 5th September and four at St Levan on 6th. Most of the remainder were scattered right along the east coast, from Shetland to Kent, and just four were reported from Wales. Perhaps the most interesting series of reports came from Sewardstone, Greater London, where four appeared in September: one on 3rd, two on 28th – one remaining until 1st October and the other to 4th – and one on 29th September.

The autumn influx is set against a worrying backcloth of concern about this species, which has shown a marked decline in breeding populations across much of western and central Europe during the past three decades (BirdLife International 2004). The autumn bounty presumably stems from a good breeding season, but there seems little reason to believe that we are about to see an increase in the long-term trend.

Little Bunting *Emberiza pusilla*

Number of individuals in 2003	Number of individuals in 1958–2003	Year rank	Highest annual maxima 1958–2003			Annual means 1958–2003				
			2000	1993	1989	1958–69	1970–79	1980–89	1990–99	2000–03
24	838	12=	60	48	47	5	10	24	30	34

A total of 24 Little Buntings was reported in 2003, by no means a vintage year for this species, at least set against the numbers recorded in the past 15 years (although still higher than all but one annual total prior to 1987). Not unexpectedly, a midwinter bird was reported, this year at Porlock Marsh, Somerset, on 14th February. This was followed by three spring migrants: at Sennen on 30th April, on Fair Isle on 9th May, and on Blakeney Point on 1st June.

Autumn passage began on 8th September, with one on Out Skerries, Shetland, the first of eight Shetland records. Ten were found between 21st September and 10th October, traditionally this species' peak period, and a further five during mid to late October. In November, there were two late birds in Shetland, at North Roe on 8th and on Bressay on 17th, and also one at Littlestone, Kent, on 16th; the last of the year was on St Mary's on 9th December. After Shetland (8) and Scilly (3), the remaining autumn records were in Cornwall, Dorset, Kent, Norfolk, Northumberland (2), Orkney, Sussex and the Western Isles.

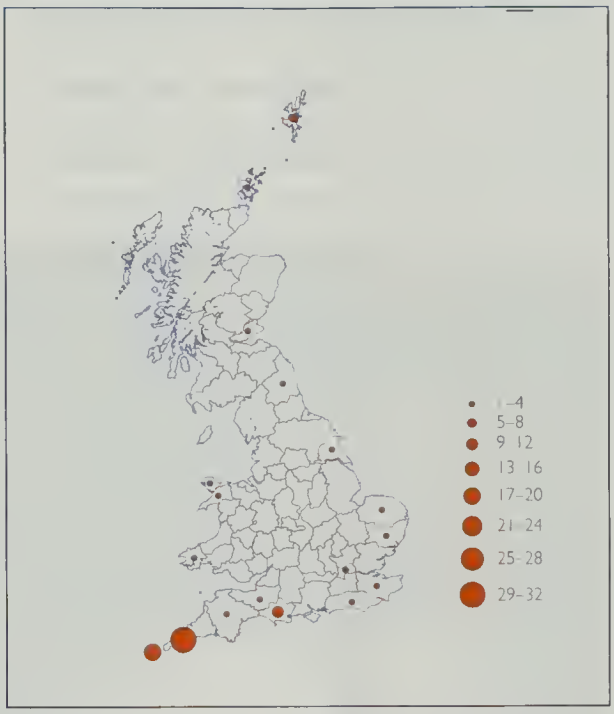


Fig. 13. Distribution of Ortolan Buntings *Emberiza hortulana* in Britain in 2003. In an excellent year for this species, the third-best on record, there was a scatter of sightings along the east coast, but the majority were in the southwest.

Acknowledgments

The authors would like to thank most sincerely the county and regional recorders and their assistants for providing such detailed information for 2003 and for supplying additional records for past years where appropriate. Without their ready co-operation, this report would not have been possible. Mike Gee is also thanked for his significant contribution to the species texts.

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The production of this report depends in no small part upon the goodwill of the county and regional recorders who provide us with data. In order to make the report as complete as possible, we would be most grateful for a copy of your county or regional report for 2004 (sent to Mike Rogers at the above address) OR, preferably, data for the relevant species e-mailed to Peter Fraser at statistician@bbrc.org.uk as soon as possible.

Request

Seabirds and pipefish: a request for records

Seabirds in the northeast Atlantic usually feed their chicks on small, oil-rich shoaling fish such as sandeels *Ammodytes marinus*, sprats *Sprattus sprattus*, herring *Clupea harengus* and capelin *Mallotus villosus*. Although many other fish species have been recorded as food of seabirds, pipefish (Syngnathidae) are almost unknown as prey. However, in 2004 and 2005, observers recorded pipefish being brought ashore by terns, auks, Shags *Phalacrocorax aristotelis* and Kittiwakes *Rissa tridactyla* across a wide area, for example at Coquet, Northumberland; St Kilda, Western Isles; Westmann Islands, southern Iceland; and Røst, northern Norway. Pipefish are distinctive, thin and long (up to 45 cm), with a bony outer skeleton. Most, but not all, pipefish identified in 2004–05 were the Snake Pipefish *Entelurus aequoreus* but five other species occur in British waters. The appearance of pipefish in the diet of marine birds appears to be linked with both a shortage of their normal prey and a population explosion and range expansion of pipefish. The change is bad news for seabirds since pipefish are difficult to swallow and there are reports of tern chicks choking to death on them and of emaciated Puffin *Fratercula arctica* chicks in burrows littered with uneaten pipefish. Red-throated Diver *Gavia stellata*, Great Northern Diver *G. immer* and Long-tailed Duck *Clangula hyemalis* have also been seen with pipefish. I would be interested in receiving all records of pipefish from recent years and 2006, and also any dried specimens that come to hand.

Rebecca Nason

66. Puffin *Fratercula arctica* with Snake Pipefish *Entelurus aequoreus*, Fair Isle, Shetland, 2004. As is the case with the related seahorses, the male pipefish carries the eggs.

Paul Morrison/RSPB

67. Common Tern *Sterna hirundo* chick choking on two pipefish, probably *Entelurus aequoreus*, on Coquet Island, Northumberland, July 2004. This chick had the stiff fish removed but many other chicks died.

Jim Greenfield

68. Snake Pipefish *Entelurus aequoreus* photographed underwater. Increasing numbers have been recorded by divers off St Abb's Head, Borders, and the Farne Islands, Northumberland, in recent years.

Prof. Mike Harris, Centre for Ecology & Hydrology, Hill of Brathens, Banchory AB31 4BW; e-mail mph@ceh.ac.uk

Letters

Identification of the Fair Isle sandpiper – a statistical analysis

When Garner (2005) reviewed the 'Fair Isle sandpiper' (FIS), his reasoning that the bird was not a Western Sandpiper *Calidris mauri* seemed compelling. It is not possible for statistics to prove that the bird was one species or another, since it deals only in probabilities, but I was surprised at the results when the measurements of the FIS were compared with those of the series of Western and Semipalmated Sandpipers *C. pusilla* in *BWP*. The probabilities are hundreds to one against the FIS being a Western Sandpiper, confirming Garner's opinion, whereas the fit with Semipalmated Sandpiper is extremely good for all but the short-billed population.

As Colin Bradshaw stated, at the end of Garner's account, there is now a danger that the record may not be acceptable either as a Western or as a Semipalmated Sandpiper, unless the missing photographs can be found. The elimination of Western Sandpiper is not proof that the FIS was a Semipalmated, but I contend that a statistical analysis of the biometrics eliminates Western, whereas the measurements of Semipalmated, including males, females and two different breeding populations, fit the FIS with a considerable degree of exactitude.

I have modest claims to any ability in statistics, although I did a term in the subject at university in the early 1950s. However, all that is needed is the simplest form of statistical analysis, namely a consideration of the mean and standard deviations. Any biological series has a range of variation. If plotted, the series will have a complex curve (see Fowler & Cohen 1986). Most observations will occur near the mean, and observations will become fewer as the distance from the mean increases. So in order to be described, a series needs two calculations: the mean and the standard deviation (SD), which measures the degree of variability in the series. The series will then have certain characteristics: 68.26% of the series will be within 1 SD of the mean, 95.44% within 2 SD, and 99.74% within 3 SD. Probability conventionally has three critical levels: an outcome which is predicted to occur in fewer than one trial in 20 ($P < 0.05$) is considered to be unlikely, or statistically significant (outside mean by +/–1.96 SD); an outcome which is predicted to occur in fewer than one trial in 100 ($P < 0.01$) is considered to be very unlikely, or statistically highly significant (outside mean by +/–2.58 SD); and an outcome which is predicted to occur in fewer than one trial in 1,000

Table 1. Measurements of the Fair Isle sandpiper (FIS), compared with those of males and females of both Western *Calidris mauri* and Semipalmated Sandpipers *C. pusilla*. Data from *BWP*, combining all populations of Semipalmated; measurements in mm.

		FIS	*mauri* male	*mauri* female	*pusilla* male	*pusilla* female
Wing	mean	97	97.10	101.00	95.90	100.10
	SD		2.38	1.38	1.48	1.31
Tail	mean	40	41.80	42.20	39.30	40.60
	SD		1.65	1.87	2.02	2.46
Bill	mean	19.5	23.10	26.70	18.60	20.20
	SD		1.00	0.67	1.17	1.25
Tarsus	mean	23	21.80	23.40	21.30	22.10
	SD		0.68	0.71	0.70	0.58

Table 2. Wing- and bill-length measurements of the Fair Isle sandpiper (FIS), compared with those of males and females of three breeding populations of Semipalmated Sandpiper *Calidris pusilla*. Data from *BWP*; measurements in mm.

		FIS	long-billed		medium-billed		short-billed	
			male	female	male	female	male	female
Wing	mean	97	95.80	98.90	95.10	97.10	93.20	96.30
	SD		2.23	2.09	1.68	4.20	1.93	1.80
Bill	mean	19	19.60	21.30	18.00	19.50	17.30	18.90
	SD		0.95	0.91	0.72	0.72	0.73	0.41

Table 3. A statistical comparison of the biometrics of the Fair Isle sandpiper with those of Western *Calidris mauri* and Semipalmated Sandpipers *C. pusilla*. Cells show z scores (see text for explanation); in summary a z score of > 1.96 (or < –1.96) denotes rejection at the 5% level (amber text), while a z score of > 2.58 (or < –2.58) denotes rejection at the 1% level (red text). Data from *BWP*.

	mauri		*pusilla* (skins)		*pusilla* populations					
					'long'		'medium'		'short'	
	male	female	male	female	males	females	males	females	males	females
Wing	–0.04	–2.90	0.74	–2.37	0.54	–0.91	1.13	–0.02	1.97	0.39
Tail	–1.09	–1.18	0.35	–0.24						
Bill	–3.60	–10.75	0.77	–0.56	–0.11	1.98	2.08	0.00	3.01	1.46
Tarsus	1.76	–0.56	2.13	1.55						

($P < 0.001$) is considered to be extremely unlikely, or statistically very highly significant.

If a specimen was slightly, moderately, or particularly large (or small), it would be expected that the measurements of that specimen would occupy the same part of the range, producing a cluster. Table 1 shows the measurements of the FIS compared with published biometrics of Western and Semipalmated Sandpipers from *BWP*.

In *BWP*, three populations of Semipalmated Sandpiper are described, (1) from Alaska, (2) from central Canada, and (3) from eastern Canada; bill length varies from east to west, with Alaskan birds being short-billed, and east Canadian birds long-billed. Table 2 shows the wing and bill measurements of the FIS with the corresponding measurements of these three breeding populations for comparison.

For each measurement of the FIS, e.g. bill length, it is possible to calculate how many standard deviations it lies away from the mean value of bill length for, in turn, *pusilla* males and females, and *mauri* males and females. This is expressed as a z score, where z = (x – mean)/standard deviation. So, for example, comparing bill length of the FIS to that of male *mauri* (see table 1), z = (19.5 – 23.1)/1.00 = –3.60. So the bill length of the FIS lies 3.6 SD away from the mean bill length of male *mauri*. This bill measurement alone effectively excludes the bird as a male Western Sandpiper, as it can only be, at best, in the lowest 0.13% of the series (a probability of less than 1 in 700, or $P < 0.0015$, that the bird is a Western).

In table 3, z scores for all measurements of the FIS compared with all populations and sexes of *mauri* and *pusilla* are presented. Red text highlights those measurements where the FIS lies more than 2.58 SD from the mean for the compared population, and effectively rejects the identification as being less than a 1% chance. Amber cells highlight FIS measurements which lie between 1.96 and 2.58 SD from the mean, meaning a less than 5% chance that the FIS fits with that population – i.e. unlikely but not impossible. Table 3 demonstrates that, statistically, the FIS is absolutely not compatible with either male or female Western Sandpiper; the z scores for bill length fall well outside the +/–2.58 cutoff, which rejects the identification at the 1% level. The wing of the FIS is also far too short to be compatible with female *mauri*. There are no measurements which reject Semipalmated at this level, and the bird is statistically more likely to have belonged to one of the long- or medium-billed populations of *pusilla*.

Nisbet's figures

Nisbet (1963) claimed that the bird was a Western Sandpiper, the first for the Western Palearctic, and published bill measurements of Semipalmated and Western Sandpipers, measured by him. Nisbet used his own measurements because the published American data of bill length involved tip-to-skull measurement, whereas Williamson had used the conventional tip to feather-edge measurement. It would have been much better for Nisbet to have measured the feather to skull distance as an average; he could then have subtracted this from the mean for all published series. The mean would have then been adjusted, and no change would have been needed in any published standard deviation. As it is, Nisbet's figures did not include the important sex differences in both species, which introduced greater errors than he sought to eliminate. This inflated the standard deviations, and thus considerably increased the theoretical range of each species, making analysis of his

figures unreliable. Moreover, he claimed that these figures showed the bird as a Western Sandpiper, though the FIS bill did not fall within his range of measurement, and they did fit Semipalmated.

It is interesting that Kenneth Williamson and H. G. Alexander, the original observers of the bird, were on the BBRC at the time of the change of identification. Williamson was possibly alone on the committee in having an understanding of means and standard deviations – he had just published his *Identification for Ringers 2: the genus Phylloscopus* in May 1962, with guides for the other genera following in March 1963 and May 1964 (BTO Guides Nos. 7, 8 & 9). They included tables not only of means, but also of standard deviations. Perhaps he excluded himself from the discussion of his own record.

Summary

Following Martin Garner's paper on the Fair Isle sandpiper of 1956 (Garner 2005), a statistical examination of the measurements of that bird against those of Western and Semipalmated Sandpipers has been made. The measurements of the FIS eliminate Western Sandpiper. The measurements of the FIS fit well with Semipalmated Sandpiper. The female of the medium-billed population is an excellent fit, as is the male of the long-billed population, though others are not excluded. The FIS is unlikely to be from the short-billed population. Garner's analysis of the mixed-age feathers on the upperparts, the absence of chevrons on the underparts, and the character of the scapulars, together with this statistical analysis, leaves no grounds at all for retaining this bird as a Western Sandpiper in the records, in my opinion, and no grounds for rejecting it as a Semipalmated Sandpiper.

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Taxonomy for birders

The paper by Maclean *et al.* (2005) was a welcome ray of sunshine when the authors of so many papers on taxonomy go to great lengths to spell out in the minutest detail the esoteric details of their biochemical procedures, which are comprehensible only to other specialists in the same field.

The difficulty of using the amount of genetic change as a biological clock (I have seen a comment that it keeps time as well as a sundial in a London fog, but cannot trace the source) is dependent on finding a well-dated event to which the speciation event is unequivocally linked. The divergence rate for Hawaiian honeycreepers (Drepanidini) is totally dependent on the assumption that the ancestral form arrived on the oldest island shortly after it became habitable about 4–5 million years ago and subsequently spread to or evolved on the progressively younger islands. However, if the ancestor arrived in the last few hundred thousand years, the clock would be out by a factor of ten. The divergence between Rheas (Rheidae) and Ostrich *Struthio camelus* has been dated to the splitting of South America from Africa 80 million years ago, but the continents do not split neatly overnight. It is more like a ragged tear over several million years and it is difficult to be precise about when the split was sufficiently complete to prevent any interchange. The ancestral populations could have been out of contact before the geological split, or one or more land bridges could have existed after the main split.

Newton (2003) pointed out (see footnote to his table 2.1) that the rate of genetic change is dependent on body size, metabolic rate and generation time, and the figure for Hawaiian honeycreepers (and often used for other passerines) is rather low compared with calibrations from some other animals. The figures (all cytochrome *b*) for large mammals are 2.1% over one million years and for rodents 3.8%–11.3%. Passerines, with their small size and high metabolic rate, would appear more similar to the latter. Another calibration, from fossil albatrosses (Diomedeidae) – large, slow-breeding birds – gives 1.58%–2.86%. We are

thus still some way short of inscribing any figure in stone.

Another problem with the clock is that it is not just the rate at which mutations occur but how many survive which must vary with environmental conditions, the amount of competition and any population bottlenecks which may occur. A species confined to a narrow niche by ecological restraints is less likely to evolve viable mutations than a newly arrived species in a pristine environment with many niches waiting to be filled by appropriate mutations. Any successful mutation will spread faster through a small population than a large one, making it more distinct earlier. Individuals of a migratory species which forms large flocks are going to have a much wider choice of mates and hence keep the gene pool well mixed compared with a sedentary species with strong site fidelity which is always going to mate with its closest spatial and genetic kin. Consider a single homogenous species which occupies a large range and which suffers some event that fragments it into a number of isolated populations around the periphery, all of which evolve into separate species. If, subsequently, the newly derived species were to spread back into their ancestral range, it seems unlikely that they would all show the same degree of divergence as required by the biological-clock theory. If there was some limited hybridisation between some of the new species, the biochemical picture would become very murky. Perhaps this is what happened with the *flava* wagtail complex.

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One of the problems with taxonomic literature is that the avian evolutionary tree is typically portrayed as a neatly trained and pruned two-dimensional espalier with orders, families, genera and species all arising at set levels. In practice, it is more like a dense, tangled, three-dimensional thicket full of dead wood, with today's extant species on the outside being connected to the main stem via numerous branches. Our knowledge of the inside of the thicket appears to be rather less than 1% and a lot more digging about in the undergrowth is required. It is like trying to write a book on British birds when we know only four species.

In my half century or so of birding, I have seen many features heralded as the latest philosopher's stone for resolving avian taxonomy. These have involved multiple aspects of the skeleton and musculature, egg-white proteins, egg-shell structure, parasites, vocalisations, nest architecture, fledgling plumage, mating behaviour, scutellation of the tarsus... and now a variety of biochemical features. To get a truer picture of evolution, these features need to be considered simultaneously, but with so much specialisation in the scientific field it would require a large team, and also serious computing power.

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Foot and leg colour of Goldcrest

The foot and leg colour of Goldcrests *Regulus regulus* may be more complex than reported by Martin Woodcock (*Brit. Birds* 98: 379). After visiting Madeira in April 2002, I was surprised to find that, whereas I had noted the leg colour of Madeira Firecrest *R. madeirensis* as markedly bright yellowish-chestnut, it was illustrated as black in Bannerman & Bannerman (1965), while *BWP* states that *ignicapilla* has brown legs and feet and makes no mention of any difference in *madeirensis*. I therefore decided to check the leg and foot colour of Goldcrests.

Between 21st September 2002 and 12th November 2004, I recorded the colour of the legs and feet of 30 Goldcrests at Limpsfield Chart, Surrey, taking care to note the colour only when I was sure that the light conditions were such that I would not be misled by shadow cast by the bird. All observations were made with 10× binoculars at ranges of no more than 3–4 m. The results were as follows: five birds (17%) with tarsus and feet entirely blackish-brown (including one where lower tarsus and feet a paler brown); four (13%) with tarsus entirely blackish-brown, feet bright yellow-brown; 17 (57%) with upper tarsus blackish-brown, lower tarsus and feet bright yellow-brown (including one where feet a dull

ochre and another where almost all of the tarsus was bright yellow-brown); and four (13%) tarsus and feet all bright yellow-brown. In the absence of individually marked birds, I cannot exclude the possibility of duplication in these data, but the fact that I made the observations over an area of about 75 ha and that they encompassed a period of over two years, including all or part of three autumns (when numbers of Goldcrests on the Chart increase, presumably because of immigration and/or dispersal), suggests that duplication, if any, is likely to be minimal.

Finally, in May 2005, I saw a number of Tenerife Goldcrests *R. teneriffae* on the islands of Tenerife and La Gomera, in the Canaries. The only ones I saw well enough to determine leg and foot colour were two just-fledged juveniles from different broods, both of which had all blackish-brown legs and feet. There is evidently much more variation in this feature than has previously been recognised in this group.

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Notes

All Notes submitted to *British Birds* are subject to independent review, either by the Notes Panel or by the *BB* Editorial Board. Those considered appropriate for *BB* will be published either here or on our website (www.britishbirds.co.uk) subject to the availability of space.

The killing of a young Shelduck by a Tufted Duck

On the evening of 7th July 1996, I was birdwatching at Raynham Lake, Norfolk, where, among the usual numbers of wildfowl, I came across a newly hatched brood of Tufted Ducks *Aythya fuligula* and a brood of Shelducks *Tadorna tadorna* that were about two weeks old. Both broods were happily following their respective mothers around and no unusual behaviour was witnessed from either family.

At one point, the Shelduck family drifted past the Tufted Ducks, which seemed to prompt the female Tufted to swim quite purposefully towards the last of the string of young Shelducks. What at first appeared to be a strange curiosity rapidly turned into unexplained aggression. As she got very close, she made several lunges, bill first, at the young Shelduck. Despite every effort made by the young Shelduck to avoid her, she soon succeeded in pecking it on top of its head. She then repeatedly hammered the young Shelduck with savage blows onto its head before grabbing it by the back of its neck and submerging it under the water. This seemingly unprovoked attack continued for up to two minutes, the duck having several attempts at drowning the Shelduck by holding its head underwater while holding her body tight over the young bird. Finally, when the struggling of the duckling eased and there were no more signs of life, she administered several more stabbing blows to the head of the corpse before returning to her own brood.

I could see no reason for such aggression and neither can I find any reference to such behaviour. What was also interesting was that at no point did the parent Shelduck make any attempt to intervene. She simply drifted a few metres away and continued to feed, the remaining members of her family close by her side.

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Foot-slapping by Common Coot

On 6th February 2005, at Kingfisher Lakes, a private fishing area beside the River Ivel south of Blunham, Bedfordshire, I heard loud slapping noises in the distance. On investigation, I found that these were produced by a very intense Common Coot *Fulica atra* that was foot-slapping, with both feet used alternately, on a bare, wet, muddy mound, about the size of a large molehill, 1 m or so from the edge of the lake. The Coot's feathers were fluffed up, and its head was held low down, close to the ground, with its bill pointing forwards. The slaps were regular, at about one-second intervals, were audible from over 100 m away, and continued for over five minutes. There was another Coot swimming, with its head lowered to the water surface, about 15 m away, apparently reacting mildly to the foot-slapper on the nearby shore.

I assumed that the foot-slapping Coot was a male, either announcing his territory or trying to attract a female, but I can find no reference in the literature to foot-slapping with both feet or to either of these interpretations. The only mentions of foot-slapping refer to females foot-slapping (with one foot), apparently to entice a male to copulate, or to males trampling nest material (*BWP*).

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EDITORIAL COMMENT David Kramer has commented as follows: 'I have frequently observed foot-slapping by Common Coots at Priory Country Park, Bedford, and made notes of this behaviour on well over 30 occasions. The Coot usually chooses a low platform of mud or flattened reeds, roughly circular and about 30 cm to 45 cm in diameter, and usually only just above the water level. The surface, in my experience, has always been wet, possibly to increase resonance. On one occasion, I observed foot-slapping taking place on an emergent rotten log. Foot-slapping involves the bird slapping the wet surface with its foot, usually at about one-second intervals. Most of my observations have involved the bird slapping the surface with the same foot but I have also noted birds changing to slap with the other foot or, more rarely, alternating between one foot and the other. In one case, the bird continued the behaviour for four minutes and it was on this occasion that the bird changed from using one foot to the other. The sound produced is quite resonating and I have heard it when I was well over 50 m from the source. It seems to me that it is the sound that is produced rather than the action of foot-slapping itself that is the important factor in this behaviour. The earliest date on which I have recorded foot-slapping was 29th January (1984) and I have recorded it occasionally in February but more regularly in March and April and less frequently in May and June. On several occasions I have observed the bird interrupt the foot-slapping to pull or bend adjacent *Typha* stems and leaves onto the platform. On one occasion the bird picked up a fairly long (45 cm) twig, adjusted its position in its bill and then dropped it before continuing its foot-slapping. Although I have recorded foot-slapping on the nest platform, I have never recorded a nest subsequently being built on the site where foot-slapping has taken place.

'P. W. Richardson (*Brit. Birds* 75: 126–127) suggested that this behaviour was associated with potential danger and served as a warning to others. At first I also was of this opinion as it seemed to be associated with my approach. However, because the sound is clearly audible from quite a long distance, I was able to position myself well away from the bird and observe this behaviour without being seen and I noted that it took place when there was no apparent danger from potential predators. In addition, I have frequently watched Coots perform foot-slapping whilst I have been standing only 10–15 m away and have noted that, on no occasion did the bird adopt an alert posture. In fact, often the situation was quite the opposite with the bird totally engrossed in what it was doing, looking down towards the platform, not even pausing to look towards me. On another occasion I watched as one of two birds swam to an emergent log and performed foot-slapping. As I had been watching this pair of birds for several minutes from a distance of about 12 m, this behaviour would have been useless if it was meant to serve as a warning signal.

'As I have recorded foot slapping in late January and in February, it seems likely that it is related to the establishment of territory or attracting a female to copulate rather than to nest building, which occurs after copulation and, usually, in March and April onwards. On over 75% of the times that I have observed this behaviour, only one bird has been present and I have never recorded copulation fol-

lowing this activity, although display and copulation sometimes take place on these platforms. It therefore seems to me that the main function of this behaviour is for the male to establish, advertise and maintain a territory.'

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Common Tern incubating an empty nest

Observations of Common Terns *Sterna hirundo* at the Banter See colony, Wilhelmshaven, Germany, contribute to a long-term study of this species in Germany. During observations of parental feeding behaviour in 2000, I noticed that one particular female, 0172CAE, subsequently named 'Alisaea', appeared to be incubating over an unusually long period, always in exactly the same place. An examination of the site showed no eggs, but there was a clear depression in the grass and some nest material. This bird, which had fledged in 1994 and first returned to the colony as an adult in 1996, was sexed as a female in May 1998, when she exhibited intense begging behaviour and accepted food from the male during courtship feeding. The male partner, 009678A1, remained with Alisaea for four years, 1998–2001 inclusive.

Since 1992, all fledglings at this colony have been marked with transponders (TROVAN ID100), which allow remote identification of individuals throughout their lifetimes; the transponders, which transmit a 10-character alphanumeric code, require no battery and are implanted subcutaneously. Consequently, the presence of each marked individual can be recorded automatically by an antenna system installed around the colony perimeter to detect arriving birds (Becker & Wendeln 1997; Ludwigs & Becker 2002).

To establish Alisaea's 'brooding profile', and to compare it with that of typical incubating Common Terns, the nest depression was marked and monitored continuously with a portable antenna. During a period of almost 44 hours, from 10.19 hrs on 12th June until 06.08 hrs on 14th June 2000, Alisaea was present at the nest-site for 59.7% of the time. During this period, the longest uninterrupted night-time incubation stint lasted 242 minutes, the longest daytime period was 119 minutes and, in all, she took 17 breaks from incubation. Alisaea's mate did not incubate the empty nest during those periods when she was absent.

Subsequently, Alisaea returned to brood an empty nest in each breeding season from 2001 to 2003. In each year, all terns in this area of the colony were checked during the peak laying period, and in each year Alisaea brooded an empty nest close to the original site in 2000. Table 1 shows the breeding history of this female. After the disappearance of her first known mate, Alisaea paired with different males in 2002 and 2003, but continued to brood an empty nest. In 2004, when aged ten years, she returned to the colony once again, but we did not search for a nest.

In 2001, after Alisaea had brooded her empty nest for more than three weeks, being fed by her mate, we placed three eggs from a deserted clutch into the nest. The pair subsequently reared two fledglings that season and showed no obvious differences in behaviour or parental effort compared with neighbouring pairs. Furthermore, there was no difference in nest attendance in 2000, when the nest contained no eggs, from that recorded in 2001, both before and after eggs were placed in the nest. So nest atten-

Table 1. 'Breeding' history and pair mates of female Common Tern *Sterna hirundo*, named 'Alisaea', which was incubating empty nests at the Banter See colony, Wilhelmshaven, Germany.

Breeding season	2000	2001*	2002	2003
Partner's ID-code	009678A1	009678A1	0015C312	0015B01E
Age (years)	6	7	8	9
Partner's age (years)	6	7	9	10
Partner's breeding experience (years)	0	(1)	6	>5

* On 20th June 2001, three eggs from a deserted nest in the same colony were placed into the empty nest incubated by 'Alisaea', and two young were subsequently fledged from this nest.

dance is apparently not governed by the presence of eggs in the nest, and may be mainly controlled endogenously, as suggested by observations of Great Tits *Parus major* incubating empty nests (Winkel 1993).

At this colony, the body mass of individual terns can be measured remotely, by the use of special platforms distributed throughout the colony (Wendeln & Becker 1996), and Alisaea was weighed in all years from 1998 to 2003. Mean body mass over this six-year period, taken from 25 available values during her first five days after arrival at the colony, was 124.6 ± 4.9 g. This increased to 148 ± 7.2 g during the period 25–30 days after arrival. Thus, courtship feeding presumably resulted in an increase in her body mass, even though she did not lay any eggs.

The incubation of empty nests is a widespread but poorly understood phenomenon. Owen (1940) summarised a series of incidents involving birds brooding empty nests, but was uncertain to what extent this occurred before egg-laying commenced. Incubation of empty nests by Great Tits has subsequently been reported on numerous occasions in this well-studied species (e. g. Male 1977, Dhondt & Eyckerman 1978, Berndt & Winkel 1979, Ojanen & Orell 1981, Carlsson *et al.* 1991, Winkel 1993, 1995 & 1998), while Winkel & Hudde (1990) documented this behaviour for Pied Flycatcher *Ficedula hypoleuca*, Blue Tit *Cyanistes caeruleus*, Coal Tit *Periparus ater* and Eurasian Nuthatch *Sitta europaea*. As well as hole-nesting species, Schilde (1986) observed a female Blackbird *Turdus merula* sitting on a nest without eggs for at least 12 days, apparently attended by a male, while Mudd (1999) reported a female Blackbird which sat on an imaginary nest on a lawn for 19 days, even during the night, and defended a 'nest territory'.

Brooding empty nests has also been recorded in a number of non-passerines. For example, Poulsen (1953) reported a Great Cormorant *Phalacrocorax carbo* which built a nest and then brooded without laying eggs for more than a month. Owen (1940) described similar events involving Common Buzzard *Buteo buteo*, Common Kestrel *Falco tinnunculus* and Green Woodpecker *Picus viridis*. Similar behaviour has been recorded in a number of duck species, including Common Eider *Somateria mollissima* (Gudmundsson 1983), and the present author observed a Mallard *Anas platyrhynchos* brooding an empty nest within a tern colony for a minimum of 42 days in 2001. Gruber (1978) reported a Little Tern *Sternula albifrons* treating egg-shaped stones as a clutch of eggs and incubating for one week. Similar instances of 'stone-brooding' by Common Terns are known (pers. obs.), but brooding empty nests has not yet been described in colonial seabirds.

The reason for the failure to lay eggs in such cases is still unclear. It is usually assumed that birds sitting on empty nests are perhaps unable to lay eggs and, so far, there is no clear evidence that females which brood empty nests lay eggs in subsequent breeding seasons. It seems important to collect more data about this phenomenon and to understand more about this unusual behaviour, which is rare but clearly widespread in birds – at least in species in which males feed brooding females, not least because such females can clearly benefit from male partners if they pretend to brood.

Acknowledgments

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Great Spotted Woodpecker nesting in Yew

While visiting Lacock Abbey, Wiltshire, on 28th May 2004, I heard the loud and constant calls of young Great Spotted Woodpeckers *Dendrocopos major* close by, and discovered a freshly excavated nest hole in the trunk of a healthy Yew *Taxus baccata*, about 7 m from the ground. Given the hardness of Yew wood, it seemed an unusual choice, especially as within 100 m there were many mature trees including Pedunculate Oak *Quercus robur*, Beech *Fagus sylvatica* and Lime *Tilia* × *europaea*. Since *BWP* does not mention Great Spotted Woodpeckers nesting in Yew, I contacted David Glue, who commented that this has never been recorded by the BTO Nest Record Scheme.

Stephen Edwards
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Juvenile Wrens singing in their first summer

Several years ago, I first became aware that juvenile Wrens *Troglodytes troglodytes* sing in the summer of their hatching. One that I had ringed at Weybourne, Norfolk, in June, when still in juvenile plumage, was subsequently retrapped in August. On being released on the second occasion, it perched on top of a nearby bush and burst into song. In July 2005, I heard a Wren churring in my garden in Sheringham, before it gave a stuttering, abbreviated rendition of the species' normal territorial song. Although I had not heard this before, I have no doubt that it was a juvenile making its first attempts at a song.

Armstrong (1955) described these early attempts at singing by young Wrens as very crude songs comprising a few scratchy, splintered notes. He also confirmed that '... [in August] the birds of the year frequently utter their broken ditties, mainly during the hour and a half after sunrise', which probably explains why I had not previously heard this type of song! Armstrong also stated: 'In June many birds reach their highest daily production of song and a few young Wrens begin to sing at the end of the month. During July song decreases and deteriorates, and some adults go almost out of song, but the number of juveniles singing increases.' As co-ordinator for the current Norfolk Bird Atlas, I have noticed, both from personal experience during fieldwork and during data inputting, that the number of 'pairs' of Wrens recorded in a tetrad is often higher on the second visit (mid May to late June) than on the first visit (April to mid May).

Wrens are highly vocal and most of the records of 'pairs' in atlas work are based on birds in song. However, in view of the fact that juveniles start singing in June, I am beginning to wonder whether the counts made on later visits are being artificially inflated by juveniles in song and thus are not true representations of the number of adult males present. With the current trend towards global warming and subsequent earlier breeding, this may become a more significant problem during fieldwork for future breeding bird atlases.

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Dunnock eating candle wax

On 19th December 2004, I saw a Dunnock *Prunella modularis* which had somehow become trapped inside the parish church of West Bagborough, Somerset; unfortunately the bird defied all attempts to guide it to an open door. However, the Dunnock eventually flew to perch at the top of an unlit candle and began to peck at the wax; several fragments of wax were secured and were seen to be swallowed. On looking around, I suspect that other candles had been attacked previously. The Dunnock must have been in the building for at least 24 hours. Candle wax must be an unusual food for a bird which is normally a ground-feeder, even though it is conceivable that it may have found some insect matter in the church during its time of imprisonment.

Dr A. P. Radford
Crossways Cottage, West Bagborough, Taunton, Somerset TA4 3EG

Robin displaying at smouldering wood ember

On 6th January 2005, at West Bagborough, Somerset, I saw a Robin *Erithacus rubecula* posturing before a nearly spent garden bonfire. The Robin, tail cocked, was standing on the ground and was swaying its puffed-out red breast before a glowing red ember, at a distance of about a metre. The ember had the rough shape of a small bird and was beginning to lose its colour through cooling. It is well known that Robins, particularly males, will readily posture before orange-red objects in their territory, but it must be unusual for a piece of burning wood to attract attention.

Dr A. P. Radford
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Mistle Thrush defending berries from Waxwings

On 12th December 2004, in Gatehouse of Fleet, Kirkcudbrightshire, my attention was drawn to persistent alarm calls from a Mistle Thrush *Turdus viscivorus* perched in a large tree. I then noticed a flock of about 50 Waxwings *Bombycilla garrulus* in an adjacent tree, which were clearly the cause of the thrush's alarm. Shortly afterwards a few Waxwings flew down towards an ornamental Rowan *Sorbus aucuparia* tree with an abundant crop of white berries, whereupon the Mistle Thrush became more agitated and started flying around the Rowan, calling loudly. This caused the Waxwings to return to their perch in the top of the larger (non-berry-bearing) tree. This was repeated several times until, after about 20 minutes, the whole flock of Waxwings flew off. The thrush remained, making a high-pitched 'see' call, but made no attempt to eat the Rowan berries.

About two hours later, the thrush again started making alarm calls, and this time a party of about eight more-persistent – and presumably hungrier – Waxwings started to make repeated attempts to land in the Rowan. Some managed to do so, whereupon they were attacked by the Mistle Thrush, and only one or two Waxwings managed to grab the odd berry while the thrush was occupied with their colleagues. During this period the thrush also paused momentarily to eat the odd berry – the only time that it did so. Interestingly, two pairs of Bullfinches *Pyrrhula pyrrhula* (often recognised as competitors by Mistle Thrushes and driven off) were in the same Rowan eating berries, unmolested and unperturbed by either thrush or Waxwings. After about 15 minutes, these Waxwings also gave up, and none returned for the rest of the day. The thrush remained in the area.

Dr Jeremy Brock
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EDITORIAL COMMENT The defence of berry trees by Mistle Thrushes is well known, but this observation is of interest given the numbers of Waxwings repelled by the thrush. As described by Snow & Snow (1988, *Birds & Berries*, Poyser), a flock of birds that persistently intrudes can eventually overwhelm the defenders, and Creutz (1952, *Orn. Mitt.* 4: 67) described Waxwing flocks overwhelming

Mistle Thrushes attempting to defend Mistletoe *Viscum album* in Germany. This Note is also of interest for the location of the behaviour. Snow & Snow (1988) speculated that there may be a northern limit of food-guarding behaviour, perhaps in northern England, since berry trees are impossible to defend successfully in areas or at times when conditions are harsh.

Coal Tits using peanuts in courtship feeding

Between 30th April and 2nd May 2005, in my garden at West Bagborough, Somerset, I saw typical courtship feeding by a Coal Tit *Periparus ater* pair on three occasions. Each time the male Coal Tit fed its mate with peanut fragments obtained from a feeding cage; no invertebrate food was offered. According to *BWP*, protein-rich animal food is normally offered during courtship feeding among Coal Tits, which must benefit the female during egg-laying; vegetable seeds do not have a high available-protein content. Now that peanuts, with good nutritive value, are commonly put out in gardens, they may be selected increasingly for use in courtship feeding by Coal Tits and, possibly, by other tit species.

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Western Jackdaw carrying Slow-worm

Driving along a narrow lane between Cape Cornwall and St Just, Cornwall, on 4th April 2004, I noticed two Western Jackdaws *Corvus monedula* perched on a roadside wall, one of which was carrying a Slow-worm *Anguis fragilis* in its bill. I stopped the car very close to the birds and could then see that the reptile was freshly dead. After a few seconds the Jackdaws flew off, the Slow-worm still being carried.

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Lesser Redpolls at garden feeders

Until 1983, declining numbers of Lesser Redpolls *Carduelis cabaret* occasionally visited the Silver Birch *Betula pendula* trees in my garden in Digswell, Hertfordshire. On 13th February 2005, a single Lesser Redpoll arrived in the same trees, but then flew into an apple *Malus* spp. tree where it joined nine Goldfinches *C. carduelis*, and fed on niger seed provided in appropriate dispensers. Two Redpolls were present on 17th and four by 26th February. Thereafter at least four different birds visited the niger seed feeders several times daily until 16th March. The last were two that appeared briefly on 18th March. Could this be the start of redpolls adapting to garden feeding, as has happened with other cardueline finches, i.e. Goldfinches and Siskins *C. spinus*? Time will, of course, provide the answer to this question. In the meantime, the behaviour reported here would appear to be extremely unusual, if not unique.

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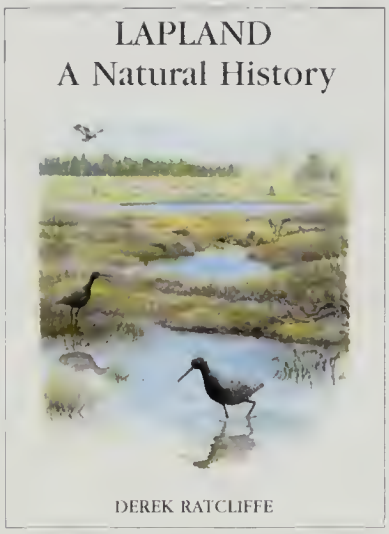
LAPLAND:
A NATURAL HISTORY

By Derek Ratcliffe. T. & A. D. Poyser, A&C Black, London, 2005. 352 pages; 249 colour photographs; many maps, line-drawings, diagrams, etc. ISBN 0-7136-6529-7. Hardback, £40.00.

Derek Ratcliffe's reputation as one of the most gifted and articulate naturalists of our time could easily have rested on his having unmasked the threat of DDT, not to mention his acclaimed monographs on the Peregrine Falcon *Falco peregrinus* and the Common Raven *Corvus corax*, or his time as Chief Scientist at the Nature Conservancy. This exceptional book not only reveals again his depth of knowledge and his acute feel for a landscape, and all that goes to make it what it is, but is a production maintaining the highest standards of the iconic Poyser series. The writing of this book stemmed from 14 expeditions to Lapland in the breeding season with his wife Jeanette, and his love of this wild northern region. His enthusiasm for researching it is apparent on every page. In May 2005, he was on the point of leaving for his next visit, having passed the proofs for this book, and had the day before been to the publishers to collect his photographs, when he died unexpectedly.

As an ecological study of a faunal region, the subject is by no means unique, but the treatment can hardly ever have been bettered; the wealth of information is discussed in such delightful writing that even the more obscure differences between certain types of bogs and mires become quite absorbing. The early chapters form an in-depth introduction to Lapland, the naturalists who explored it and documented their findings, the biogeography and composition of the wildlife, and the ecology of the birdlife. This is followed by a series



of chapters in which habitats such as lakes and rivers, the tundra, boreal forests and man-made habitats are treated in detail, each topic being generally followed by a double-page spread of four photographs of relevant subjects. These photos, of the highest quality, are of landforms, plants, mammals and birds, many of them taken by the author. They are excellently reproduced, and form a notable feature of the book, together with the attractive drawings by Mike Unwin.

One senses that the author has a special affection for waders, and his accounts of the nesting and habits of such iconic northern birds as Jack Snipe *Lymnocryptes minimus*, Wood Sandpiper *Tringa glareola* and, perhaps particularly, Spotted Redshank *T. erythropus* simply make one want to book a trip right away for next summer. One useful appendix summarises the fascinating breeding strategies and behaviour of the waders, and another, in tabular form, lists data for all the breeding birds of Lapland.

While great areas of pristine habitat remain, Lapland is far from immune to change, and given the attention that the subject of damage by overgrazing of deer is now attracting in Europe and North America, his comments on a parallel situation with Reindeer *Rangifer tarandus*, and its possible ecological consequences, are particularly interesting. These animals, which in Lapland are mostly semi-domesticated, have increased greatly in numbers in the last 50 years. They feed largely on lichens, which sustain soil moisture and nutrients, hence plant diversity, and provide important food and cover for lemmings and voles (Muridae). It has been found that in ungrazed Reindeer exclosures, lichen biomass is up to nine times greater than in grazed areas, and the author suggests that one consequence of overgrazing and trampling has been the collapse of the well-known phenomenon of rodent cycles. These typically occurred at four-year intervals, but the last moderate peak in numbers was about 14 years ago. Not only has there been a parallel reduction in numbers of predators, especially owls (Strigidae) and Rough-legged Buzzards *Buteo lagopus*, but it also seems that when mammal numbers are low, grouse (Tetraonidae) experience increased predation. The author has noted the general scarcity of the four species of grouse, and in my limited experience in spring, I could not find Willow Grouse *Lagopus lagopus* in Finnmark, and saw only one Capercaillie *Tetrao urogallus* and four Black Grouse *T. tetrix*. There are interesting discussions about other threats, such as atmospheric pollution and acidification from the Russian nickel-smelting operations, and not least from global warming, for which, as the author notes, 'the evidence is surely overwhelming'.

This book is a classic in every sense, and will be a great delight and source of information for those who know Lapland, and a stimulus to others to get there and see it for themselves. I can thoroughly recommend it.

Martin Woodcock

BIRDS IN EUROPEAN CITIES

Edited by John G. Kelcey and Goetz Rheinwald. Ginster Verlag, St Katharinen, Germany, 2005. 450 pages; black-and-white photos; maps. ISBN 3-9806817-2-6. Hardback, 29.50.

This intriguing volume documents and discusses the avifauna of 16 cities scattered across continental Europe from Lisbon, Portugal, to Moscow, Russia; although, as more than half of those featured are located from Germany eastwards, a distinct central and eastern European flavour is apparent. The book's editors are well aware of this bias (which is presumably due to the availability of willing authors) and hope to publish accounts from a wider range of European cities in a future edition. Following a short preamble outlining the editors' thoughts on the relationship of birds to urban areas (touching briefly on subjects such as town planning and landscape design), the various cities, arranged in alphabetical order, are discussed in turn. Each of these chapters is similarly structured, firstly describing the particular city's history and the development of its habitats and bird populations, and secondly its present-day avifauna and environment.

To some *BB* subscribers this may sound rather dull, yet there is much to interest the general reader in the accounts. For example, in Sofia, Bulgaria, migration was well studied before 1940, and the numbers of birds sometimes then encountered emphasise just how much the populations of many European species have declined during the latter half of the twentieth century. Red-footed Falcons *Falco vespertinus* roosted in 'hundreds' in parks and gardens in the city centre, while adverse weather conditions resulted in spectacular falls of 'thousands of Common Quails *Coturnix coturnix*, mixed with Corn Crakes *Crex crex* and other birds'; even the Slender-billed Curlew *Numenius tenuirostris*, a species now apparently sliding inexorably towards extinction, was then 'numerous' on passage. However, not all is bad news for birdwatchers in Sofia, as in recent years Peregrine Falcons *Falco peregrinus* have begun to nest, the breeding population of Black Woodpeckers *Dryocopus martius* continues to expand, and it is thought likely that Isabelline Wheatear *Oenanthe isabellina*, a species spreading westwards across southeast Europe, will colonise soon. There is also a reminder of just how unnerving birding in certain parts of the world can sometimes be. During the time of the communist regime, Petar Iankov (author of the Sofia account) was briefly arrested following an early-morning breeding bird survey, and it later transpired that the area he had just finished mapping was under 24-hour surveillance by the Bulgarian Secret Police! In a short postscript, the editors discuss points emerging from the various contributions, note a few avenues for future study (for example, little is known about the interchange of bird populations between town and country), and express the view that, as urban habitats are inevitably set to expand in future, biologists should be involved in city design and management.

Birds in European Cities has something new to say, and will be a useful addition to the library of anyone with an interest in Europe and its birds.

Pete Combridge

BIRDS: A COMPLETE GUIDE TO ALL BRITISH AND EUROPEAN SPECIES

By Dominic Couzens. Photographer and Photographic Editor, David Cottridge. Collins, London, 2005. 336 pages; numerous colour plates; drawings and maps. ISBN 0-00-713821-0. Hardback, £30.00.

The back-jacket blurb of this large-format, glossy and well-produced volume boldly claims it to be 'the ultimate reference book' to European birds. Well, it certainly is an extremely well-illustrated one, being enhanced by small coloured drawings (by Norman Arlott) and a comprehensive collection of often-wonderful colour photographs. Following an 18-page introductory section, which includes an explanation of the book's plan and brief discussions of various topics such as habitats and conservation, the text is arranged in species order (beginning with divers *Gavia* rather than swans *Cygnus*). The species accounts are written in an informal and chatty style and appear mostly well researched, though a few errors have slipped in (for example, the now-defunct scientific name *Sula bassana* is used for Northern Gannet *Morus bassanus*).

This volume is clearly aimed at birdwatching beginners but, despite my generally favourable comments in the preceding paragraph, I doubt that their long-term interests will be best served by its purchase. Why? Well, my first steps in birdwatching were illuminated by such books as Ian Newton's *Finches* and Bruce Campbell & James Ferguson-Lees's *A Field Guide to Birds' Nests*, from which I learnt not only about their subjects but also much about ornithology in general, and more than 30 years later they still remain valued and regularly consulted volumes. I doubt that *Birds* will enjoy such longevity for, though competently executed, it is simply a compilation of information available in reference works such as *BWP Concise* and *The EBCC Atlas of European Birds*, to which developing birders will, hopefully, soon progress. Although not without merit, this book offers nothing new.

Pete Combridge

OISEAUX DE TUNISIE

By Paul Isenmann, Thierry Gaultier, Ali El Hili, Hichem Azafzaf, Habib Dlensi and Michael Smart. Société d'Etudes Ornithologiques, Paris, 2005. 432 pages; 200 colour photographs; 150 maps. ISBN 2950654894. Paperback, £32.00.

North Africa has benefited from an increase in visiting birders in recent years, and detailed avifaunas have been published on Morocco and Algeria. This French and English volume (a companion to the work on Algeria) will add further to this focus. Well illustrated throughout, the book is mainly a systematic list of the 395 species recorded from the country. A brief description of the geography of Tunisia is given, and this is accompanied by an attractive range of habitat photographs. There is also a concise history of the country's ornithological milestones and a discussion on its importance as a wintering destination.

Much of the book, amounting to almost 340 pages, is devoted to species accounts. Most accounts of breeding and wintering species are in the region of 400–500 words, and somewhat less for passage migrants and vagrants. Much of this comprises distributional data but there is also some breeding information taken from local records. Some 193 species are shown as breeding, of which 143 benefit from a simple distribution map printed somewhere nearby. Recent changes in breeding ranges are also discussed. It is difficult to understand why maps for some breeding species, including waterfowl, Eleonora's Falcon *Falco eleonorae* and Savi's Warbler *Locustella luscinioides* were left out. Similarly, maps are not included for frequent winter visitors. Clearly such additions add expense but would make the book more complete. A gazetteer of about 300 localities is given together with their appropriate administrative region, although latitude and longitude co-ordinates would have been helpful. There is also an extensive list of references.

If you have never visited Tunisia, I would urge you to rectify this, as the country offers great birding at an attractive price. If you were put off by the lack of available literature, then you now have absolutely no excuse!

Keith Betton

SKYE BIRDS: AN ILLUSTRATED GUIDE TO THE BIRDS OF SKYE AND WHERE TO FIND THEM

By R. L. McMillan. Skye-Birds, Isle of Skye, 2005. 176 pages; line-drawings by Jean Thomas; colour and black-and-white photos. ISBN 0-95502-530-3. Paperback, £14.95, inc. p&p from Elgol, Broadford, Isle of Skye IV49 9BL; www.skye-birds.com

This book fills a long-standing gap in the avifauna of western Scotland, for there has not been a major summary of the birds of Skye for over a century, the last significant work being Harvie-Brown & Macpherson's *A Vertebrate Fauna of the North-west Highlands and Skye*, published in 1904. Few will have access to previously published papers that update this volume, among which the latest list is now 50 years old. The national atlas surveys are useful, but are no substitute for a local avifauna, written by those who know their local birds better than anyone, which is what is provided here. The author's website www.skye-birds.com is, perhaps, compensating for his sad complaint that few observers send their records to the excellent *Highland Bird Report*.

Writers of Highland and Island avifaunas will always have to consider the tourist market. Most have sought to combine local history with a site guide, which is the format followed here. There is a good introduction, including detailed biographies of Macpherson, the largely absentee laird of the Glendale Estate, and Seton Gordon, for whom Skye was home for the last 46 years of his long life.

Although there may be few birdwatchers for whom Skye would be a prime holiday destination, this book shows that there is much to interest visitors, including breeding White-tailed *Haliaeetus albicilla* and Golden Eagles *Aquila chrysaetos*, Hen Harrier *Circus cyaneus*, Corn Crake *Crex crex* and Greenshank *Tringa nebularia*. The author advises you to expect 'quality, not quantity'. Seawatching opportunities are given. Whatever you see here will have a splendidly memorable background, provided the notoriously fickle weather permits.

There are good drawings of local interest, and a selection of species photographs. It is unfortunate that this authoritative work was typeset in office-computer style, with spaces used rather than indents. The style is often repetitive and somewhat under-punctuated for easy reading. One can only hope for some standardisation of vernacular names, so that the 'Black-billed Magpie' *Pica pica* may be consigned to the international scene to which it belongs.

David Ballance

RSPB BIRDS OF BRITAIN & IRELAND

Gibbon Multimedia, Henfield/Christopher Helm, London, 2005. Multimedia product including sound clips, photos, maps and other illustrations. Single CD-ROM (for use with Windows 98, 2000, ME, XP or Windows PDA with Pocket PC 2002 or later and 128 Mb SD-card). £39.95

This CD-ROM incorporates best-selling Christopher Helm titles (the *Handbook of Bird Identification* and the *RSPB Handbook of British Birds*, plus the *Where to Watch Birds* series entries for both Britain and Ireland) along with sound-files from the familiar Jean Roché four-CD collection *Bird Songs of Britain and Europe*. It can also be loaded on a Windows-based Personal Digital Assistant (PDA), using a 'plug and play' 128 Mb SD-card. Apple computers are not catered for.

It is easy to nitpick about this product when browsing on a desktop PC at home. There is an annoying online registration/deregistration system to ensure that only one copy is installed; there are no videos and only half the 567 species have full content, including photographs and sound-files; the illustration for Sykes's Warbler *Hippolais rama* is the same as one of the two provided for Booted Warbler *Hippolais caligata*; the site guides are not updated so, for example, information on access to Seaforth Docks, Merseyside, and ferry booking arrangements for Shetland are out of date.

The interactive map (which has Edinburgh (!) and Martin Mere, Lancashire, in the wrong place) has the facility to click on sites on the map and obtain a local list, but this needs considerable development. For example, in Shetland we are told to expect just 47 species on Fair Isle (including Great Shearwater *Puffinus gravis* – last seen there in 1986), or 51 species on Foula (including Red Grouse *Lagopus lagopus*, which has never been recorded there); but 107 species on North Ronaldsay, Orkney, where Barred Warbler *Sylvia nisoria* and Red-breasted Flycatcher *Ficedula parva* are apparently more likely to occur than they are on Fair Isle! If you want a multimedia product for a home computer, there are better choices available, with video as well as sound-files.

This is missing the point, however. The size of the program and the lack of video make it small enough to be portable. If you travel round with a laptop, having access to another field guide in CD-ROM form can be quite appealing, especially if it comes with sounds, a site guide and installation on the hard drive so that there is no need for the original disc. This product really comes into its own when uploaded onto a PDA, and there are interactive features clearly designed for the PDA module which help with identification and recording, with the option to write information back to PC. It is, however, unlikely that there are many users who would consider the current implementations to be quicker to use in the field than the traditional paper-based field guide and notebook.

At the moment, the only comparable software for the PDA is the *Collins Bird eGuide*, an electronic version of the famous field guide. With 750 species, sound-files for over 450 species and complete Western Palearctic coverage, it provides more-comprehensive coverage, but lacks the site guide and is currently twice the price. Software is also being developed for other handheld devices. The latest iPod not only plays music but video as well, and BirdGuides has already produced an iPod edition of their *Video Guide to British Birds*. Using these devices in the field in Britain may seem a little incongruous, but imagine replacing the two or three field guides and minidisc player required for an overseas trip with one pocket-sized device. How long before birders will be carrying round their field guide on their mobile phone?

In summary, *Birds of Britain and Ireland* is not what the computer world calls a 'killer app', a software application that makes the hardware essential, but if you have a PDA already, it is worth looking at. In the internet age, however, we expect digital products to be up to date, while the future of PDA products must depend on making them easier to use and essential in content, especially given the likely competition in future.

Mike Pennington

'Svensson' is now available again

The BTO is pleased to announce that the seminal identification guide for ringers and birders – Lars Svensson's *Identification Guide to European Passerines* – has now been reprinted and is available once more. 'Svensson' has been an essential item in every ringer's 'toolbox' for decades, and provides the wherewithal to determine the age and sex of 229 species and subspecies, including all passerines occurring regularly in Europe. Given the quality of modern optics, many birders now have the opportunity to see features that were once the sole preserve of ringers – and where else will you find out how to age that spring Arctic Warbler *Phylloscopus borealis* or how to sort out the wing formula of that possible 'eastern' Lesser Whitethroat *Sylvia curruca*?

The guide was developed from a booklet first published in Swedish in 1964, the first English-language edition of the current guide being published in 1970. A completely new edition of the guide is in preparation, but this limited reprint of the fourth edition provides a great opportunity to get hold of the guide now. To order a copy, e-mail sales@bto.org, or contact Chris Morley at the BTO, The Nunnery, Thetford, Norfolk, IP24 2PU; tel: 01842 750050; price £20.00 plus £2.95 p&p, or £18.00 post-free for registered ringers.

News and comment

Compiled by Adrian Pitches

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

Precious wetland drained by wildlife trust

A Special Protection Area designated for its wintering wildfowl was drained by the wildlife trust entrusted with its stewardship in the run-up to World Wetlands Day, on 2nd February. English Nature was so concerned that it has considered prosecution. The questionable drainage policy of the Yorkshire Wildlife Trust (YWT) at Wheldrake Ings in North Yorkshire has been challenged before by birdwatchers, but this latest event has sparked particular fury. Local birder Russell Slack said: 'This was eco-vandalism of the worst kind. If some industrial company had done this, there would be uproar. There were 30,000 birds on the reserve, including 8,000 Eurasian Wigeons *Anas penelope*, before they opened the sluices – and then there were just puddles left, a few hundred ducks remaining and nowhere else for them to relocate to nearby.'

Wheldrake Ings is a seasonally flooded grassland in the Derwent valley southeast of York which has both ornithological and botanical value (according to JNCC, the Lower Derwent valley contains a greater area of high-quality lowland hay meadows than any other UK site). YWT owns the Ings and manages it in accordance with plans drawn up by English Nature, by adjusting the water levels through sluices or 'penstocks' which drain into the River Derwent. The draw-down is supposed to happen in spring – not in winter, and not in the middle of the worst drought for a decade. Michael Krause of the YWT said that the Ings could be drained only when the River Derwent was not too full, and he admitted: 'The water has drained away more quickly than we would have liked. It's a complicated job, not an exact science. We have to estimate now what might happen in February or March and conditions vary every year. Managing the site for wildfowl *and* the special grassland is rather difficult and we may need to seek clarification from English Nature about the management agreement.'

English Nature took the midwinter draining of the Ings extremely seriously and called a meeting with YWT immediately. EN's deputy area manager in York is Sarah Woolven. She said: 'We very much regret the short-term impact of recent events at Wheldrake Ings on the wintering bird populations. The medium- to long-term impact of the draining of the Ings remains to be seen but we will monitor the situation closely. We accept the explanation of the Trust that the draining of the water from the site was caused by an error of judgement on the part of site managers and, in this respect, was an unfortunate accident. Whilst we hope that it will not be necessary to take any legal action in relation to the impact on wildlife, we have obligations to investigate such matters under the relevant legislation and are presently taking legal advice on these matters.'

Russell Slack remains pessimistic about the prospects for the coming breeding season: 'If we hit a drought this year and no further water comes onto the reserve, then there will be hardly any wetland breeding birds on the site.' This is precisely what happened in the spring of 1998, when YWT took over management of the reserve from English Nature and promptly drained the Ings. Russell recalls: 'It was mid May and they drained the site. A pair of Black Terns *Chlidonias niger* abandoned their nest. Black-necked Grebes *Podiceps nigricollis*, Spotted Crakes *Porzana porzana* and possibly Eurasian Bitterns *Botaurus stellaris* went overnight and thousands of young birds died, clogging up the penstocks.'

Incidentally, the YWT is currently urging people to vote for Yorkshire's favourite bird. Readers might wish to nominate Black-necked Grebe... Visit the Yorkshire Wildlife Trust website www.yorkshire-wildlife-trust.org.uk

Bill Baston

69. Black-necked Grebe *Podiceps nigricollis*: Yorkshire's favourite bird?

Windfarms and White-tailed Eagles

The RSPB has highlighted the deaths of four White-tailed Eagles *Haliaeetus albicilla* at a Norwegian windfarm as it maintains its campaign against plans for a massive 200-turbine windfarm on Lewis in the Western Isles. The four dead birds were found between August and December last year on Smøla, a set of islands about 10 km off the northwest Norwegian coast and site of a 68-turbine windfarm. Two eagles had been sliced in half, apparently by a turbine blade. Post-mortem analysis blamed multiple trauma caused by a heavy blow for the birds' deaths. Besides the four deaths, a further 30 eagles failed to return to nesting sites within the windfarm area.

Smøla is listed by BirdLife as an Important Bird Area (IBA) because it has one of the highest breeding densities of White-tailed Eagles in the world. The Norwegian government ignored advice based on an environmental assessment warning against the development because of the danger it posed to the eagles, and the windfarm was constructed between 2001 and 2005. Research by the RSPB, the Norwegian Institute for Nature Research (NINA) and the Norwegian Sea Eagle Project will now be stepped up to include regular checks for casualties throughout the wind park, and monitoring of this spring's breeding activity. Conservationists are yet to draw firm conclusions from their initial monitoring because breeding numbers of White-tailed Eagles often vary, and in 2004 and 2005 especially, construction activity for the second part of the wind park was intense.

Arne Follestad, a Research Scientist at NINA said: 'Breeding results on Smola have been strikingly poor compared with the 30 years before the windfarm was built, both on the site itself and on the remainder of the island.' Dr Mark Avery, Conservation Director at the RSPB, said: 'The Norwegian findings are shocking, yet may be only the tip of the iceberg. ... if more dead birds are found, and even fewer are able to breed, we will be doubly determined to fight windfarm plans that could cause similar destruction in the UK.'

White-tailed Eagles are beginning to thrive in the Western Isles as a direct result of the 30-year reintroduction project, but wind power could wipe them out. Stuart Housden, Director of RSPB Scotland, said: 'The news from Norway is of great concern to us. If White-tailed Eagles have died because of wind-turbine collisions, there are major implications for our own eagle populations here in Scotland. We are campaigning hard against the proposed 209-turbine windfarm for the north Lewis peatlands, partly because of the great danger it poses to Scotland's eagles.'

Furthermore, there are grim portents for Hebridean eagles from the other major windfarm proposal on Lewis, the 133-turbine development on the Eisgein estate. Scottish Natural Heritage (SNH) was forced to reassess the impact of this proposal after complaints from the public that the environment impact assessment submitted by Beinn Mhor Power had grossly underestimated the risk the turbines posed to eagles. In fact the risk was underestimated by 5,000%! The projection for the 25-year lifetime of the windfarm should have been 575 eagle deaths! SNH had originally rubber-stamped the risk assessment which went with the planning application; it predicted one adult eagle killed by wind turbines every 3–6 *years*. When SNH re-evaluated the risk, it found that the projected mortality rate should have been one Golden Eagle *Aquila chrysaetos* every 3–6 *weeks* and a White-tailed Eagle death every 8–15 weeks. Over the 25-year lifetime of the project, up to 450 Golden Eagles and 125 White-tailed Eagles could be expected to fall victim to turbine blades. Of course, this exceeds the entire UK population for both species, but Lewis and Harris do support one of the highest-density Golden Eagle populations in Europe (c. 60 pairs), while the entire UK population of White-tailed Eagles (32 breeding pairs) is restricted to the islands off western Scotland. Neither population would last very long if the Eisgein windfarm is built and these projections prove correct.

Reintroduction of White-tailed Eagle to England

Now that the extinction of the White-tailed Eagle in Scotland could be a possibility, perhaps it is timely that English Nature is proposing to 'reintroduce' the eagle to Suffolk. A paper presented by EN ornithologist Phil Grice to the EN Council in December stated that: 'The Sea Eagle should be a characteristic feature of England's wetland habitats and has been proposed as a suitable candidate for population re-establishment through reintroduction. Coastal East Anglia is arguably the most suitable place to reinstate the species, based on habitat suitability.' Indeed, preliminary discussions among the Suffolk Wildlife Trust, RSPB, Forestry Commission and Anglian Water have already taken place.

White-tailed Eagle chicks of 6–8 weeks old would be collected from nests in eastern Europe and reared in holding aviaries in Suffolk before release. Feeding stations would be maintained in the vicinity as the young birds learnt to hunt. The project could start as soon as next year. The EN paper says: 'A simple population model (using parameters derived from the Scottish population) suggests that releasing 80 juveniles over a four-year period will yield a self-sustaining population (considered to be at least 20 breeding pairs) in 27 years, whereas releasing 120 birds over six years would result in 20 pairs in 15 years.'

The justification for the Sea Eagle project is 'To re-establish by reintroduction, a self-sustaining breeding population of Sea Eagles in eastern England.' Phil Grice suggests that by so doing the project can promote the wildlife

and landscapes of East Anglia, generate economic benefits from ecotourism and raise the profile of Natural England. Natural England is the successor to English Nature and the Countryside Agency and will be launched in October. Cynics may see the Sea Eagle project as a high-profile PR campaign for the new agency, particularly as East Anglia is already a tourism magnet whose economy is doing very nicely from the hordes of visitors to Minsmere and other Suffolk coast honey pots.

Crucially, as Phil Grice (co-author of the acclaimed *Birds in England*) acknowledges, there is little evidence that the White-tailed Eagle has ever bred in eastern England, so 'reintroduction' is a little misleading: 'There is a dearth of documentary evidence for breeding in eastern England, probably because the species was extirpated here before their presence was documented... Since their extinction, individual birds have continued to visit eastern coastal counties, with at least 12 long-staying overwintering birds recorded during the period 1958–2000 confirming that the bird's wintering habitat requirements are being met in this area.'

The projected cost of the Sea Eagle project is up to £150,000 per year over a ten-year period. Perhaps £1.5 million could be better spent restoring wetlands to increase the Bittern population? Particularly given that Suffolk's first windfarm has just won planning permission in the area of the planned releases... To find out more, visit: www.english-nature.org.uk/about/meetings/GCP0536.pdf

Breeding Eagle Owl shot dead

In North Yorkshire, the female of the first pair of Eagle Owls *Bubo bubo* to breed in the wild in the UK has been found dead, close to the nest-site in the Yorkshire Dales. The pair became famous last November, when a BBC TV documentary *Return of the Eagle Owl* postulated that the growing British population of the birds could be attributed to colonisation from the continent (*Brit. Birds* 99: 48). The owls had nested on MoD land for the past nine years and raised 23 chicks. A post-mortem examination found that the bird's body contained a large amount of heavy-gauge shot; the bird would either have died when it was shot or have starved to death because the pellets meant that it was unable to feed.

Despite some confusion over the legal status of Eagle Owls in Britain, which are presumed to originate from captive birds, they *are* protected by law; a recent amendment to the Wildlife and Countryside Act included all threatened species that are native to Europe. Consequently, a police investigation has been launched (and anyone with information on the shooting is asked to call 0845 6060 247).

One of the young eagles raised by this pair was killed when it flew into power lines in Shropshire last year. Apparently it was homing in on a calling Eagle Owl in an aviary when it collided with the wires. If the male North Yorkshire bird, which remains on territory, is equally vocal, then there is a slim chance that he may attract another female Eagle Owl at large in northern Britain.

British bustards migrate to France

The Great Bustard *Otis tarda* reintroduction project in Wiltshire has inadvertently started to reintroduce bustards to France. Three different wing-tagged birds from the release scheme on Salisbury Plain were sighted in December and January, including one (unlucky '13') that was found dead beneath power lines on 2nd January. It had flown 430 km south across the Channel before colliding with the wires at Champ-sur-Layon, near Nantes, in the Loire valley. Another bird ('31') was sighted a fortnight earlier at Saint-Vio, Baie d'Audierne, Brittany on 21st December, while a third ('23') was seen on 14th January at Ampouillac, Cintegabelle, Haute-Garonne, close to the Spanish border (see www.ornithomedia.com/magazine/mag_art268_1.htm).

There have now been two years of Great Bustard releases in Wiltshire using young birds sourced from the Russian breeding population. The class of 2004 suffered high mortality, with predation by Red Foxes *Vulpes vulpes* and collision with barbed-wire fences on the Plain being particular problems. Only 16 of the original 28 birds transported from Russia were still at large by spring 2005. A further 37 birds were imported in summer 2005. The first two bustards seen in France were from the original 2004 cohort but, perhaps surprisingly, the bird that travelled furthest was one of the youngest, released in summer 2005.

The fact that the British/Russian bustards have proved so dispersive (there are unconfirmed sightings from the north coast of Germany and northwest Italy) has raised fears of birds from the Russian population arriving in Spain and interbreeding with the genetically distinct Iberian population of Great Bustard. Of course, the last species of British origin to arrive in Spain and interbreed with local birds was the Ruddy Duck *Oxyura jamaicensis*, which hybridised with White-headed Ducks *Oxyura leucocephala*. An extremely expensive extermination programme is now taking place in the UK to prevent this continuing.

Culling the wandering British Great Bustards to preserve the genetic purity of the Spanish stock has not yet been mooted, and the Great Bustard Group (GBG;

www.greatbustard.com) is hopeful that the young birds will return to Wiltshire after their wanderings. The present reintroduction scheme, which could see annual releases over a ten-year period, is the third since the species became extinct in Britain in 1832. In the 1900s, 16 pinioned birds from Spain were released on Lord Iveagh's estate at Elveden, in Suffolk, but never bred successfully. In the 1970s, the Great Bustard Trust attempted a reintroduction on Porton Down, Wiltshire. One chick was hatched but did not survive, and in 1989 the surviving birds were transferred to Whipsnade Zoo in Bedfordshire, where the last bird died in 1999. The Great Bustard Group was formed in 1998 and in 2003 secured a Defra licence to import Russian bustard chicks to the UK.

Meanwhile, following allegations by Dr Patrick Osborne, a former adviser to the GBG, that the reintroduction scheme involved overzealous harvesting of eggs in Russia (*Brit. Birds* 99: 49), the GBG has responded. David Waters, GBG chairman said: 'Dr Patrick Osborne was dismissed as an adviser to the Great Bustard Group in June; he was not, nor has ever been, the project's chief scientist, but was commissioned to write certain pieces of work, including the licence application. Dr Osborne has been on record many times stating that the Russian Great Bustard population is either increasing or stable. His change of opinion is a serious matter and one that he has been asked to provide some evidence for. He has not yet produced [the Group with] any evidence to support his claim [that the reintroduction scheme in Britain is threatening the Russian population]. The Russian officials he named and claimed supported his allegations have provided statements contradicting his claims.'

Urban House Sparrows need insects

A lack of insects in built-up areas in summer may be contributing to the dramatic decline of the House Sparrow *Passer domesticus*. New research from De Montfort University (DMU) in Leicester could help to explain the plummeting population of House Sparrows in many urban and suburban areas, where numbers have more than halved in 20 years. Kate Vincent has just completed her PhD investigating the causes of the decline in House Sparrows in urban Britain. The five-year study was funded by DMU, RSPB and English Nature.

Kate Vincent said: 'This is one of the most mysterious and complex declines of a species in recent years. Since 1970, the urban House Sparrow population has declined by 58% while sparrow populations in rural gardens have declined to a lesser extent, by only 48%.' Fieldwork was undertaken at nine study areas across Leicester and surrounding villages, for which more than 600 nestboxes were erected. At each site, the sparrows' nesting success, chick condition, diet and feeding habits were monitored. Many chicks starved in the nest during June and July and a lack of small insects, including beetles, craneflies, aphids and spiders, was a particular problem in suburban areas. 'While we can't pinpoint one simple cause of the sparrows' decline, food limitation during the breeding season does have a negative impact on nestling survival rates. House Sparrows need key habitats in which to find food for their young during the summer months and they particularly target deciduous shrubs, grass lawns and tilled soil.' The trend for low-maintenance and smaller gardens with more concrete, gravel, paving and evergreen shrubs, as well as the increased development of brownfield sites in city areas, could limit the availability of invertebrates.

Dr Will Peach, Senior Research Biologist at the RSPB, said: 'This study has clearly demonstrated that a lack of insects in suburbia during summer prevents House Sparrows rearing their young. Although we are not sure about the exact causes of the population decline, any measures that boost insect numbers in gardens should help nesting sparrows. Growing deciduous shrubs and trees, leaving patches of unmown long grass and minimising usage of insecticides should all help.'

DNA analysis on the 'Minsmere curlew' – an update

The controversy surrounding the identification of the mystery curlew seen at Minsmere RSPB reserve, Suffolk, in September 2004, has finally been resolved using DNA analysis. When the bird was found, there was a great deal of initial excitement about the possibility that it might be a Slender-billed Curlew *Numenius tenuirostris*; although most people soon accepted that the bird was merely a small Eurasian Curlew *N. arquata*, its true identity remained a mystery.

Prof. Staffan Bensch, from the Ecology Department at Lund University, in Sweden, has now analysed droppings collected from the Minsmere bird, and also fragments from museum specimens of other *Numenius* species, including Slender-billed Curlew. Analyses of two separate faecal samples proved that the DNA was identical to that of Eurasian Curlew, while the results from museum specimens also support the theory that the Minsmere bird was not Slender-billed. In short, the scientists are now as sure as they can be that the mother of the Minsmere Curlew was a Eurasian Curlew and not a Slender-billed. A note describing the analysis in more detail is in prep. for *British Birds*.

(contributed by Adam Rowlands)

Vic Reeves 'comes out' as a birder

Newsreader Robert Dougall, comedian Eric Morecambe, former Chancellor Ken Clarke. Arguably the three most famous British birdwatchers, if you exclude the ubiquitous Bill Oddie. Thanks to Bill and his TV programmes, birding has a higher profile than ever before and is no longer regarded as an eccentric pursuit. But does birding have an ambassador who could broaden its appeal beyond the middle-aged majority? Is there anyone who can make birding 'cool'?

Step forward TV comedian Vic Reeves, whose exhibition of paintings 'Birds of the UK and Other Stuff' is currently (until 4th March) at the Opus gallery in Newcastle upon Tyne. Among his quirky caricatures of Northern Lapwing *Vanellus vanellus*, Great Spotted Woodpecker *Dendrocopos major* and Crested Tit *Lophophanes cristatus* (with a Mohican crest!) is the intriguing 'Rudolf Nureyev imitating a Smew as it passes over his house in the direction of the railway line' (the Smew *Mergellus albellus* is in fact an excellent depiction of a redhead in flight and more recognisable than the Rudolf Nureyev).

When News and comment approached the Darlington-born comedian at the exhibition opening, it was soon apparent that he's been a birder since his youth, although he professes to carry his binoculars around in a carrier bag. Vic lives in Kent and told N&c: 'I don't go out birding much but I saw a Dartford Warbler *Sylvia undata* in my garden and phoned up the RSPB to tell them. The bloke at the other end said they're quite common round my way...' Memo to RSPB: If a celebrity birdwatcher phones you up in future, don't give him/her short shrift. Birding celebs are rarer than Crested Tits with mohicans.

Anthony moves on...

Sharp-eyed readers will have noticed a change to the familiar names on 'Recent reports' this month. Anthony McGeehan has decided to opt out of the monthly deadlines associated with providing our rarity news, after an unbroken run of no fewer than 17 years (Anthony and Barry Nightingale first teamed up to provide 'Recent reports' in February 1989). It has always been a pleasure and a privilege to receive Anthony's monthly missives from Ireland; and to hear news of what's happening at Belfast Lough and, in autumn, on the Donegal coast, his reports invariably spiced with that unmistakeable 'Norn Iron' wit and humour. Understandably, given the pressure of work at the reserve, Anthony has decided to cut back on his commitments elsewhere. His latest e-mail from his office computer, in early February, came with a PS: 'I guess you know there's a Baikal Teal asleep 200 m from this digit?!' Everyone at *BB* wishes him all the very best for the future; and a Pallas's Grasshopper Warbler *Locustella certhiola* at Rocky Point. Taking over from Anthony, we welcome Eric Dempsey, based in Dublin, and well-known on the Irish scene as the man behind BINS (Birds of Ireland News Service). *RR*

Directors for British Birds

BB 2000 Ltd, the company that owns and publishes *BB*, wishes to recruit one or more additional directors. As well as enthusiasm for *British Birds* in particular, and British ornithology in general, applicants should possess skills and experience relevant to the enterprise, in particular in marketing and publishing. This is an opportunity for someone who wishes not only to contribute to the continued development and progress of *BB*, but also to be part of the growth of British ornithology.

We should like to hear from anyone who is interested in being actively involved with *British Birds*; please send a CV to John Eyre (john.eyre@ntlworld.com) and explain how your skills and experience would be relevant to *BB*.

FIBO 3

Fair Isle Bird Observatory must surely be known to all *BB* readers – at least by name if not directly from a visit to the island. The present observatory building was erected in 1969 to replace the collection of naval huts that originally housed the observatory, which dates back to 1948. The pounding of 36 Shetland winters has taken its toll on the existing building, however, and, after a period examining all the options, including refurbishment or part-replacement, the directors of Fair Isle Bird Observatory Trust have now agreed to press ahead and build a completely new observatory. Plans for the new building are at an early stage of development, but they are certain to embrace environmental sustainability as a key thread running through the project. That reflects this remote island community's battle to achieve the sustainable management and enjoyment of its marine environment; and the central role of the observatory in the community. A comfortable, practical and well-equipped new building will be a solid foundation for FIBO's role in the monitoring of the island's seabird populations and migrants, together with other ornithological projects and research, during the coming decades.

The chairman of the Trust is former warden Roy Dennis: 'The Observatory has a crucial role to play in bringing people to Fair Isle and providing a base for birdwatching and scientific research. We believe the time is ripe for a new and exciting eco-friendly building appropriate for the twenty-first century. We recognise that raising the funds will be a challenge for a small trust, but we are certain it is not only possible but also essential for economic well-being of the Fair Islanders.'

Visit the FIBO website at www.fairislebirdobs.co.uk

Recent reports

Compiled by Barry Nightingale and Eric Dempsey

This summary of unchecked reports covers mid January to early February 2006.

Baikal Teal *Anas formosa* Belfast Lough (Co. Down), 29th–31st January and 5th February. Blue-winged Teal *Anas discors* North Bull Island (Co. Dublin), long-stayer throughout. Redhead *Aythya americana* Lewis (Western Isles), 14th January. Ferruginous Duck *Aythya nyroca* Coole Park (Co. Galway), to 3rd February, with long-stayer at Craigavon (Co. Armagh) throughout. Lesser Scaup *Aythya affinis* Caerlaverock (Dumfries & Galloway), 16th January to 5th February; Ouse Washes (Cambridgeshire), 29th

David Tipling/Windrush

70. Lesser Scaup *Aythya affinis*, Caerlaverock, Dumfries & Galloway, January 2006.

Gary Thoburn

71. Cattle Egret *Bubulcus ibis*, Warblington, Hampshire, January 2006.

Marc Read

72. Long-billed Dowitcher *Limnodromus scolopaceus*, Drift Reservoir, Cornwall, January 2006.

Gary Thoburn

73. Adult Laughing Gull *Larus atricilla*, Brixham, Devon, January 2006.

Marc Read

74. Hoopoe *Upupa epops*, Gosport, Hampshire, January 2006.

January to 5th February; Drift Reservoir (Cornwall), long-stayer to 5th February. **King Eider** *Somateria spectabilis* Peterhead (Northeast Scotland), 22nd January and 2nd–4th February; Mousa Sound, long-stayer to at least 1st February, with another at Sand Voe (both Shetland), 1st February. **Barrow's Goldeneye** *Bucephala islandica* Quoile Pondage (Co. Down), long-stayer throughout.

White-billed Diver *Gavia adamsii* Two long-stayers in Shetland, off Nesting on 21st–25th January, and in Mousa Sound 28th January to 1st February.

Cattle Egret *Bubulcus ibis* Bodle Street Green (East Sussex), at least 3rd February and probably for two weeks earlier; Warblington (Hampshire), long-stayer, joined by another on 21st January, with at least one to 4th February; Piddinghoe (East Sussex), eight long-stayers, to 21st January, with at least seven to 28th and six to 31st January; Pagham Harbour (West Sussex), two long-stayers to 3rd February, with one to 5th; Britford Water Meadows (Wiltshire), two long-stayers to 28th, with one to 4th February. **Great White Egret** *Ardea alba* Welney

John Carter

Kit Day

75 & 76. Male 'Black-throated Thrush' *Turdus ruficollis atrogularis*, Swansea, Glamorgan, January 2006.

(Norfolk), 16th January; Cork city (Co. Cork), 5th February.

Rough-legged Buzzard *Buteo lagopus* A few reports: three or four in Norfolk (at Horsey Mill, in the Wighton area, in the Massingham Heath area and at Haddiscoe Island); two in Kent (at Harty Marshes and near Sandwich); Blows Downs (Bedfordshire); Denton Fell (Cumbria); Mainland (Orkney); North Uist (Western Isles).

Little Ringed Plover *Charadrius dubius* Ballycotton (Co. Cork), 29th January. Temminck's Stint *Calidris temminckii* North Ronaldsay (Orkney), 28th January to 4th February. Long-billed Dowitcher *Limnodromus scolopaceus* Drift Reservoir (Cornwall), long-stayer to 4th February.

Laughing Gull *Larus atricilla* Between Saltcoates and Ardrossan (Ayrshire), 24th January to 5th February; Arklow (Co. Wicklow), 25th January; Roscarberry/Owenahinch (Co. Cork), 30th January to 5th February; Theale Gravel-pits (Berkshire), long-stayer to 5th February; Brixham (Devon), long-stayer to 5th February; North Bull, long-stayer throughout; Nimmo's Pier (Co. Galway), long-stayer throughout; Porthmadog (Gwynedd), long-stayer to 5th February. Franklin's Gull *Larus pipixcan* Dundrum Bay (Co. Down), 28th January to 4th February; Cork city, 29th–30th January. Bonaparte's Gull *Larus philadelphia* Cobh (Co.

John Malloy

Stef McElwee

77 & 78. Hume's Warbler *Phylloscopus humei*, Whitley Bay, Northumberland, January 2006.

Cork), 16th January; Lunan Bay (Angus), presumed long-stayer, 2nd February. Forster's Tern *Sterna forsteri* Long-stayers at Ballycotton and Nimmo's Pier throughout. Common Guillemot *Uria aalge* 28,000 flew past Flamborough Head (East Yorkshire) on 15th January. Snowy Owl *Bubo scandiacus* Spiddal (Co. Galway), 31st January.

Shore Lark *Eremophila alpestris* Few reported: six at Holkham (Norfolk), and one at Minsmere (Suffolk), in January. Buff-bellied Pipit *Anthus rubescens* Frampton Marsh (Lincolnshire), long-stayer seen again 24th–29th January.

'Black-throated Thrush' *Turdus ruficollis atrogularis* Swansea (Glamorgan), 18th January to 5th February (and possibly since late December). Hume's Warbler *Phylloscopus humei* Whitley Bay (Northumberland), 14th January to 5th February; Horsey Mill (Norfolk), 24th January to 5th February; Portreath (Cornwall), long-stayer to 1st February. Penduline Tit *Remiz pendulinus* Stodmarsh (Kent), 12th January; Rainham Marshes (London), four, long-stayers, seen again 29th January to 4th February.

Arctic Redpoll *Carduelis hornemanni* Woodwalton Fen (Cambridgeshire), 28th January; Icklingham (Suffolk), long-stayer seen again 2nd–4th February, with two 5th February; Aberlady Bay (Lothian), long-stayer to 5th February. Common Rosefinch *Carpodacus erythrinus* Graves Park, Sheffield (South Yorkshire), 31st January to 5th February. Hawfinch *Coccothraustes coccothraustes* Small numbers were reported widely across England following the influx last autumn. Little Bunting *Emberiza pusilla* Morston/Stiffkey Fen (Norfolk), long-stayer to 5th February.

Correction

The photograph of male Lesser Scaup *Aythya affinis* on page 114 of the February issue (plate 41), was incorrectly attributed to John Carter; the photographer was in fact Gary Thoburn and we apologise for this error.

Classified advertising

Payment for all classified advertisements must be made in advance by VISA, Mastercard or by cheque payable to British Birds. **Copy deadline:** 10th of the month.

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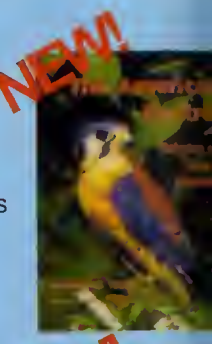

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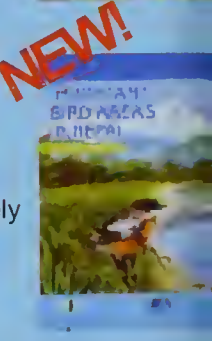

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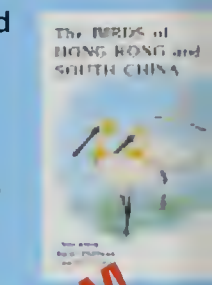

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Roosting behaviour of Bitterns

Species limits in scoters

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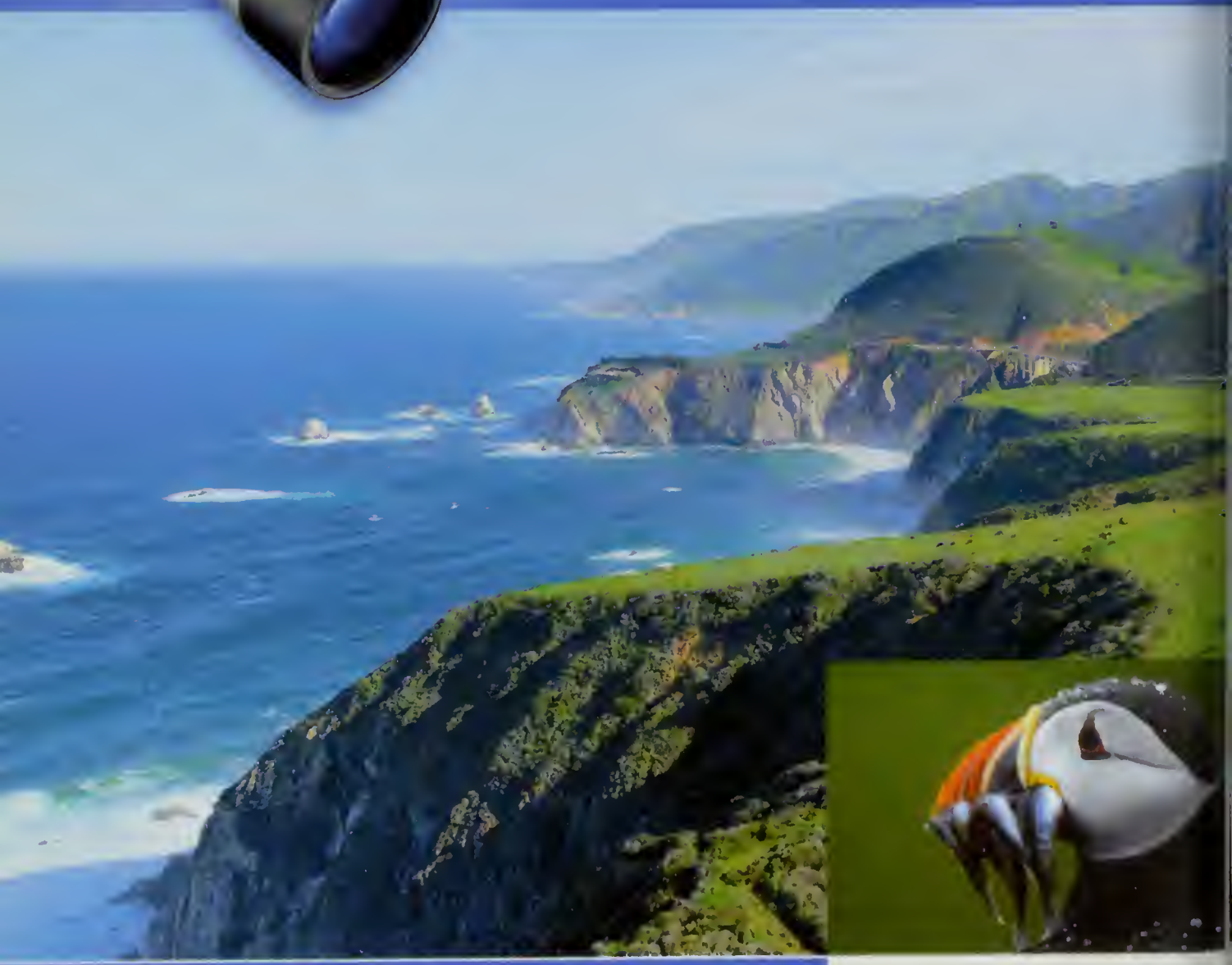

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Roosting behaviour of wintering Eurasian Bitterns in the Lee Valley

Alan Harris

Alan Harris

ABSTRACT In the Lee Valley, Eurasian Bitterns *Botaurus stellaris* leave their foraging sites and go to roost late in the day, usually after sunset. The distance travelled is often only a few metres (accomplished on foot) and for around two-thirds of the birds in the study area the roost site is in the same reedbed in which they forage. Consequently, travelling time and distance are minimal. They roost high up in the reeds, standing on a sheaf of reed stems all night, and leave the roost usually before sunrise to travel back to the foraging site, again mostly on foot. Some roosts contain more than one bird. Those Bitterns leaving the roost-site reedbed to forage elsewhere also normally leave before sunrise and return after sunset.

The Eurasian Bittern *Botaurus stellaris* [hereafter simply 'Bittern'] is currently a non-breeding visitor to the Lee Valley, on the Essex/Hertfordshire border, where it frequents the network of lakes with fringing beds of Common Reed *Phragmites australis*. Since the mid 1980s, the status of the Bittern in the Lee Valley has changed from that of a rare, less than annual visitor to that of an annual winter visitor in small numbers, up to a maximum of 11 or 12 birds.

The roosting behaviour of Bitterns is poorly covered in the existing literature. Bitterns are said to be mainly active during the day and at dusk, so roosting is likely to occur during the night; roosting is reported to be solitary, in

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dense cover and off the ground (*BWP*). Lundevall (1953) observed the roosting behaviour of a captive bird, but this bird slept in the 'protective bittern stance' (with the 'classic' stretched neck, bill pointing upwards) all night, perhaps suggesting that conditions were not ideal!

Bitterns are occasionally seen in flight in the late evening. In summer, these sightings are probably related to feeding flights or territorial behaviour. At migration times, such reports may be linked to pre-migratory behaviour; for example, in spring, at Mai Po in Hong Kong, up to seven vocal Bitterns have been seen to leave the reedbeds as dusk approaches and circle to a great height, before turning northwards and eventually being lost to view (Leader 1999).

Wintering Bitterns in the Lee Valley are occasionally seen in flight (usually early or late in the day), moving between isolated patches of *Phragmites* within gravel-pit systems, and over the years several regularly used sites have been discovered. Three sites have the added advantage of being overlooked by birdwatching hides. Elsewhere in the Lee Valley, the only way to locate additional wintering Bitterns is by hard work and prolonged observation of reedbeds. This paper describes the roosting habitat of Bitterns and their behaviour at roost.

Study area

From October 2002 to April 2003, the wintering population of Bitterns in the Lee Valley was studied. The lower River Lee forms the border between Essex and Hertfordshire, and the Lee Valley Regional Park runs from Ware in the north southwards into London, where the River Lee joins the Thames. The Lee Valley contains a series of reservoirs, lakes and open spaces. The study area encompassed the 14-km stretch from Waltham Cross (and the M25) northwards, where the valley contains a network of gravel-pits up to 80 years old, Rye Meads sewage treatment works and two relatively untouched water meadows with large areas of dry reed swamp.

Methods

At the beginning of the study, all *Phragmites* reedbeds in standing water and of more than 5 m in length were examined and mapped. This involved checking some 30 sites in total, where over 130 reedbeds were identified. Where possible, they were entered to establish water

Tim Loseby

79. Eurasian Bittern *Bataurus stellaris*, Lee Valley, Essex/Hertfordshire, February 1998.

depths (!) and to discover whether Bitterns were present. This method, although momentarily invasive (and causing any Bitterns present to be flushed), was the only practical method available and flushed birds usually returned to the reedbed on the same or the following day. Several of these sites had been used by Bitterns in previous winters and some likely roost sites were thus already known. All reedbed sites were then checked for Bitterns every fortnight until December, by which time the winter population had arrived. A number were checked thereafter, usually to follow up Bittern sightings reported by birders or when a regular bird at another site went 'missing'. Once individual Bitterns had been located, reedbeds were not re-entered.

All fieldwork effort was directed at establishing the home range; an essential part of this was locating the roost. This was achieved by observing reedbeds during the day for Bittern activity. Having located a Bittern, I stayed with it until dark, when it either roosted without relocating or flew to roost elsewhere. In the latter case, likely roost sites in the direction of flight were checked on subsequent evenings for incoming birds, or observed at dawn for departing birds. Once roosts were located, roosting activity was studied in detail, most effectively (and comfortably) from those sites overlooked by a hide. These sites have the added advantages that the Bittern(s) involved may well have been under observation for some hours (while accruing data for other aspects of my study) and that the bird's exact location in the reedbed is known. Nevertheless, even from a hide, the moment a Bittern goes to roost can very easily be missed, especially in the case of birds flying in. Typically, such birds approach directly and at low level, just above the reeds, perhaps through a limited field of view, or below the level of the reeds if approaching from over open water. They land either directly into the reed face or some way in, and the observation time may be only a few seconds.

Once a roost site had been discovered, it was described with reference to a detailed set of criteria, including a brief description of location (table 1; p.178) together with a detailed survey of the reedbed (table 2). The prevailing wind in the Lee Valley is westerly; reedbeds with a face open to water to the west were considered to be exposed, and the reedbed would be affected regularly by the wind. Reedbeds classed as sheltered were protected from the prevailing wind by bank contours or trees. Reedbeds were also evaluated for disturbance, which encompassed accessibility and noise disturbance at periods of roost by humans, including the proximity of anglers. Humans were judged to be excluded by a water depth of more than 0.5 m. Other fieldwork established that Bitterns were not disturbed by the close proximity of humans provided that the birds believed they remained undiscovered. For example, Bitterns appeared unconcerned by normal levels of conversation, but during daylight hours a dog barking loudly and the use of grass-cutting machinery produced a brief tense reaction in foraging birds (pers. obs.). I also considered the probability of mammalian predators disturbing the roost.

The roosting observations presented here are part of a much wider study. In some situations, I was fortunate to be able to study Bitterns for long, continuous periods from a hide, at close range through a telescope. At sites where more than one Bittern resided, it was possible to recognise individual birds on plumage peculiarities, size and habits. It quickly became clear that one bird would be dominant over the others sharing the reedbed (always a large bird and so presumably a male, as males are up to a third bigger than females; *BWP*), regularly chasing other Bitterns from the vicinity of its foraging spots, even if it was not fishing. With continuous observation until dusk, it was possible to see which individuals roosted where and when. In some roosts, additional birds arrived that had been foraging elsewhere. The irregular habits of these birds suggest that they were probably subordinate and unable to establish a feeding territory in the roosting reedbed. In addition, a female Bittern, fitted with a radio tag to establish the winter home range, provided some information on overnight roosting habits. This female was ringed as a nestling at a site in Lincolnshire as part of a study of Bittern breeding ecology by the RSPB, and fitted with a radio tag as she overwintered in the Lee Valley; for details of these tags see Gilbert *et al.* (2005).

Roost sites

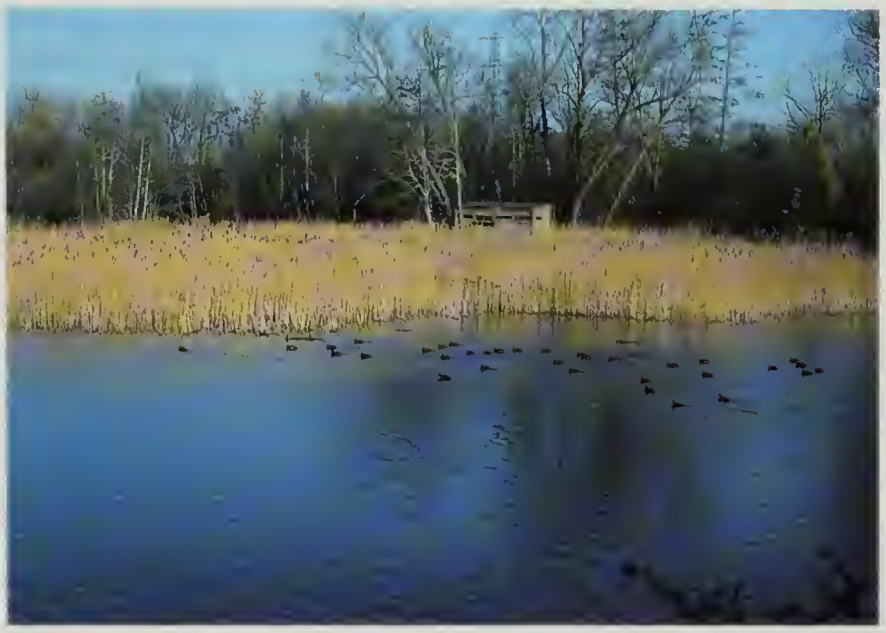
In the winter of 2002/03, between nine and 11 Bitterns were found at four separate sites (A–D) in the study area, all four being reasonably discrete. Eight roost sites were located, one each at sites B and C, two at site A and four at site D. Of these eight, two were close to other roost sites and used only occasionally. Site D contains the

well-known Bittern Watchpoint, a hide overlooking a reedbed where wintering Bitterns can be seen and studied closely.

Site A is a gravel-pit where extraction ceased within the last ten years. The roosting site A1 is a large *Phragmites* reedbed of irregular shape (somewhat rectangular), with extensive dry reed fen adjoining the southwest side. The area of the roost site is taken as the area of reed in standing water. The roost site is in the extreme northeast of the reedbed, where it is wettest and terminates at open water in the form of a small shallow pool. On one occasion the Bittern roosted in a neighbouring reedbed (A2); the reason for the change in roost site is unknown. An overwintering bird at site A was joined by a second bird on two occasions.

Site B is an area of gravel-pits, extensive reed swamp, marsh and water meadows, and sewage treatment lagoons. Only one, irregularly used roost site was found in reed swamp, and it was surrounded by deep ditches on three sides. A regular roost site could not be located at this site. Two birds wintered at site B, although the second left in January to visit site A (briefly) before settling at site C.

Site C is an old gravel-pit which has been extensively landfilled. One Bittern, initially wintering at site B, moved to site C in January 2003 and remained until at least 12th February.



Alan Harris

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80–82. Eurasian Bittern *Botaurus stellaris* roost sites, Lee Valley, Hertfordshire, February 2003. Plate 80 (top) shows roost D3, plate 81 – roost D4 (the smallest regular reedbed roost), and plate 82 the roost at site C.

A linear reedbed along the eastern edge of the pit is contiguous with a wet *Phragmites* reed fen at right angles to it, running inland over a depression in a hay meadow on a landfill site.

Site D is an extensive area of mature gravel-pits and three main roost sites were identified. The most popular roost site was the Bittern Watchpoint (D1), where a maximum of six birds roosted. A *Phragmites* reedbed straddles the southern exit of a deep, 8-m-wide channel formed by the lakeside and a parallel wooded island. Site D2 is a small Lesser Bulrush *Typha angustifolia* bed, 84 m from the Bittern Watchpoint. On two occasions, a Bittern apparently roosted here (although it is possible that it moved to the main roost well after dark). The third roost site in site D is 650 m northwest of the Bittern Watchpoint. The reedbed is an extensive, irregularly shaped *Phragmites* reedbed in a sheltered lagoon at the north end of a large pit. This reedbed is deep and much of it is apparently floating on a mat of debris, with the thickest reed around the perimeter. It is thought that this site is a submerged, embanked sand-silt lagoon. There are two open pools of irregular shape in the middle. Up to three Bitterns roosted here. The fourth roost site in D was occupied in January and February 2003 by a Bittern which had formerly been using the second roost site in D, 1.8 km to the north. It was the smallest *Phragmites* reedbed in the study area to be used as a regular roost site.

Characteristics of roost sites

The six main roost sites in the study area are characterised by *Phragmites* reedbeds, irregular in shape (not linear) and of a minimum size of at least 630 m². All are growing in water, two in depths over 1 m. All are normally completely undisturbed at night by humans. A hide overlooks the roost site D3, and the noise created by occasional vandalism of the hide after dark was possibly sufficient to disturb roosting birds. However, the radio-tagged Bittern remained in

Table 1. Roost-site situation of eight Eurasian Bittern *Botaurus stellaris* roosts in the Lee Valley, Essex/Hertfordshire, winter 2002/03.

Roost site	A1	A2	B	C	D1	D2	D3	D4
Reedbed bordering gravel-pit	•			•	•	•	•	•
Reedbed on island in gravel-pit		•						
Reedbed in depression in former landfill				•				
Reed swamp in water meadow			•					

Table 2. Roost-site qualities of eight Eurasian Bittern *Botaurus stellaris* roosts in the Lee Valley, Essex/Hertfordshire, winter 2002/03.

Roost site	A1	A2	B	C	D1	D2	D3	D4
Lesser Bulrush						•		
Phragmites	•	•	•	•	•		•	•
Approximate size (m²)	2,150	600	5,600	1,400	850	55	2,600	630
Water depth at roost site (m)	0.5	0.5–1	0.2–0.6	0.4	>1	>1	>1	0.3–0.45
Former sand-silt delta	•						•	•
Sheltered from prevailing wind	•	•	•				•	•
Reedbed growing into deep open water		•		•	•	•	•	•
Joins more extensive reed swamp	•		•					
Disturbance-free	•	•	•	•	•	•	•*	•
Nearest alternative known roost (m)	20	20	?	2,300	84	84	650	1,800
Regular (R) or occasional (O) roost	R	O	O	R	R	O	R	R
Reedbed growing into shallow pool (<1m deep)	•							
Estimated % surrounded by deep water (>1m)	40%	100%	75%	20%	80%	70%	80%	60%
Number of birds using roost	1–2	1	1	1	1–6	1	1–3	1
Roost site also foraging site	•	•	•	•	•	•	•	•

* This site was normally disturbance-free, but see 'Characteristics of roost sites'.

this roost during such disturbance on at least two occasions. Mammalian predators would have great difficulty entering the reedbeds silently owing to the noise made when moving through reeds and water, and no evidence of such incursions was noted. Only Otters *Lutra lutra* or American Mink *Mustela vison* may be stealthy enough in reed and water to approach roosting Bitterns. Otters were not encountered but do occur in small numbers in the Lee Valley. On one occasion, a noisy interaction between two American Mink was observed in darkness close to five roosting Bitterns at 07.09 hrs on 10th January 2003. The Mink were apparently unaware of the roosting Bitterns, and no bird made any movement until 07.32 hrs, after the Mink had disappeared.

Four main reedbed roost sites are growing in open water in gravel-pits. A minimum of three sites are roosts that have been used in previous winters (site A and two in site D). At site C, the roost in previous years has been a large reed fen on an active sand-silt lagoon, where the water is shallow but the terrain is probably predator-proof because of underlying sinking sand. The intermittent roost at site B is the only roost site that is not a reedbed in, or by, a gravel-pit. This roost site is a reed fen standing in water less than 1 m deep. This was the only roost site found at site B, and the location of the roost site here clearly changed, perhaps on a daily basis. In previous years, the roost has been in meadows in extensive reed fen, parts of which were dry while other parts were flooded.

The development of the reedbed used as a roost site is known in all six main roosts found in the 2002/03 winter. Three reedbeds have formed on sand-silt deltas, at sites A and D (two). These develop from sand-silt that has been discharged from gravel-washing plants into flooded gravel-pits in the past, the accumulations then being colonised by *Phragmites*. In general, the reedbeds are roughly triangular, semi-circular or square in outline rather than strictly linear, the bank-side edge being straight and forming the widest part of the bed. Site C has such a reedbed that has been used for roosting in previous years (but not in the 2002/03 winter). Sand-silt-delta reedbeds provide important roost sites within gravel-pits: they are large and often treacherous for predators to penetrate and cannot be entered without much noise. The remaining three main roost sites are *Phragmites* growing in an abandoned water meadow (site B), on a flooded landfill site by a gravel-pit (site C), and a shallow bar in a gravel-pit (site D, the Bittern Watchpoint).

At three roost sites, the roost held more than one Bittern at some time during the winter. At site A, the regular bird was joined by a second during cold weather from 5th to 7th January 2003, and again on 6th March 2003, when the second bird was possibly a spring migrant. At the Bittern Watchpoint in site D, three birds roosted regularly during the winter, with four during most of January and up to six during cold weather around 11th January 2003. Most (usually all) Bitterns in the site-D complex roosted either here or at a second reedbed, where two and occasionally three roosted on a regular basis; proof of interchange between these two roosts, 650 m apart, was established by the radio-tagged bird. At two other roosts (in sites C and D), single birds began to use them only midway through the winter.

Some Bitterns were observed to fly out at dawn to feeding sites, but at all the main roost sites studied at least one Bittern remained and walked to its foraging site. Bitterns seem to prefer to roost as close to their foraging site as possible, probably in order to protect quality foraging sites from other Bitterns. A number of seemingly ideal foraging sites exist in the study area but are not used by Bitterns, probably because there is no suitable roost site nearby. Of nine established birds, 6–8 roosted in their foraging reedbed at some time during the winter; in the case of six of these, probably throughout the winter. Up to four birds were found to forage in the same reedbed, keeping apart in order to avoid aggressive encounters. The habits of some birds changed as the winter progressed, probably in response to cold, disturbance (from other Bitterns) or diminishing fish stocks. One bird at site D moved to a new roost and foraging site 1.8 km away late in the winter. While Bitterns changed their roost site within the discrete study sites A to D, only one Bittern moved from one site to another (site B to site C, via site A). Roosting at the foraging site (or foraging at the roost site) is the clear preference, and only subordinate birds have to feed away from the roost site in normal circumstances.

Roosting behaviour

Bitterns return to the roost site late in the day, usually after sunset but before darkness (table 3). The arrival time after sunset is variable and

Table 3. Timing of Eurasian Bitterns *Botaurus stellaris* going to roost, Lee Valley, Essex/Hertfordshire (all sites combined), 2002/03 and 2003/04 winters.

	October	November	December	January	February
Roost time (range; GMT)	17.58–18.30	15.48–17.16	16.20	15.30–17.35	17.16–18.10
mean	18.19	16.25		16.21	17.46
Minutes before (+) or after (–) sunset (range)	–6 to –37	+16 to –41	–28	+44 to –79	–16 to –37
Mean roost time after sunset (minutes)	–19	–11		–13	–25
n	4	9	1	23	5

may relate to how well the bird has fed. In the 2002/03 winter, birds foraging away from the roost arrived back later (in relation to sunset) during cold conditions in January and February, using every last bit of daylight to fish, than in better weather. Conversely, the dominant bird at the Bittern Watchpoint roosted earlier than the others, presumably being in good condition and thus better able to cope with a cold spell.

In the reedbeds in gravel-pits, Bitterns chose to roost in the outer edge, usually within 4 m of the edge of open water, perched high up in the reeds for preference, where the stems of the flower heads meet the leaf layer. Subordinate birds often get lower spots in poorer reed (pers. obs.).

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83. *Phragmites* reeds damaged by roosting Eurasian Bittern *Botaurus stellaris*, Lee Valley, Essex/Hertfordshire, February 2003.

The exact manner of going to roost has been observed closely. A Bittern will scramble up into the reed tops, usually with open wings, making a few wing strokes and three or four strides until it has a good grip of a bunch of reed stems. The wings are then closed, this manoeuvre taking a couple of seconds. If not satisfactory, up to four more similar movements may be made, moving the roost position up to 12 m from the first attempt. Once happy with the position, the Bittern will stretch out its neck fully and move it in an arc around the roost site, catching more vertical reed stems by using its neck as a crook (see fig. 1). As soon as the stems are pulled within range of the feet, the toes relax momentarily and the new stems are added to those already gripped. It does this in all directions around the roosting spot until a strong sheaf of reeds is achieved. It does not use its bill to grasp reeds in this action; it simply uses the neck in the same way that a man might gather up reeds with his arm. Once settled, the Bittern may then make some adjustments to the reeds using its bill. The bird then 'relaxes down', eventually becoming compact and ovoid, the head retracted deep into the shoulders, the bill pointing out a little above the horizontal.

Bitterns seem happy to roost communally, as close as c. 4–8 m apart, although the dominant bird gets first choice of position. This does not mean that other Bitterns will wait for the dominant bird to choose its roost site, so the latter may dislodge another already roosting in the most preferred spot, but will allow the subordinate to resettle close by. Individual Bitterns may use exactly the same position to roost in the reedbed for up to two weeks, or they may change daily, probably for hygiene reasons or because of deterioration (breaking down) of the reeds. Bitterns do not normally move from the roost site during the night.

In the 2001/02 winter, when the water was frozen, Bitterns were seen to roost in scrub near the Bittern Watchpoint reedbed. Presumably they realised that predators could reach them in the reedbed over the ice in such circumstances.

The fact that Bitterns defend foraging sites aggressively by day but allow other Bitterns to roost in those same sites by night presumably infers that communal roosting is advantageous, probably because predators are likely to be detected more quickly. Alternatively, it is possible that a shortage of suitable roosting sites may force communal roosting.

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Fig. 1. Eurasian Bittern *Botaurus stellaris* preparing to roost.

Bitterns leave the roost early, usually at the first hint of daylight before dawn (table 4). In the late-winter period in 2002/03, there were periods of cold and freezing weather. During this time, Bitterns at the Bittern Watchpoint roost left later than normal. The strategy of a Bittern in good condition in cold weather appears to be to move less and conserve energy, to defend its foraging site from intruding Bitterns until the site becomes ice-free again, and not to waste energy trying to find an ice-free foraging site which may not hold fish stocks and may expose the Bittern to predators. How long this strategy remains viable is unknown, but probably at least a week. Bitterns appear to arrive at a foraging site before dawn (but not in complete darkness) and leave at dusk, again not in total darkness. This accords with the finding that Bitterns forage purely by sight.

Where the roost- and foraging-reedbed are one and the same (which is the case for over half the Bitterns in the Lee Valley study area), the Bittern climbs down from the roost and walks to the foraging site, which will be only a few metres away from the roost. If they fly to the foraging site, they almost always go directly.

Table 4. Timing of Eurasian Bitterns *Botaurus stellaris* leaving roost, Lee Valley, Essex/Hertfordshire (all sites combined), 2002/03 and 2003/04 winters.

	November	December	January	February
Departure time (range; GMT)	06.28–07.16	07.04–07.58	07.10–08.32	07.00–07.57
mean	06.56	07.24	07.39	07.16
Minutes before (+) or after (–) sunrise (range)	+46 to +10	+54 to +8	+55 to –26	+35 to –34
Mean departure before sunrise (minutes)	+23	+34	+23	+12
n	7	5	13	4

Günter Bachmeier

84. Eurasian Bittern *Botaurus stellaris*.

Discussion and management implications

Bitterns roost as close as possible to good foraging areas. They are reluctant to fly any further than is necessary, and this restricts the number of apparently good reedbeds currently exploited by Bitterns in the study area. However, in periods when standing water is frozen, some Bitterns will travel further in search of open water. The longest movement recorded in the 2002/03 winter was 2.1 km from a known roost, and this movement is regarded as exceptional. Given the limited nature of winter movements, it would be prudent to create or safeguard smaller reedbeds near to roosts that can be utilised for foraging if and when required.

A safe roost site is a prerequisite for wintering. Roosting reedbeds need to be disturbance-free, sufficiently wet and large enough. 'Large enough' need not be enormous; the smallest reedbed used regularly by a roosting Bittern during the study was around 630 m^2. Simply providing deep, wet reedbeds of around 1,000 m^2 in sites where Bitterns do not currently occur would probably allow Bitterns to expand their distribution in the Lee Valley, as well as decreasing competition between the birds and possibly increasing the number of birds able to overwinter here. Some apparently suitable foraging sites are just too far from a roost site for them to be exploited, and there are currently very few reedbeds of sufficient size and water depth for roosting Bitterns in the Lee Valley that are not already used. Active management is necessary to maintain reedbeds in good condition for wintering Bitterns, particularly to prevent scrub encroachment. Since Bitterns forage in the roosting reedbeds, efforts should also be made to monitor and maintain fish stocks of species suitable for Bitterns in the immediate area of the roost site.

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A paper from the BOURC Taxonomic Sub-committee

Species limits within the genus *Melanitta*, the scoters

Martin Collinson, David T. Parkin, Alan G. Knox, George Sangster and Andreas J. Helbig

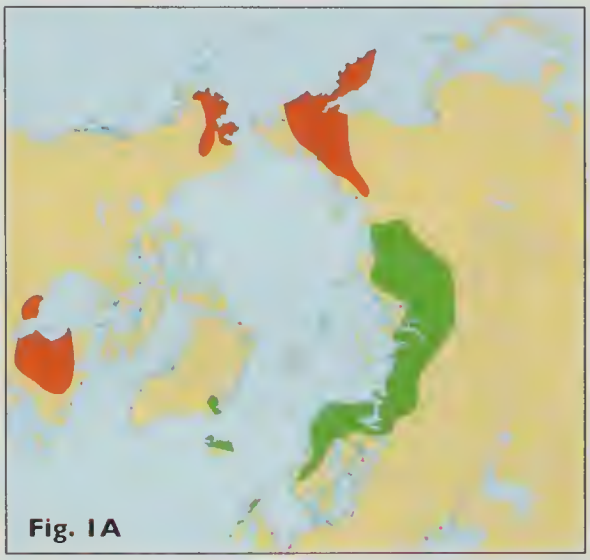
Common Scoters *Melanitta nigra* with one Velvet Scoter *M. fusca* — *Dan Powell*

ABSTRACT As part of its reassessment of the taxonomy of birds on the British List, the BOURC Taxonomic Sub-committee has assessed all six recognised taxa of scoters *Melanitta* against its previously published Species Guidelines (Helbig *et al.* 2002). We consider that, on the basis of evidence currently available, at least five species should be recognised: Common Scoter *M. nigra*, Black Scoter *M. americana*, Velvet Scoter *M. fusca*, White-winged Scoter *M. deglandi* and Surf Scoter *M. perspicillata*. The taxonomic status of the Asian subspecies of White-winged Scoter (*stejnegeri*) is uncertain, owing to insufficient information on several aspects of its morphology and behaviour. Provisionally, we suggest that it is best treated as conspecific with *M. deglandi*.

Introduction

Six taxa of scoters *Melanitta* are generally recognised within the seaduck tribe Mergini (Miller 1916; Vaurie 1965; Cramp & Simmons 1977; table 1). The Surf Scoter *M. perspicillata* is monotypic. The other taxa have traditionally been treated as two polytypic species by both the American and the British Ornithologists' Unions: Velvet (or White-winged) Scoter *M. fusca* with three races, *fusca*, *deglandi* (syn. *dixoni*) and *stejnegeri*; Common (or Black) Scoter *M. nigra* with two races, *nigra* and *americana*. All six taxa have also, in the past, been regarded as separate species (BOU 1883, 1915; Dwight 1914).

For brevity, these taxa will henceforth be referred to by their subspecific names, i.e. *nigra* (Common or Eurasian Black Scoter), *americana* (American and East Asian Black Scoter), *fusca* (Velvet Scoter), *deglandi* (American White-winged Scoter), *stejnegeri* (Asian White-winged Scoter) and *perspicillata* (Surf Scoter). In Britain, *nigra* and *fusca* are widespread non-breeding and winter visitors, though small numbers of *nigra* breed in Scotland (Ogilvie *et al.* 2001). Two other forms, *americana* and *perspicillata*, are vagrants or scarce migrants in Britain (BOU 1992). At present, there are no accepted records of *stejnegeri* or *deglandi* in Britain, although both have occurred as vagrants elsewhere in the Western Palearctic (Garner *et al.* 2004).



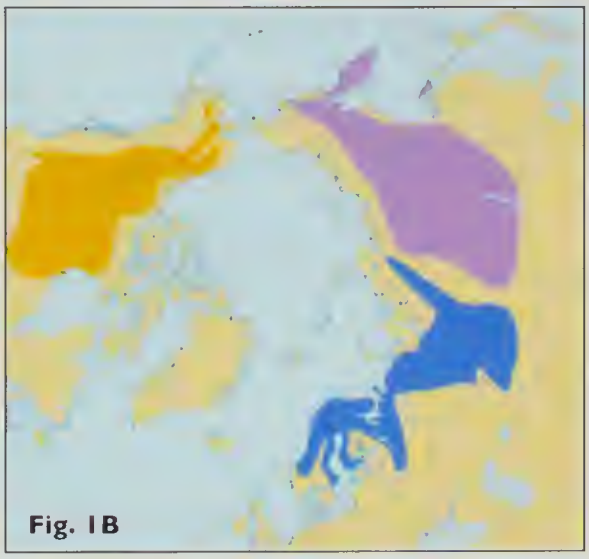


Fig. 1. Approximate distribution of scoter taxa.

1A. The breeding ranges of Common Scoter *Melanitta nigra* (green) and Black Scoter *M. americana* (orange).

1B. The breeding ranges of Velvet Scoter *M. fusca* (blue), (Asian) White-winged Scoter *M. deglandi stejnegeri* (pink) and (American) White-winged Scoter *M. deglandi deglandi* (yellow).

1C. The breeding range of Surf Scoter *M. perspicillata* (green).

Table 1. Genus *Melanitta* (Boie 1822) (*Tageb. Reise Norwegen*, p. 301).

Subgenus *Melanitta* – White-marked Scoters
M. perspicillata (L. 1758) – Surf Scoter (*Syst. Nat.*, i, pp. 123–125).
M. fusca (L. 1758) – Velvet Scoter (*Syst Nat.*, i, pp. 123–125).
M. deglandi (Bonaparte 1850) – White-winged Scoter (*Rev. Crit. Orn. Europe*, p. 118)
M. d. stejnegeri (Ridgway 1887) – White-winged Scoter (*Man. N. Am. Birds*, p. 112).

Subgenus *Oidemia* (Fleming 1822) (*Philos. Zool.*, ii, p. 260) – Black Scoters
M. nigra (L. 1758) – Eurasian Black Scoter, Common Scoter (*Syst. Nat.* i, pp. 123–125).
M. americana (Swainson 1832) – Black Scoter (*Faun. Bor. Amer.*, ii, p. 450).

Problems of scoter taxonomy

Scoters have a broad Holarctic distribution (fig. 1; Appendix 1). Published literature does not define specifically whether the breeding ranges of *nigra* and *americana* or of *fusca* and *stejnegeri* overlap. However, there is little, if any, evidence that they do, and for the purposes of this assessment they are regarded as allopatric. It remains possible that they are to some extent parapatric (i.e. their ranges meet but do not significantly overlap). For example, a zone of near-parapatry has been described for *fusca* and *stejnegeri* in western Siberia (Rogacheva 1992).

As described below, Common/Black (*nigra* and *americana*), Velvet/White-winged (*fusca*, *deglandi* and *stejnegeri*) and Surf Scoters (*perspicillata*) differ in plumage and morphology in multiple diagnostic characteristics. They are divergent in ecology, and there are significant differences in their courtship displays and breeding behaviour. This is entirely normal for species that are, over parts of their range, sympatric. The three traditionally recognised species fulfil all requirements for specific status under any species concept.

Difficulties arise in the taxonomic treatment of the two sets of allopatric taxa: *nigra* and *americana* on the one hand and *fusca*, *deglandi* and *stejnegeri* on the other. In both cases, the taxa occupy non-overlapping ranges on both the breeding and (almost entirely) the wintering grounds. This is the problem: *nigra* and *americana* are clearly more similar to each other than they are to any other species, as are *fusca*, *deglandi* and *stejnegeri*, which underlies their traditional classification as subspecies. However, parapatric and allopatric sister species do not always show levels of divergence in multiple characters similar to those found between sympatric species, because there is no requirement for the ecological separation that characterises co-existing taxa (see Helbig *et al.* 2002). Consequently, in spite of their apparently smaller degrees of divergence, it is still possible that the 'subspecies' of *M. nigra* and *M. fusca* merit specific status.

The remainder of this paper will assess the differences and similarities among the subspecies of Black/Common and Velvet/White-winged Scoters, in light of the differences among the accepted species in the genus *Melanitta*.

Phylogeny of Melanitta

The pattern of a Holarctic distribution, in which closely related taxa are distributed allopatrically, is not unique to *Melanitta* but is also found to some extent in other seaduck, including *Somateria* (eiders) and *Bucephala* (goldeneyes and Bufflehead *B. albeola*; Livezey 1995). This suggests that splitting of seaduck lineages has resulted from relatively recent vicariance events: the Pacific basin and Northern Atlantic were probably isolated during Pleistocene glaciations, and these refugia seem to have been important areas for speciation. One can postulate that the extant scoter taxa are the result of the splitting of two ancestral lineages – a 'black' scoter and a 'white-marked' scoter – after isolation in two or three refugia during the glacial periods.

No molecular phylogenetic analyses have been performed. Livezey (1995) investigated Mergini phylogeny by cladistic analysis of 137 morphological characters; *nigra*, *americana*, *perspicillata*, *deglandi* (incl. *stejnegeri*) and *fusca* were included separately in the analysis. Relationships within *Melanitta* came out very clearly, albeit sometimes on the basis of very few characters, and a single most-parsimonious tree was resolved (fig. 2). This confirmed that *nigra* and *americana* are sister taxa (99% bootstrap support). They themselves comprise the sister group to other *Melanitta* taxa (93% support). Furthermore, *fusca* and *deglandi* are also sister taxa (98% support), more closely related to *perspicillata*. In this study, *stejnegeri* was not included as a separate taxon.

Evolutionary trends for body mass, sexual

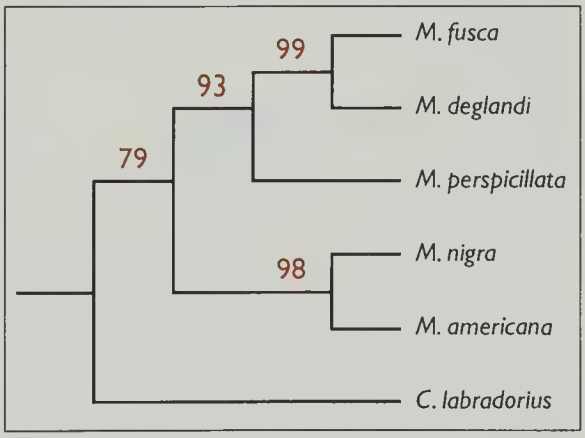


Fig. 2. Scoter phylogeny, after Livezey (1995). A phylogeny of scoters *Melanitta*, part of a study of Mergini ducks based on 137 morphological characteristics. Branch lengths are arbitrary. The Labrador Duck *Camptorhynchus labradorius* was sister taxon to *Melanitta*. The numbers represent bootstrap statistical support (%) for branch points.

dimorphism, clutch size and relative clutch mass across the Mergini were also examined. In all cases, *nigra* and *americana* showed identical trends; while *fusca* and *deglandi* showed clear divergence from *perspicillata*, and differed from each other on two counts (relative clutch mass and body mass). Livezey recommended the recognition of *deglandi* and *americana* at full species level, without further justification.

Diagnosability

All the taxa within *Melanitta* are distinguishable from all other taxa in the genus on the basis of the colour, form and/or feathering of the bill (below). This applies to adult males and, in some cases, females.

1) *nigra* and *americana*

These two forms are currently classified together in subgenus *Oidemia*, which reflects the many shared features of morphology and plumage that distinguish *nigra* and *americana* from the other scoters (table 2).

Adult males are distinguishable on the basis of bill colour-pattern and shape (Dwight 1914; Dement'ev & Gladkov 1952; Cramp & Simmons 1977; Astins 1992). The bill of adult male *nigra* is largely black, with a swollen, black basal knob on the maxilla. Yellow coloration is normally restricted to a small area around the nostrils and along the culmen ridge. Examples of *nigra* with larger amounts of yellow do occur, although they show the typical *nigra* bill shape (Garner 1989). In contrast, *americana* has a swollen, fully yellow bill-base. The nostrils are more elongated and closer to the bill tip on male *americana* than on male *nigra* (this may be a consequence of the different bill shape of the two taxa), and the bill of *americana* is shorter (*americana* mean 43.7 mm (42.0–45.5); *nigra* mean 47.5 mm (43.0–51.0)) (Dean 1989). Contrary to some reports, the nail overhangs the lower mandible no more in *americana* than it does in *nigra*, but it may be more arched.

In common with other scoters, the colouring of the bill base of both *nigra* and *americana* appears before the bill shape (Bent 1925), which may not be fully expressed until late in the second calendar-year (Alderfer 1992). Intermediate *nigra*-type birds with extensive yellow on the maxilla are probably immature male *nigra* (Cramp & Simmons 1977).

Females may also be distinguishable on bill shape or colour-pattern. Waring (1993) reported differences in head-and-bill profile between the two taxa. Adult female *nigra* may show small yellow markings around the nostrils, but these markings are reported to be more extensive in about 10% of female *americana*. The bill of female *americana* is shorter, on average (table 3). The differences reported in female bill shape and other plumage character-

Table 2. Features that distinguish the subgenera *Oidemia* and *Melanitta* (from Miller 1916, 1926; Brooks 1920; Bent 1925; Cramp & Simmons 1977).

Subgenus *Oidemia* (*nigra* and *americana*)	Subgenus *Melanitta* (*fusca, deglandi, stejnegeri* and *perspicillata*)
The outermost primary, P10, is heavily notched	P10 not heavily notched
P10 in adult male attenuated, shorter than P8	P10 longer than P8
16 tail feathers	14 tail feathers
Tail >2× tarsus length	Tail <2× tarsus length
Tail graduated for over half its length and rectrices pointed	Tail graduated for less than half its length; rectrices less pointed
Males have a simple tracheal structure lacking bullae	Bullae present in males
Bill small, commissure shorter than inner toe with claw	Bill larger, commissure longer than inner toe with claw
Outline of facial feathering nearly straight, not angled	Outline of facial feathering angled
Head and neck feathers are narrow, distal barbs converging at tip, giving striated effect	No modification of head and neck feathers
Silvery under-surface of primaries in both sexes	No silver wash to under-surface of primaries
Feet and nail of upper mandible black	Feet red, nail yellow, orange or red (males)
Adult male all black	Adult male not all black
Female/immature – capped head pattern without white patches	Female immature – white or off-white patches on head plumage
Iris brown in both sexes	Iris of males white

Table 3. Biometrics of Common Scoter *Melanitta nigra* and Black Scoter *M. americana*.

	nigra male	*americana* male	*nigra* female	*americana* female
Wing length (mm)	228–247	213–241	214–239	206–230
Tarsal length (mm)	43–54	45–49	41–46	42–45
Culmen length (mm)	43–51	40–47	40–48	39–44
Mass (g)	642–1,450	1,117.0±101.6	600–1,268	987.4±110.1

istics are not quantified, since individual variation is high; furthermore, they were not fully supported by a small series of skins at the NMS and Royal Museum, Edinburgh (MC pers. obs.).

Directly comparable data for the size and weight of *americana* and *nigra* are lacking, but there appear to be no diagnostic differences. Published data for *nigra* and *americana* from Bordage & Savard (1995), Dement'ev & Gladkov (1952) and Cramp & Simmons (1977) are summarised in table 3. Western and eastern populations of *americana* have not been compared morphometrically (Bordage & Savard 1995).

2) *fusca, deglandi* and *stejnegeri*

These three forms, together with *perspicillata*, form the subgenus *Melanitta*, sharing several characteristics that distinguish them from the subgenus *Oidemia* (table 2). Identification of adult male *fusca*, *deglandi* and *stejnegeri* is normally straightforward (Dwight 1914; Proctor & Pullan 1997). The main distinguishing features are the shape and colour of the bill, the size of the white eye-patch and the colour of the flanks.

Bill

The bill of *fusca* is yellow to yellow-orange, bordered by black along the small knob and the lower edges of the nostrils, cutting edges and (variably) the culmen, with a pinkish-orange nail. That of *deglandi* is a richer orange, becoming variably reddish laterally. On the lateral plate of the upper mandible, the distribution of red and yellow pigmentation is different between *deglandi* and *stejnegeri* (Garner *et al.* 2004). The bill of *deglandi* has yellow pigmentation bordering the black basal area of the bill, with red along the lower edge of the upper mandible, and a black rim on the lamellae; *stejnegeri* has red proximally, with yellow distally

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85. The brightly coloured bills of male scoters (as shown by this male Common Scoter *Melanitta nigra*) are in striking contrast to their predominantly black plumage, and accentuate the head movements made during courtship. Bill colour may also facilitate interspecific recognition.

along the lower edge of the upper mandible and usually no black rim.

The knob above the nostrils is, on average, larger on *deglandi* than on *fusca*, although the largest *fusca* knobs may approach those of *deglandi*. That of *stejnegeri* is yet more prominent, likened to the bow of a ship. Several of the photographs in Garner *et al.* (2004) suggest that the distinctive bill shape of *stejnegeri* is not always fully defined and may therefore overlap with the bill shape of *deglandi*. It is suggested that the 'less obvious' *stejnegeri* bills may belong to second- or third-year males, although there is no proof of this.

The bills of *stejnegeri* and *deglandi* also have more rounded nostrils than the bill of *fusca*. There is individual variation in all three taxa, and some overlap between the extremes of *deglandi* and *fusca* in bill form and colour. Note that *fusca* can show traces of a keratinous growth above the nostrils. As in other scoters, the bill colour of *deglandi* and *stejnegeri* develops before the final shape is fully attained.

Females and immatures may also be identifiable (Garner 1999). Whereas female and juvenile *fusca* typically have a long bill, with a concave profile and little discernible basal knob, female and immature *deglandi* usually show traces of a knob (central culmen ridge), which combines with a steeper culmen angle to make the bill look bulkier. The forehead of *deglandi* may also be steeper, giving this taxon a 'stepped' head profile, which can contrast markedly with the head shape of some *fusca*. In comparison with *deglandi*, female *stejnegeri* has a fuller, straighter forehead-and-bill profile, perhaps recalling Common Eider *Somateria mollissima*.

Feathering of the bill in relation to the nostrils is diagnostically different for all three taxa (Gardarsson 1997). There is individual variation, but in *deglandi* and *stejnegeri*, the feathering of the bill closely borders the proximal margin of their nostrils (1–4 mm), surrounding the bill base with a roughly square patch of feathering; this is in contrast to *fusca*, on which the bill feathering usually (but not always) stops 6–8 mm before the nostril. This is a reliable identification feature for all age- and sex-classes. Although feathers extend onto the culmen of *deglandi*, this is not the case for *stejnegeri*.

White subocular crescent of males

This is, on average, larger on *deglandi* and *stejnegeri* than on *fusca*, extending further behind the eye. There is possibly some overlap in this feature, but the extent has not been quantified. Garner (1999) reported an adult male *deglandi* with an eye crescent no more developed than on *fusca*.

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86. The brown flank feathering, the relatively long white subocular crescent, the stepped head-and-bill profile and the extensive red coloration of the bill all distinguish male White-winged Scoter *Melanitta deglandi* (this bird is of the American race *deglandi*) from Velvet Scoter *M. fusca*. Note also the round 'see-through' nostrils of *deglandi*, which are in contrast to the narrower, elliptical nostrils of *fusca*.

Table 4. Biometrics of Velvet Scoter *Melanitta fusca* and (American) White-winged Scoter *M. deglandi deglandi*.

	fusca male	*deglandi* male	*fusca* female	*deglandi* female
Wing length (mm)	269–293	271–298	250–271	256–285
Tarsal length (mm)	48–52	46–54	46–48	45–51
Culmen length (mm)	37–50	36–47	38–43	35–43
Tail length (mm)	75–89	69–87	67–78	73–88
Mass (g)	1,173–2,104	1,361–1,769	1,140–1,895	952–1,946

Flanks

In both breeding and non-breeding plumages, male *deglandi* has dark brown flank feathers, tipped buffish, which contrast with the rest of the black upperparts. In breeding plumage, *fusca* and *stejnegeri* have glossy black flanks, these being less glossy, perhaps tinged brown, in non-breeding plumage. The base of all feathers is suffused brown (Cramp & Simmons 1977), so the flank colour of *deglandi* is the result of more extensive brown feather-bases.

Measurements

Direct comparisons of measurements for the three taxa are not available, but comparing data in Cramp & Simmons (1977) with those in Brown & Frederickson (1997) for *fusca* and *deglandi* suggests that there are no diagnostic size differences (table 4).

Moults

All scoters follow similar moult and plumage sequence strategies, and there are no differences between *americana* and *nigra*, nor among *fusca*, *deglandi* and *stejnegeri* (Dwight 1914; Bent 1925; Dement'ev & Gladkov 1952).

Tracheal anatomy

Johnsgard (1961) investigated the taxonomic significance of tracheal anatomy in the Anatidae. The structure of the trachea and associated syrinx is a useful taxonomic tool for studies of waterfowl, although its value varies in different groups. Anatidae lack the complex syringeal musculature of songbirds, and therefore use differences in length, size and shape of the trachea and syrinx to produce specifically distinct vocalisations. Tracheal structure has been used to investigate the relationships of, for example, Harlequin Duck *Histrionicus histrionicus*, Bufflehead and Hooded Merganser *Lophodytes cucullatus*. The tracheae of seaducks are the most variable among waterfowl, and those of the genus *Melanitta* are the most aberrant in their syringeal anatomy. They also show some of the greatest sexual dimorphism, suggesting a significant role for vocalisation in sexual display.

The tracheal structure of male *nigra* is simple, similar to that of females, and identical to that of male *americana* (Miller 1916, 1926). There are no bullae in males, and the bronchi are greatly enlarged (fig. 3).

Both Surf Scoter and white-winged taxa have tracheal bullae, although these are atypically small for Mergini. In *perspicillata*, the trachea is diagnostically different from that of all other scoters, but most similar to the trachea of *fusca* (Miller 1916, 1926). Perhaps significantly, *fusca* is clearly different from *deglandi* in the position of the tracheal enlargements (Miller 1926; fig. 3). There are no equivalent data for *stejnegeri*.

Intestinal caeca

Miller (1926) reported on the length of intestinal caeca in the scoters. Those of both *nigra* and *americana* are greatly reduced com-

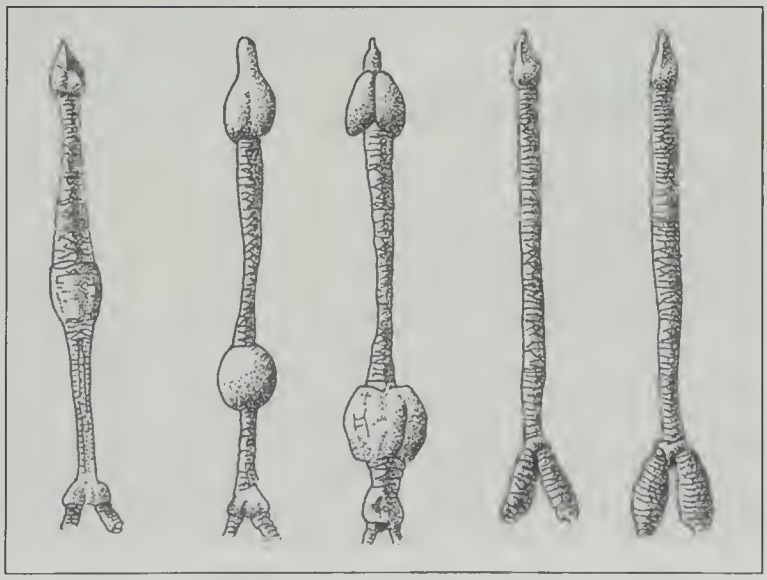

Fig. 3. The tracheal structure of (left to right) *Melanitta perspicillata*, *M. fusca*, *M. deglandi*, *M. nigra* and *M. americana*; from Miller (1916).

pared with the caecal length of other ducks, including other scoters. No caecal differences between these two taxa have been reported. Those of *perspicillata* are 80–123 mm long, based on a sample size of six males and one female. There is a suggestion that, on average, the caeca of *fusca* are longer (90–130 mm) than those of *deglandi* (67–100 mm) but the sample sizes are small and not taken from the same sources, and further work is required. Furthermore, caecal length varies seasonally, and until sex-, age- and season-matched samples are investigated, caecal length cannot be proposed as a taxonomically informative character.

Courtship and copulation

In common with many other ducks, scoters have lengthy courtship displays, based upon a series of ritualised behaviours (modified or exaggerated comfort behaviours, alertness signals and aggressive/flight responses) that are performed predominantly by one or several males in the presence of a female (Cramp & Simmons 1977). There are separate displays associated with incitement to copulation. Courtship displays have been shown to be potentially important for specific recognition between closely related taxa: for example, Common Goldeneye *Bucephala clangula* and Barrow's Goldeneye *B. islandica* have quite different courtship displays, in contrast to pre- and post-copulatory displays, which are similar (Myres 1959). Copulation displays are rather conservative in sea ducks and may be taxonomically informative (Myres 1959).

Directly comparable reports of the displays of all six taxa have not been published, so are described more fully in Appendix 2, based on Brooks (1920), Bent (1925), Gunn (1927), Boase (1949), Dement'ev & Gladkov (1952), Koskimies & Routamo (1953), Humphrey (1957), McKinney (1958), Myres (1959), Johnsgard (1965), Bengston (1966), Cramp & Simmons (1977), Bordage & Savard (1995) and Brown & Frederickson (1997). Several displays show variation within Mergini, which therefore may be useful for untangling phylogeny – these include pre-copulatory drinking by males, copulatory wing-flicks, post-copulatory rotations and 'steaming' (Appendix 2).

Comparisons of the three traditionally accepted species of Black/Common, Velvet/White-winged and Surf Scoters reveal specific and diagnostic differences in both their courtship and their copulation displays that may prevent hybridisation (Appendix 2). Any equivalent differences between the courtship and copulation displays of *nigra* and *americana*,

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87. Adult male Surf Scoter *Melanitta perspicillata* is unmistakable, but the outsize triangular bill with the square-cut edges also helps to distinguish females from the superficially similar female Velvet *M. fusca* and White-winged Scoters *M. deglandi*.

or among *fusca*, *deglandi* and *stejnegeri* would, therefore, have taxonomic significance. However, as noted in Appendix 2, there are very few, if any, described differences in the courtship and copulation behaviours between *nigra* and *americana* or among *fusca*, *deglandi* and *stejnegeri*.

The courtship vocalisations of *fusca* and *deglandi* are reported to be different (Cramp & Simmons 1977), but are poorly documented. In the course of our work on scoters, a potentially significant (but previously undescribed) difference between the courtship vocalisation of male *nigra* and that of *americana* has emerged. This difference is described fully elsewhere (Sangster in press). Briefly, the courtship call of male *nigra*, a repeated short 'phiu' lasting approximately 0.1 s, contrasts sharply with the longer call of *americana*.

Hybridisation and intergradation

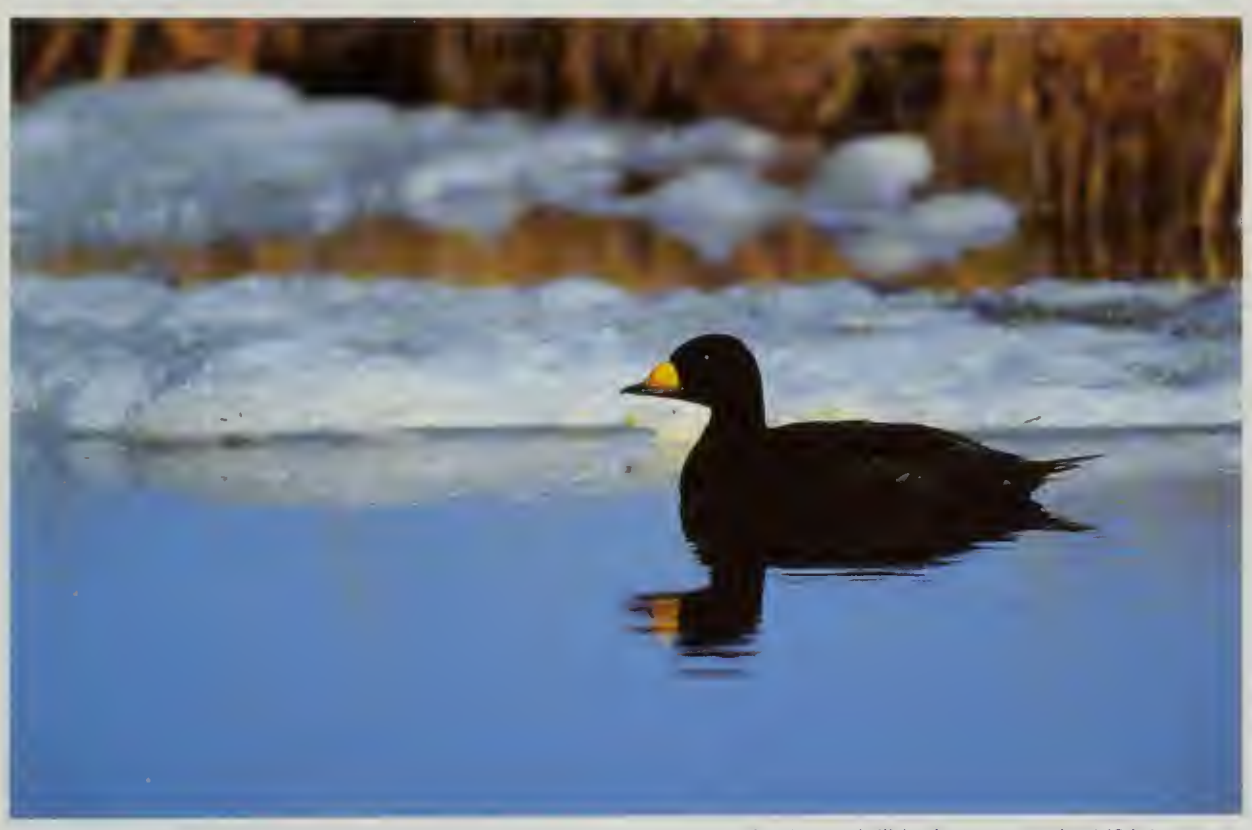
Hybridisation involving the three universally recognised species of scoters is extremely rare. Hybridisation of *deglandi* × *perspicillata* has occurred, and *nigra* × Eurasian Wigeon *Anas penelope* has been reported. Additionally, *deglandi* has been reported to pair-bond with Common Eider, and *fusca* or *deglandi* × Common Goldeneye pairings are alleged (Johnsgard 1965; Cramp & Simmons 1977; Gardarsson 1997). However, reproductive isolation between the three recognised scoter species is clearly efficient.

Since all forms show the proven potential for vagrancy, and the ranges of different taxa almost meet, the opportunity for their hybridisation probably occurs rather often. However, no intergrades of *nigra* and *americana* are known, and no hybridisation has been reported among *deglandi*, *stejnegeri* and *fusca*. The potential problems in identifying hybrids are one possible reason for this lack of reporting, along with the difficulties associated with subspecific identification of paired females.

Ecological differences, feeding habitat and food preferences for Melanitta taxa in sympatry and allopatry

Breeding behaviour and habitat

The nesting behaviour and habitat choice of breeding *americana* and *nigra*, and of *fusca*, *deglandi* and *stejnegeri* have not been explicitly compared previously. These details are contained in Appendix 3, based on Bent (1925), Dement'ev & Gladkov (1952), Koskimies & Routamo (1953), Bengston (1966), Cramp & Simmons (1977), Johnsgard (1978) and Kondratyev (1989).



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88. The Black Scoter *Melanitta americana* is colloquially known as the 'butterbill' by hunters in the USA because of the male's swollen yellow bill-base. This is visible at long range, so that even a vagrant among flocks of Common Scoters *M. nigra* stands out.

In summary, the nesting behaviours of the recognised species of scoter are not dissimilar and, when sufficient data exist, it appears that there is variation within taxa that is determined at least in part by the local environment. Minor differences that have been reported for nest-sites, egg sizes and colours between *nigra* and *americana* and among *fusca*, *deglandi* and *stejnegeri* are possibly to some extent due to biased reporting. Even if real, they may represent intra-taxon variation. In the absence of further information, it is concluded that there are no significant differences among the nesting behaviours of the two groups.

Winter habitat and diet

The diet of scoters has been studied primarily on the basis of stomach contents of hunted birds. It is perhaps to be expected that Black/Common Scoters, Velvet/White-winged Scoters and Surf Scoters would show different foraging strategies that reinforce niche separation. In fact, such differences have been difficult to establish. Mixed feeding flocks of two or three species of scoter occur during the winter on both sides of the Atlantic and Pacific Oceans, while separation into single-species flocks with different habitat choices is also frequent.

During the winter, *nigra* and *americana* avoid rough water, preferring shallow, open-sea conditions or estuaries (500–2,000 m from land), rather than broken rocky or island coasts (Brooks 1920; Dement'ev & Gladkov 1952; Cramp & Simmons 1977). On the Pacific coast, *americana* is usually segregated from *perspicillata* and *deglandi* (Bordage & Savard 1995). Shallow offshore waters are preferred by *nigra*, at a depth not more than 10–20 m; in one study, 81% of dives by *nigra* were within the depth range 2.2–3.7 m (Cramp & Simmons 1977). By comparison, *americana* can feed at depths of 13 m, but prefers to feed at depths of less than 7 m and may be found feeding among breakers in shallow water. There is no information on food selection for either taxon, but the implication is that they eat what is there! The diet of *nigra* was examined on medium and fine sandy sediment off the Belgian coast by Degraer *et al.* (1999). The polychaete *Lanice conchilega* community is of interest to *nigra* but Degraer *et al.* found no direct similarity between distribution of this food source and the distribution of flocks of wintering *nigra*.

There is no previously published comparison of recorded food items for all six taxa of scoter. This information is therefore summarised in Appendix 4, on the basis of Bent (1925), Dement'ev & Gladkov (1952), Cramp & Simmons (1977), Johnsgard (1978), Rogacheva (1992), Bordage & Savant (1995), Livezey (1995), Byrkjedal *et al.* (1997) and Brown & Frederickson (1997).

In summary, there are few directly comparable data. It seems as though ecological differences among the three traditionally accepted species of scoter, on both the wintering and the breeding grounds, are probably real, but variable and poorly defined – birds change their feeding habits depending on local conditions. When comparing *nigra* with *americana*, and *fusca* with *deglandi* or *stejnegeri*, it is not yet possible to pick out any consistent, biologically important differences in feeding ecology that may impact on their systematics. Indeed, they seem to be rather similar to each other, and the differences in ecology or food items that have been recorded can be explained either by latitudinal differences in habitat or available food species or by insufficient sampling. The evidence points to *nigra* and *americana* filling similar ecological niches, as do *fusca* and *deglandi*. There is no published evidence about the ecology and feeding strategies of the allopatric scoter taxa that suggests species-level differences.

Discussion

Taxonomic status of nigra *and* americana *(Common/Black Scoters)*

Melanitta nigra nigra and *M. n. americana* are allopatric sister taxa between which no hybridisation has been reported. Condition 4.2 of the species-defining criteria employed by the BOURC-TSC (Helbig *et al.* 2002) states that allopatric taxa may be treated as species if 'at least one character is fully diagnostic [i.e. enables either taxon to be identified with near-100% certainty], and the level of divergence is equivalent to that of the most closely related sympatric species'. On the basis of the differences in their bills, *nigra* and *americana* may be considered to fulfil this criterion, i.e. they are diagnosably distinct on the basis of the structure and colour pattern of the bill of adult males. Diagnosability is 100% on the basis of bill shape alone; but cannot be considered to be 100% on bill colour alone, since a small propor-

tion of *nigra* show an amount of yellow that approaches that of *americana*. It seems likely that *nigra* which show a large amount of yellow on the bill are subadult (second-calendar-year) birds, in which case diagnosability may be 100% for birds in their third calendar-year or older. In addition, there are population-level differences in the length of the bill (the means are different, but the ranges of bill lengths for each taxon overlap); and the shape of the nostrils of the two taxa are diagnostically distinct, but this may be a function of the different bill shapes, and thus cannot be regarded as an independent supporting character.

The two taxa do not show similar levels of divergence in any other physical character, as shown in table 5, nor, indeed, do they approach the overall level of differentiation seen between other closely related diving seaduck, such as Common and Barrow's Goldeneyes. Their claim to specific status would be strengthened if it could be shown that differences in the bill shape and colour of the males were biologically significant and affected breeding performance or foraging strategy; and there *is* good reason to suspect that breeding performance may be affected by this character (Myres 1959). The brightly coloured bills of scoters probably function to accentuate the stereotyped head movements made during display – a form of sexual display relevant during pair formation. For duck species in which the males have brightly coloured plumage and iridescent specula, courtship movements are accentuated by movement of the head against the plumage background. Male scoters, with their unremarkable plumage, have produced an equivalent effect by developing extravagant bill structures and colours. There is no evidence that females formally assess the bills of potential mates, but it is reasonable to assume that this does occur and that it may be important for interspecific discrimination, an assumption that may be significant for *nigra* and *americana*.

Table 5. A pairwise comparison of significant and diagnostic differences among scoter taxa.

	nigra v *americana*	*nigra/americana* v *fusca/ deglandi*	*fusca* v *deglandi/ stejnegeri*	*deglandi* v *stejnegeri*	*fusca/deglandi/ stejnegeri* v *perspicillata*
Bill dimensions/shape (male)	✓	✓	✓	✓	✓
Bill dimensions/shape (female)	✓?	✓	✓	nd	✓
Bill colour pattern (male)	✓	✓	✓	✓	✓
Bill colour pattern (female)	✓?	×	×	×	×
Nostril shape	✓	✓	✓	×	×
Shape of outer primary	×	✓	×	×	×
No. tail feathers	×	✓	×	×	×
Tail length	×	✓	×	nd	✓
Tracheal structure (males)	×	✓	✓	nd	✓
Facial feathering (around bill)	×	✓	✓	✓	✓
Colour of primaries	×	✓	×	×	×
Plumage pattern (males)	×	✓	✓	✓	✓
Plumage pattern (females)	×	✓	×	×	✓
Iris colour (males)	×	✓	×	×	×
Iris colour (females)	×	×	×	×	×
Wing length (males)	×	✓	×	nd	✓
Wing length (females)	×	✓	×	nd	✓
Tarsal length (males)	×	×	×	nd	×
Tarsal length (females)	×	✓	×	nd	×
Moult timing	×	×	×	×	×
Courtship vocalisation	✓	✓	✓	nd	✓
Courtship display	×	✓	×	nd	✓
Copulation display	×	✓	×	nd	✓
Nesting ecology	×	✓	×	×	?
Habitat choice (summer)	×	✓	×	×	✓
Habitat choice (winter)	×	✓	×	×	✓

Key: ✓ consistent diagnostic differences reported in literature; × no consistent differences reliably reported; nd not determined – relevant data not found in literature.

There are diagnostic differences in the display calls of *nigra* and *americana* (Sangster in press), and these may serve to reinforce reproductive isolation between the two taxa. We advise caution at this time because, to the best of our knowledge, differences in call have never before been used as a primary line of evidence for defining species boundaries within ducks. Nevertheless, we include 'differences in call' as a further (potentially biologically relevant) feature by which it is possible to differentiate between the males of *nigra* and *americana*.

Clearly, the decision on the specific or subspecific status of *nigra* and *americana* is marginal and depends on the taxonomic criteria that are applied. Retention within one species could conceivably be justified under the Biological Species Concept, because reproductive isolation cannot be demonstrated for allopatric taxa. On the other hand, on current evidence of differences in sexual signals such as bill structure/colour and courtship vocalisations it is concluded that these diagnosable taxa form separate evolutionary lineages which are unlikely to merge, thus justifying their splitting under Phylogenetic or Evolutionary Species Concepts. The treatment of these birds that is most consistent with Helbig *et al.* (2002) is to consider them as two monotypic species, *M. nigra* and *M. americana*.

There is much yet to be discovered about *nigra* and *americana*. In particular, the occurrence and nature of any interaction between the two taxa around the River Lena may have implications for the decision to split them, but nothing is currently known about this. Further information about the possible assessment of male bill shape and colour for mate selection by females would also be valuable, as would a detailed molecular analysis. We intend to keep the taxonomic status of these birds under review in light of any emerging new evidence.

Taxonomic status of fusca, deglandi *and* stejnegeri *(Velvet/White-winged Scoters)*

Melanitta fusca, *M. deglandi deglandi* and *M. d. stejnegeri* are also diagnosably distinct. A pairwise comparison (*fusca* v *deglandi/ stejnegeri*, *deglandi* v *stejnegeri* and *fusca/deglandi/stejnegeri* combined v *perspicillata*; table 5) suggests that the evidence for splitting these three taxa is more compelling than that for *nigra* and *americana*, since it involves more independent criteria. These include:

- *Bill shape (males):* a stepped discontinuity in a continuously varying character. It is likely that there is near 100% diagnosability between *fusca* and *deglandi* on this feature alone, and 100% diagnosability between *deglandi* and *stejnegeri*.
- *Bill shape (females):* there are differences, at the population level, among *fusca*, *deglandi* and *stejnegeri* possibly approaching a stepped discontinuity.
- *Bill colour pattern (males):* there is close to 100% diagnosability between *fusca* and *deglandi*, and subtle but perhaps 100% diagnosable differences between *deglandi* and *stejnegeri*.
- *Nostril shape (males):* probably 100% diagnosability between *fusca* and *deglandi*, in a continuously varying character. The taxa *deglandi* and *stejnegeri* are similar.

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89. This male Black Scoter *Melanitta americana* is probably in its second calendar-year, and shows how bill coloration develops before the bill shape is fully mature. Compare bill shape with that of the adult in plate 88.

- *Facial feathering around bill:* 100% diagnosability among all three taxa.
- *Male plumage*: a stepped discontinuity in the quantitative variation in flank colour between *deglandi* and both *fusca* and *stejnegeri*. Population differences (apparently different means, probably overlapping ranges) in extent of white eye-crescent between *fusca* and *deglandi*, not shown between *deglandi* and *stejnegeri*.
- *Tracheal structure*: apparent 100% diagnosability between *fusca* and *deglandi*, but equivalent data for *stejnegeri* are not presently available.
- *Voice (males):* 100% differences reported between *fusca* and *deglandi*, possibly related to tracheal structure.

It is reasonable to suggest that *deglandi* and *fusca* should be treated as separate species under criterion 4.1 of Helbig *et al.* (2002), as allopatric taxa that are 'fully diagnosable in each of several discrete or continuously varying characters, related to different functional contexts'. Slightly more problematic is the question of whether to retain *stejnegeri* as conspecific with *deglandi*: *stejnegeri* is similar to *deglandi* in many respects and is the taxon for which there is the greatest amount of uncertain or missing data. On the basis of what is known – diagnosability on the basis of male bill shape and colour (a potentially reproductively important character), facial feathering (perhaps trivial), and male flank colour (perhaps trivial) – the argument for splitting *deglandi* and *stejnegeri* may appear to be almost as good as that for splitting *nigra* and *americana*. Given the lack of published information on *stejnegeri*, however, we conclude that further research into vocalisations and genetics is required; hence we provisionally retain *stejnegeri* as a subspecies of *M. deglandi*.

Conclusion

For the purposes of the British List, it is suggested that the genus *Melanitta* is treated as comprising five species, four of which are on Category A:

- Common Scoter *Melanitta nigra*
- Black Scoter *M. americana*
- Velvet Scoter *M. fusca*
- Surf Scoter *M. perspicillata*

The extralimital White-winged Scoter *M. deglandi* is presently treated as polytypic, with subspecies *deglandi* and *stejnegeri*.

Acknowledgments

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Appendix 1. Distribution of scoter taxa.

Common Scoter Melanitta nigra

Breeds Iceland, Scotland, Spitzbergen, N Europe and Asia to R. Khatanga, possibly further east. Winters off the coasts of W Europe and the Mediterranean, less regularly in the Black and Caspian Seas (Dement'ev & Gladkov 1952; Johnsgard 1978). A distinct moult migration is visible along the coasts of north-central Europe, although moult locations are partly unknown, sometimes far out at sea (Cramp & Simmons 1977).

Black Scoter M. americana

Breeds in N Asia (eastward from the Lena/Yana watershed to the Kamchatka Peninsula) and North America (Alaska/Canada – from Bristol Bay to Kotzebue Sound and Mt McKinley, sporadically east to Newfoundland). There are two, possibly disjunct, populations in North America: 1) coastal and alpine tundra of Alaska; and 2) N Quebec (Bordage & Savard 1995). Winters along the Asian and North American coasts of the Pacific, and along the Atlantic coast of North America (Dement'ev & Gladkov 1952; Johnsgard 1978). Southern limit of wintering area is at surface sea temperature greater than 10–11°C (Bordage & Savard 1995).

Apparently, *nigra* and *americana* replace one another abruptly on the lower Lena, but it is not known whether their ranges are in contact (Cramp & Simmons 1977). The eastern limit of *nigra* has been reported not to reach the R. Lena – stopping along longitude 120°E in the Vilyuy basin (Rogacheva 1992). Near Lake Khantayskoye, *nigra* is common on small lakes in forests, with *fusca* (Rogacheva 1992), and is sympatric with *stejnegeri* in the Syurindinsk depression on upper reaches of R. Vilyuy (Rogacheva 1992). Southern limits of the breeding range of *nigra* in C Siberia follow the boundary between northern and middle taiga (Rogacheva 1992).

Surf Scoter M. perspicillata

Breeds in North America only, in Alaska, Yukon, Northwest Territories, south Hudson Bay, interior Quebec and Labrador. Winters on both coasts of North America and on the Great Lakes. Known from Russia – non-breeders are recorded on the Kommander Islands and Chukotskiy Peninsula (Dement'ev & Gladkov 1952).

(American) White-winged Scoter M. deglandi deglandi

Breeds in North America only, from NW Alaska to Hudson Bay, south to S Manitoba. Winters on both coasts of North America as far south as California and South Carolina. There are several records from the Kommander Islands and more than one record from Iceland (Gardarsson 1997).

(Asian) White-winged Scoter M. deglandi stejnegeri

Breeds in E Asia, Altai to Kamchatka. The western limit of *stejnegeri* lies to the east of the R. Yenisey.

Occasional occurrences are reported on the lower Yenisey to Dudinka, but it is doubtful that it breeds there (Dement'ev & Gladkov 1952; Rogacheva 1992). It is a common gamebird on the upper Vilyuy. There is a possible discontinuity in this form's range in the southern part of the Angara area (Rogacheva 1992). Common, not abundant, on Anadyr and very patchily distributed throughout its range. Winters on the coasts of the W Pacific south to China (Dement'ev & Gladkov 1952).

Velvet Scoter M. fusca

Breeds in N Europe and Asia, from Scandinavia to the R. Yenisey at least, perhaps to the mouth of the Khatanga. It occurs at the mouth of R. Yenisey (70°N) but is very rare (Rogacheva 1992). Common and ubiquitous in the extreme northern taiga zone and is partially sympatric with *nigra*. These two species make up the bulk of duck populations inhabiting the lakes of C Siberian open woodlands (Rogacheva 1992). Some of the reported sites in Russia may not represent permanent breeding areas (Dement'ev & Gladkov 1952). The eastern limit of its range is assumed to lie in the upper reaches of R. Vilyuy. Only *stejnegeri* is found on the lower reaches; therefore it is possible, but not known, that the ranges of the two taxa meet (Cramp & Simmons 1977). Palmer (*Handbook of North American Birds*, Vol. 2, *Waterfowl*, 1976) indicates that their ranges are not known to meet, but non- or post-breeding *fusca* have been recorded in the gap between them. It is certainly possible that *fusca* breeds outside its main range (Rogacheva 1992). Isolated breeders are found in Turkey and Georgia. Winters from the neck of the Baltic Sea, into the North Sea and Atlantic Ocean. Smaller numbers winter in the Black, Mediterranean and Caspian Seas (Dement'ev & Gladkov 1952; Johnsgard 1978).

Thus *perspicillata* is confined to North America, where it is partially sympatric with *americana* and *deglandi*. In Europe and northwest Asia, *nigra* is sympatric with *fusca* west of the R. Yenisey, and with *stejnegeri* between the Yenisey and Lena rivers. In Asia, east of the Lena, *americana* is sympatric with *stejnegeri*.

Appendix 2. Courtship and copulation displays of scoter taxa.

Published accounts of courtship displays do not always allow for confident definition of known homologies within the Mergini. Clear differences are seen when the 'Common/Black', 'Velvet/White-winged' and Surf Scoters are compared with each other, but differences between *nigra* and *americana*, and among *fusca*, *deglandi* and *stejnegeri* are difficult to discern from the literature.

Common Scoter Melanitta nigra *and Black Scoter* M. americana

Courtship displays have been well described, albeit independently, for both taxa. Observations of *nigra* (Gunn 1927; Boase 1949; Johnsgard 1965; Bengston 1966) in general correspond very closely with what is known for *americana* (Humphrey 1957; McKinney 1958).

A number of males gather round a smaller number (perhaps only one) of females. The calling males mob the female(s) and may attempt copulation (Boase 1949; Cramp & Simmons 1977). Overt aggressive chases between males are rare in both taxa (Gunn 1927; McKinney 1958).

Comparison of the elements of display reveals that both taxa exhibit a shared repertoire of stereotyped behaviours described in Cramp & Simmons (1977). The male display is built up from somewhat fixed sequences (Bengston 1966), which have been named as follows:

- 'Upward stretch' (Boase 1949) [= 'shake'] (McKinney 1958);
- 'Wing-flapping' (both taxa) [= 'obeisance'] (Gunn 1927; Boase 1949) – note that during wing-flapping, both *nigra* and *americana* jerk their head down as if the neck were broken, in contrast to other *Melanitta* species;
- 'Lateral head-shaking' – the most frequent display (Bengston 1966);
- 'Preening';
- 'Low rush' (Boase 1949);
- 'High rush' (Gunn 1927) probably the same as 'steaming' (McKinney 1958), and equivalent to 'steaming toward female' (Johnsgard 1965);
- 'Tail-snap';
- 'Water-flick';
- 'Short-flight' (Boase 1949);
- 'Bowing' (McKinney 1958).

The only described qualitative difference is a modified version of 'shake', without shaking (!) and termed 'body-up', that was explicitly not found by McKinney for *americana* but is described in Bengston (1966) for *nigra*.

The complete display for both taxa is a complex series of movements: courtship whistle (erect), tail-snap, low rush, water-flick, breast-preen, forward stretch, upward stretch, lateral head-shake. Bengston (1966) described head-shakes, bowing, tail-snap, low rush, short flight, shake, steaming with frequent wing-flapping and preening for *nigra*. Tail-snap is almost always followed by low rush, but low rush can be performed without prior tail-snap. Tail-snap and low rush are often left out of the display.

Humphrey (1957), describing *americana*, heard nothing like the 'teka teka' call which Gunn (1927) heard for *nigra*, although Brooks (1920) did describe a similar call for *americana*. Courtship calls of the males comprise a low, slurred, hooting pipe or plaintive whistling (Bengston 1966; Bordage & Savard 1995), shorter for *nigra* than for *americana*, as

described in main text and in Sangster (in press). Females of both taxa produce a low grating noise, like a door swinging on rusty hinges (Cramp & Simmons 1977; Bordage & Savard 1995).

Copulation behaviour also figures in pair courtship (Cramp & Simmons 1977). There are no described differences between *nigra* and *americana*. The female is not prone for long. Males generally perform an upward stretch, the female becomes prone and the male mounts immediately. After copulation, the male swims away while the female bathes. Copulation is not accompanied by a 'wing-shake' from the male, and differs in this respect from the behaviour of *fusca*

Velvet Scoter M. fusca, *(American) White-winged Scoter* M. deglandi deglandi *and (Asian) White-winged Scoter* M. deglandi stejnegeri

In contrast to the other scoters, courtship behaviour in this group is very similar to pre-copulatory behaviour. Monogamous pair-bonding starts in winter, with small groups of males actively quarrelling and displaying around a smaller number of females, often only one (Boase 1949). Pairing behaviour is similar in *deglandi* and *fusca* (Boase 1949; Dement'ev & Gladkov 1952; Koskimies & Routamo 1953; Myres 1959; Johnsgard 1965; Brown & Frederickson 1997) but that of *stejnegeri* has not been described fully. Ritualised behaviours within this group include:

Male swims around female with vertically raised head and half-opened quivering wings, accompanied by diving and splashing water.

- 'Underwater chases';
- 'Threat display' – similar to goldeneyes and *perspicillata*;
- 'Neck-erect-forward' (equivalent to similar displays seen in other scoters – see *perspicillata*);
- 'Ritualised (false) drinking'*;
- 'Water-twitching'*;
- 'Ritualised preening'*;
- 'Crouching';
- 'Upward-stretch/shake' – as in other scoters;
- 'Wing-flapping' – as in other scoters;
- 'Skating' [= 'low rush'?] (Boase 1949);
- 'Short flight' (Boase 1949).

Those marked * have been described as courtship displays but are probably primarily pre-copulatory.

Typically, the male swims after the female with 'neck-erect-forward', subsequently performing low rush, upward-shake, wing-flap, bowing, short flight. There is variation in the sequence and choice of behaviour units (Brown & Frederickson 1997). Courtship flights are much less frequent than in *nigra* but replaced by persistent underwater chases (Cramp & Simmons 1977). This group of scoters is rather silent, but vocal differences have been reported between the males of *fusca* and *deglandi* (consistent with the described differences in their tracheal bullae; see 'Tracheal anatomy' and fig. 3, p. 189). The courtship call of *fusca* is a higher-pitched, double 'skryck', rather than the whistled double 'whur-er' of *deglandi*, which appears to have no *fusca* counterpart. Both taxa also make rather coarse purring and cackling noises (Dement'ev & Gladkov 1952; Cramp & Simmons 1977). The situation is made complicated by imprecise reporting, and there has been some confusion in the literature between vocal noises and those noises made by wing movement. Some extensive studies have detected no male vocalisations during courtship (Myres 1959; Brown & Frederickson 1997). Further investigation, preferably sonographic analysis, would be helpful. Females contribute few displays to courtship, and no differences are reported among the taxa (Cramp & Simmons 1977; Brown & Frederickson 1997).

Copulation has been described for *deglandi* in detail (Myres 1959), where, in contrast to other scoters, Bufflehead and goldeneyes, there is direct equivalence between courtship and copulation displays. Prior to copulation, both sexes perform false-drinking, and the male gives the water-twitch and preen-behind-wing displays. The female becomes prone shortly before the male mounts – similar to observed behaviour in *nigra/americana*. The male may give a vigorous double wing-shake (unlike *nigra*) as he dismounts, after which the birds swim away from each other.

Surf Scoter M. perspicillata

Although not directly relevant to taxonomic treatment of the subspecies within Common/Black and Velvet/White-winged Scoters, it is emphasised that there are unique differences in the courtship and copulatory behaviours of *perspicillata* that distinguish this species from the other recognised species, as well as recognisable similarities and homologies with other Mergini.

During courtship, as with other scoters, a single female is surrounded by a few males, with much fighting and threatening behaviour between males. Males swim rapidly to and fro, keeping their head and neck erect, at intervals dipping the beak into the water. The female swims from one male to another (Bent 1925; Johnsgard 1965). The following displays have been reported:

- 'Threat display' much like that of *deglandi*;
- 'Crouch display' much like that of *deglandi*;
- 'Underwater chases' much like those of *deglandi*;
- 'Sentinel' pose [= neck-stretch of *nigra/americana* and neck-erect-forwards of *deglandi/fusca*];
- 'Breast-scooping' [= combination of lateral head-shaking and breast-preening];
- 'Chest-rearing' – not found in other scoters, equivalent to rearing display of Steller's Eider *Polysticta stelleri* (Myres 1959);
- 'Fly away' [= *nigra/americana*]
- 'Short flight', similar to that seen in Steller's Eider and *Bucephala* spp. – when birds land, they may go into 'upward-wings-raised', as in *Bucephala*

(Myres 1959);

- 'Tail-raised', perhaps equivalent to tail-snap of *nigra/americana*;
- 'Head-turning', perhaps equivalent to lateral head-turning of eiders and goldeneyes.

The copulatory behaviour (Myres 1959) is similar to that seen in *deglandi* (cf. specific differences in courtship behaviour), although the female is prone for more than two minutes – much longer than in the other scoters. The male does a water-twitch and preen-behind-wing, and may ritual-drink. The male mounts, and normally chest-rears as he dismounts (something not seen in *deglandi*).

Appendix 3. Breeding habitat and behaviour of scoter taxa.

The presumed ancestral condition for breeding is fresh water. Subsequently, *deglandi* and *fusca* have shifted to significant use of brackish or salt water. Although *fusca, deglandi* and *stejnegeri* may be found in sympatry with other scoters in northern tundra, they are more strongly associated with woodland habitats, nesting in pine *Pinus* forests of Russia and zones of coniferous forest in Canada and Alaska, on shallow ponds with overgrown banks (Dement'ev & Gladkov 1952; Rogacheva 1992). Their ranges commonly extend to breeding areas on wooded shores and skerries along sea coasts. In general, *fusca, deglandi* and *stejnegeri* share the ability to nest far south of *nigra, americana* and *perspicillata*, with which they are partially sympatric, in both the Nearctic and the Palearctic. In addition, *deglandi* and *stejnegeri* are found sparingly at high altitude in the south of their ranges (Rogacheva 1992).

Both *nigra* and *americana* breed around freshwater bodies in arctic and subarctic tundra and northern taiga mossy bogs (Dement'ev & Gladkov 1952; McKinney 1958; Cramp & Simmons 1977; Johnsgard 1978; Rogacheva 1992; Decarie *et al.* 1995). Although not uncommon in suitable habitat, they are nowhere abundant and become less common in heavily wooded areas, in direct contrast to *fusca, deglandi* and *stejnegeri*. There seems to be more suitable habitat than birds to fill it (Johnsgard 1978). In the Nearctic, *perspicillata* occupies a similar range to *americana*, nesting around freshwater lakes, ponds and rivers within or beyond the northern tree limit (Bent 1925; Cramp & Simmons 1977; Johnsgard 1978).

Common Scoter Melanitta nigra *and Black Scoter* M. americana

Nests are well dispersed at concealed sites in thick vegetation or under scrub, mostly near water. Aerial surveys of *nigra* and *perspicillata* in Quebec (Decarie *et al.* 1995) showed that Black Scoters were associated with the presence of ponds (<10 ha) with sedge and grass, in contrast to Surf Scoters, which were more often found on unvegetated medium-sized lakes (10–100 ha). In contrast to *fusca, nigra* males maintain a mobile territory around their female (Bengston 1966). In both *nigra* and *americana*, the male may desert the female for his moult migration at about the time incubation begins (Bengston 1966; Cramp & Simmons 1977), although in Scotland this is not nor-

Tim Loseby

90. The smooth, concave head-and-bill profile distinguishes this female Velvet Scoter *Melanitta fusca* from both female 'American' White-winged Scoter *M. d. deglandi*, which has a slightly stepped profile resembling that of the male, and female 'Asian' White-winged Scoter *M. d. stejnegeri*, which has a rather straight bill profile, perhaps recalling Common Eider *Somateria mollissima*.

mally the case (M. A. Ogilvie pers. comm.).

Common Scoter The nest is composed of dry vegetal remains with a down lining, well concealed in birch *Betula* or willow *Salix* scrub (Bengston 1966). There are 6–10 eggs (mean 6.8 in Ireland, 8.7 Iceland), pale greenish brown, cream to buff (Cramp & Simmons 1977), 59–72 × 42–46.5 mm, shell 0.315 mm thick. Incubation lasts 30–31 days with fledging at 45–50 days (Bent 1925; Dement'ev & Gladkov 1952; Cramp & Simmons 1977).

Black Scoter The nest is built on the ground near water, sometimes on the borders of a pond or on steep banks close to water, hidden by grasses or stunted bushes, with a downy lining (Dement'ev & Gladkov 1952). There are 8–10 eggs, pale yellowish-white (colour varies from light buff or pale pinkish buff to cartridge buff), 53.0–72.7 × 33.6–46.2 mm (mean 61.9 × 41.7 mm), shell 0.315 mm thick (Bent 1925; Dement'ev & Gladkov 1952). There may be individual and inter-population differences relating to local environmental conditions. Bordage & Savard (1995) gave egg sizes as 64.11 × 44.26 mm on average (range 62.63–65.37 × 44.04–44.59). Kondratyev (1989), describing a Russian population of *americana*, counted 5–7 eggs (mean 5.83), average 66.4 × 45.0 mm (range 62.5–72.3 × 41.5–46.3). There are no North American data on the incubation period.

Velvet Scoter M. fusca, *(American) White-winged Scoter* M. deglandi deglandi *and (Asian) White-winged Scoter* M. deglandi stejnegeri

These taxa tend to arrive late on territories, and may wait for a month or more before the female lays (Johnsgard 1978). First breeding occurs in the third or fourth calendar-year (Cramp & Simmons 1977). The males defend a territory of variable size on the water, but usually leave as incubation starts. Some stay to defend the brood and female. The pair will hang around together in communal areas until the female starts sitting. Females tend to abandon the young before fledging, but remain to moult on the breeding grounds (Cramp & Simmons 1977; Johnsgard 1978).

Velvet Scoter Nests on damp lowland among sedges or grassy vegetation, right next to water of lake (or small pond) or up to 2–3 km away, under scrub or overhanging rock, in woods, or uses nestboxes – reports from different locations are extremely variable (Bent 1925; Dement'ev & Gladkov 1952). In the Gulf of Bothnia, the females usually select nest-sites under junipers *Juniperus* or other bushes, also broadleaved herbs, herb–shrub mixtures or boulders for nest cover (Johnsgard 1978). Near the coast, nesting may be associated with gulls (Laridae) and/or terns (Sternidae) (Cramp & Simmons 1977).

The female builds, using material within reach, and making a lining of dry grass and down. There are usually 6–10 eggs (up to 14), creamy white, 64.3–76.5 × 44.8–51.5 mm, mean 70.8 × 47.9. Incubation lasts about one month (Dement'ev & Gladkov 1952), specifically 27–28 days (Koskimies & Routamo 1953). Fledging occurs at 50–55 days, although the young are independent at 30–40 days (Cramp & Simmons 1977). Broods frequently unite and survival may depend on this (Dement'ev & Gladkov 1952; Cramp & Simmons 1977).

Arthur Morris/Windrush

91. The bill of an adult male White-winged Scoter *Melanitta deglandi* of the race *deglandi* has a broad, lateral black border outlining the bill, which is red distally and becomes yellow-orange close to the nostrils. This contrasts with the bill of the race *stejnegeri*, on which the black lateral border is less pronounced and the distal part of the bill is yellow, becoming red closest to the nostrils.

(American) White-winged Scoter Frequently nests far from water, the nest being covered by vegetation or between rocks, often in dense vegetation. The downy lining may be poor or profuse. There are 9–14 eggs of variable colour, dingy ochre/deep rich buff/pale pinkish buff/cartridge buff, mean 65.3 (55.4–72.5) × 45.7 (35.7–49.0) mm. Incubation lasts about one month (Bent 1925; Dement'ev & Gladkov 1952).

(Asian) White-winged Scoter Nests have been reported from the Altai, on open banks of lakes, close to water. In the Anadyr region, they are located on the high banks of rivers and lakes, hidden in bushes or grass, the lining of moss or dry grass, and brown-grey down. Typically 6–9 eggs (varies locally), pale straw ochre, 55.5–72.5 × 35.7–49.0 mm. Breeding dates vary according to local conditions and altitude.

Surf Scoter M. perspicillata

As with courtship and copulatory behaviour, the nesting behaviour of the taxa under consideration bears comparison with the nesting behaviour of *perspicillata*. The nest may be either close to or some distance from water, well concealed among grass, under bushes or low branches (Bent 1925; Johnsgard 1978). The nest is a hollow consisting of dry debris, with much down (Dement'ev & Gladkov 1952). Between 5 and 7 (up to 9) eggs are laid, cartridge buff, pinkish or buffy white, pale yellowish, yellow-tinged or cream, mean 61.6 (58.0–67.5) × 43.0 (40.5–45.0) mm (Bent 1925). Brood merges may be common (unlike *nigra* and *americana*, but similar to *fusca* and *deglandi*). Males leave before hatching for moult migration. Females may leave before the young fledge (Johnsgard 1978).

Appendix 4. Food items of scoter taxa.

Common Scoter Melanitta nigra *and Black Scoter* M. americana

An indirect comparison of food items, taken separately for *nigra* and *americana* from data in Bent (1925), Dement'ev & Gladkov (1952), Cramp & Simmons (1977) and Bordage & Savard (1995) suggests that their diets, primarily molluscs and crustaceans during the winter and aquatic insects and other invertebrates during the summer, are qualitatively very similar.

Common Scoter *Mytilus edulis*++, *Cardium* spp. *Mya*, *Spisula*, other bivalves, *Nassa*, *Littorina*, *Hydrobia*, *Idotea*, *Gammarus*, *Carcinus*, echinoderms. In fresh water, *Anodata*, *Lymnaea*, insects and larvae (dragonfly (Odonata) larvae, caddisflies (Trichoptera) and chironomids), annelids, small fish, roots and tubers.

Black Scoter *Mytilus* spp.++, *Mya*, *Spisula*, *Littorina*, gammarids, *Balanus*, etc. In fresh water, caddisflies (a major food item in the Anadyr region, 3.2% on American continent), amphipods, beetles (Coleoptera), Ephemeroptera and Nematoda.

Velvet Scoter M. fusca, *(American) White-winged Scoter* M. deglandi deglandi *and (Asian) White-winged Scoter* M. deglandi stejnegeri

The diet of *fusca* is similar to that of *nigra*, though more varied because *fusca* feeds in more variable conditions. At sea, *fusca* may be almost entirely molluscivorous (Dement'ev & Gladkov 1952). In Norway, *fusca* fed on sandy bottom, mainly on echinoderms, in association with Red-necked Grebes *Podiceps grisegena* (Byrkjedal *et al.* 1997). The food of *deglandi* varies widely in different localities (Bent 1925). Like *fusca*, it dives to submerged ledges at 5–20 m or more in search of molluscs (chiefly bivalves) and crustaceans, also crayfish (Astacidae), fish, tadpoles (Amphibia), insect larvae, vegetable food, slugs and snails (Gastropoda) inland (Bent 1925). Like *fusca*, *deglandi* extensively chooses sandy or gravelly substrates as winter feeding areas. When it occurs in flocks with *americana* and *perspicillata*, *deglandi* tends to select larger food items (Brown & Frederickson 1997), using deeper feeding grounds further away from the shore. In these flocks, *americana* and *perspicillata* often feed together over different substrates from nearby *deglandi*.

Velvet Scoter *Mytilus edulis*++ (usually 5–20 mm, cf. <40 mm for *nigra*), cockles *Cardium*+, dogwhelks *Nassa*, *Mya*, *Macoma*, *Spisula*, *Mactra*, *Venus*, *Nucula*, *Astarte*, *Cyprina*, *Modiolaria*, *Leda*, *Solen*, *Tellina*, *Donax*, etc. rarely small fish, also plant remains. In fresh water, molluscs include *Bythinia*, *Valvata*, *Anodonta*, *Unio*, *Dreissena*, insects, annelids, fish, seeds, roots, etc. When food is scarce, *fusca* may eat roe and frogs (Ranidae). Juveniles concentrate on crustaceans, i.e. amphipods, also insect larvae.

(American) White-winged Scoter *Mytilus* spp.++, *Protothaca*, *Ostra*, *Pecten*, *Mercenaria*, *Thais*, *Littorina*, *Yoldia*, *Nassarius*, *Ammodytes*, *Siliqua*.

(Asian) White-winged Scoter The diet of *stejnegeri* is not properly determined. This taxon has nearly the same habitat requirements as *fusca*. Caddisflies and stoneflies (Plectoptera) have been recorded as a food item in the Anadyr region.

Surf Scoter M. perspicillata

Primary food items vary seasonally as for other scoters (Bent 1925; Dement'ev & Gladkov 1952) and include molluscs, crustaceans, insects (caddisflies, dragonflies, *Dytiscus* diving beetles), also some fish, seeds and greenery of pondweeds *Potamogeton*.

Conservation research news

Compiled by Mark Hancock and Len Campbell

Eastwards shift in wintering waders – new evidence of a response to climate change

Climate change is now almost universally accepted and is much discussed in ornithological circles. We now have evidence, backed by published research, of birds nesting earlier and of breeding ranges moving northwards. Climate change is well established in long-term consideration for wildlife sites, particularly coastal areas that might be subject to sea-level rise and montane areas where warming may result in key species being lost.

However, there has been relatively little discussion of potential shifts in the winter distribution of migratory birds in response to climate change. This is rather surprising, given what we already know about the way many bird species respond to winter weather, and the predicted – and already apparent – warming of winters in the UK. Until recently, this issue had not been highlighted in any major published study, an omission that was corrected recently by Graham Austin and Mark Rehfisch of the BTO. Their intriguing, but also worrying, paper tells a convincing story of a major response to climatic warming by many migratory waders wintering in Britain. Featuring in an international journal alongside climate change topics ranging from boreal-lake methane emissions to thermal bleaching in corals, their paper is a fine showcase of ornithological science based on the long-term bird data we are so lucky to have in Britain.

The authors examined WeBS (Wetland Bird Survey) count data as far back as 1974, for estuaries in the east and west of England. They focused on nine wintering wader species – Oystercatcher *Haematopus ostralegus*, Ringed Plover *Charadrius hiaticula*, Grey Plover *Pluvialis squatarola*, Red Knot *Calidris canutus*, Sanderling *C. alba*, Dunlin *C. alpina*, Bar-tailed Godwit *Limosa lapponica*, Eurasian Curlew *Numenius arquata* and Common Redshank *Tringa totanus* – and asked the question: 'Has migrating to southwest Britain become a poor strategy, now that winters are warmer?'

The evidence suggests that the answer is 'yes' for seven of the nine species. Estuaries in eastern Britain, which formerly would have suffered more severe winter weather, now hold more waders, while estuaries in the west – which involve further travel for most species – hold fewer. The incentive to travel west has been removed, as winters have warmed by an average of 1.5°C over the study period. The effect is particularly strong for small-bodied species, like Ringed Plover and Sanderling, which are probably more susceptible to weather effects. The two exceptions were Redshank, a species known to be particularly site-faithful, and Curlew, the species with the largest body weight.

The effects of these changes at some sites have been dramatic. For example, in the Severn Estuary SPA, winter counts of Dunlin have declined markedly, from averages in the 1970s of 40,000–50,000 to numbers in the late 1990s that approached or even fell below the threshold for international significance of 14,000. This highlights the importance of understanding bird trends properly – it would be pointless trying to address the decline in wintering Dunlin in the Severn Estuary by action at that site alone, when the main causes appear to be truly global.

What is particularly worrying about this study is that it highlights the increasing dependence of waders on estuaries in eastern Britain, where sea-level rise, hard sea defences and development pressures mean that intertidal habitats are under particular threat. It

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also raises the long-term prospect of Britain losing some of its most spectacular winter wildlife – if the eastward drift in range of these huge wintering wader flocks continues right out of the country.

Austin, G. E., & Rehfisch, M. M. 2005. Shifting non-breeding distributions of migratory fauna in relation to climate change. *Global Change Biology* 11: 31–38.

Grassland management and its effects on birds

Although declines in farmland bird populations are now well known, the most advanced research work has been concentrated on arable systems. This has resulted in the development, testing and introduction into agri-environment schemes of prescriptions designed to reverse these declines. Agricultural intensification has been equally dramatic in lowland grassland areas but much less research into the impacts on birds has so far been completed. In a recent study, Dave Buckingham and his colleagues assessed winter and summer usage by birds of grassland on 23 farms in the West Midlands, an area of mixed farming where grassland made up 70–90% of each farm. In addition to surveying foraging and other birds, a range of field characteristics were measured, such as sward structure and composition, soil type, fertiliser inputs and grazing.

The number of species and total number of birds seen on each visit were generally low, with 90% of visits recording 32 or fewer individuals in winter and ten or fewer in summer. Blackbirds *Turdus merula* were recorded in 65% of fields but, apart from Carrion Crow *Corvus corvus*, Wood Pigeon *Columba palumbus* and Magpie *Pica pica*, no other species occurred on more than a third of fields.

Sward structure had the greatest influence on the use of fields by foraging birds, which fell into two main groups according to their different feeding preferences. Thrushes (Turdidae), corvids (Corvidae) and Common Starlings *Sturnus vulgaris* all preferred short swards, which is consistent with the fact that they feed mainly on soil-dwelling invertebrates. A tendency to avoid the very shortest swards was noted and this may be because these were found in the most intensively grazed fields, where trampling can have an adverse effect on soil invertebrates. The other group of birds, which included larks (Alaudidae), sparrows (Passeridae), finches (Fringillidae) and buntings (Emberizidae), which are known to feed mainly on seeds or invertebrates living in the sward, preferred areas of taller sward interspersed with patches of bare ground.

Grazing was the management practice that appeared to have the most impact on bird usage, through its obvious effects on sward structure and height. The two groups were affected rather differently. For those species feeding on soil-dwelling invertebrates, grazing, particularly by cattle in summer, increased the level of usage by birds in both the summer and the following winter. For species depending on seeds or invertebrates living in the sward, the situation appeared to be more complex. Heavy grazing (and indeed activities such as cutting for silage) appeared to reduce usage by this group of birds: preventing the grass from growing taller, or flowering, inhibited seed production and the development of abundant populations of suitable invertebrates. Lighter grazing or delays in cutting, which allow seeding and invertebrate populations to develop, are likely to be much more favourable. However, if swards become too dense and tall, as perhaps in some hayfields, the usage by birds may again be reduced because access to food is restricted.

Although the intensification of grassland management may continue to benefit some species, the group of species that suffer is the one that has also declined markedly in arable areas and which contains several 'red-listed' species. To stem these declines in agricultural grassland will require changes in management that allow taller swards to develop, which in turn will enhance the seed and invertebrate food resources crucial for both granivores and insectivores.

Buckingham, D. L., Peach, W. J., & Fox, D. E. 2005. Effects of agricultural management on the use of lowland grassland by foraging birds. *Agriculture, Ecosystems and Environment* 112: 21–40.

Letters

Population estimates

The January issue of *BB* included the population estimates of all British species (*Brit. Birds* 99: 25–44) prepared by Helen Baker and others under the auspices of the Avian Population Estimates Panel (APEP). They set out their terms of reference quite clearly and so they are aware of the opinions they are likely to encounter. I suppose that if you are compiling a new field guide, absolute figures of bird populations are useful. Most of us are more interested in population trends, which are admirably monitored by the BTO, whose various surveys are conflated in the APEP figures. The main problem with the tables is that their geographical areas are political. A case could be made for showing figures for Great Britain separately from those for the British Isles as a whole including Ireland. To introduce another figure for the UK is meaningless. Northern Ireland, however much the government may regret it, is part of Ireland, and from a scientific viewpoint its bird populations should be shown with the rest of Ireland. As it is, the APEP tables not only show irrelevant information but also make the tables themselves twice as large as they need to be. I sympathise with the authors' need to satisfy the demands of government, from which source patronage comes, but this should not necessarily affect *BB*.

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EDITORIAL COMMENT Helen Baker has replied as follows: 'As Christopher points out, APEP has given its rationale for producing the list, and we have noted our desire to produce an all-Ireland list and possibly individual country lists in future. The APEP list is unashamedly based on geopolitical divisions and I would hope that the primary aim of assisting conservation of the UK's birds is sufficient to support its publication. In this context, the UK is not a meaningless geopolitical entity – in Europe and internationally it is the UK that is a signatory to conservation policy and the status of the UK's birds is used as one measure of implementation of these policies. Other authorities and organisations also take this view, for example BirdLife International uses UK population status in *Birds in Europe* (2004). At the national level, GB and all-Ireland have become important divisions in conservation practice, but not solely because this is viewed by some as being scientifically (or biologically) sensible. Of course, publishing biologically meaningful lists of population estimates is also of considerable value and when such lists are available they are important tools for bird conservation – a good example is the Wetlands International *Waterbird Population Estimates*. However, if one takes a more puritanical biological view, then the role of national lists for Britain and Ireland becomes dubious for almost all species – most of our taxa have far more extensive natural ranges. Both types of list have considerable practical value in conservation and production of geopolitical lists should reflect both national and international needs.'

The former status of Great Bustard in Britain

Certain points remain to be made about the valuable account by Estlin and David Waters of the Great Bustard *Otis tarda* in Britain (*Brit. Birds* 98: 295–305). In the first place, while the history of enclosed farmland, longer than is sometimes allowed, now seems well understood, this hardly applies to the former Open Fields, which once stretched down the middle of England. The Open Fields were enormous and, even at the best of times, until the 18th century, somewhere between a half and a quarter would normally have been left as grazed fallow, and probably more after the periodic Medieval plagues and famines. Doubtless they provided an ideal habitat for Great Bustards, and one important reason for this species' downfall must have been the end of fallow fields (until the onset of set-aside).

More consideration also needs to be given to the likely seasonal variation in Great Bustard behaviour. They may have dispersed to take part in conspicuous displays in the spring, but flocked unobtrusively in secluded places at other seasons, leading to speculation that they

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must migrate. It is also notable that there seems to have been little traditional procedure for hunting them in western Europe, where they were sometimes taken by Northern Goshawks *Accipiter gentilis* along with other birds (John Cummins, *The Hound and the Hawk*, London, 1988), compared with the coursing of bustards on horseback with dogs and falcons still practised in the Middle East. It seems possible that one of the main ways of taking them may have been snaring, which is remarkably effective in skilled hands, but seldom gets into respectable manuals of hunting. They would have fetched the high prices (also reported by Sir Hugh Gladstone; *Brit. Birds* 36: 122–131) of 252–756 old pennies in 1807, not because of their scarcity, but because, like Common Cranes *Grus grus* and swans *Cygnus*, they are great, big, edible birds.

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Lady Amherst's Pheasants in Britain

I enjoyed reading Barry Nightingale's paper on the status of Lady Amherst's Pheasant *Chrysolophus amherstiae* in Britain (*Brit. Birds* 98: 20–25). Originally from Hertfordshire, I now work with Grey Partridges *Perdix perdix* in Italy and was struck by the repeated references in the paper to low numbers of female Lady Amherst's. Sex-ratio imbalance has been recorded through inbreeding in lots of birds (and outbreeding in Grey Partridge in Finland, where *P. p. perdix* × *P. p. lucida* pairings produce few females). Sex-ratio discrepancies at birth aside, biologists dealing with a monogamous gamebird generally believe that:

a) an excess of unpaired spring males signifies fox predation of incubating and brood-rearing females; and

b) an excess of unpaired spring females signifies raptor predation of males 'on guard' on nest duties and in coveys (or, in the case of polygamous galliformes, because of the males' showier colours).

I believe that the population structure BN describes fits perfectly a model of severe losses of incubating and brooding females to Red Fox *Vulpes vulpes* predation, probably due to poor cover (due to grazing by Muntjac Deer *Muntiacus reevesi*?) and poor gamekeepering. Similar problems are affecting Capercaillies *Tetrao urogallus* away from deer-fencing in Scotland.

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Looking back

Seventy-five years ago:

'RED-BACKED SHRIKE IN CORK. An immature Red-backed Shrike (*Lanius c. collurio*) was killed striking the lantern at the Fastnet Rock, Co. Cork, at 3.30 a.m. on August 30th, 1930; the wind at the time was light, from the N.E. The specimen was sent to me in the flesh by Mr. P. J. O'Connor. This is the sixth Irish record, five of which are from light-stations, two of these being from the Fastnet. G. R. Humphreys.' (*Brit. Birds* 24: 338, April 1931)

Fifty years ago:

'Breeding of Great Black-backed Gull in Gloucestershire.—On 3rd July 1955, a pair of Great Black-backed Gulls (*Larus marinus*) was found breeding on Chapel Rock at the mouth of the River Wye, Gloucestershire. Whilst the nest containing a single egg was being examined, the two adults demonstrated overhead and later, after we had left the rock, one of them settled in the vicinity of the nest. We are informed by Mr. H. H. Davis that this is the first breeding record for the county. D. M. Cormack, R. S. Cormack and R. H. Poulding.' (*Brit. Birds* 49: 153, April 1956)

Notes

All Notes submitted to *British Birds* are subject to independent review, either by the Notes Panel or by the *BB* Editorial Board. Those considered appropriate for *BB* will be published either here or on our website (www.britishbirds.co.uk) subject to the availability of space.

An observation of Moorhens simultaneously incubating eggs in two adjacent nests

Female Moorhens *Gallinula chloropus* typically lay 5–9 eggs per clutch, but there are two main situations in which the number of eggs in the nest can exceed 20. Firstly, as Moorhens are brood parasites, they occasionally lay 1–6 eggs in neighbouring nests. Secondly, as Moorhens have extremely flexible mating systems, it is not uncommon for at least 10% of populations to breed communally. A large proportion of these communally breeding groups consist of more than two females laying together and under these circumstances clutch size can easily exceed 15. During the occurrence of brood parasitism and communal laying between co-breeding females, it is not uncommon for eggs to be displaced from the nests; the greater the number of eggs present, the greater the likelihood of eggs being accidentally (or deliberately in some cases) ejected. These 'lost' eggs are usually destroyed or removed from the vicinity of the nest by the adults, buried under the nest or scavenged by predators.

Over the last seven years, at the National Wetlands Centre, Llanelli, I have recorded three instances (out of a total of 3,461 nests) in which adult Moorhens have constructed 'satellite' nests around displaced eggs adjacent to the main nest. On all three occasions, eggs in both nests have been incubated by the parents and have ultimately produced chicks. In March 2005, a nesting attempt involved a communal group consisting of two males and three females incubating a main nest containing 13 eggs and a satellite nest containing four eggs. The eggs in the satellite nest (30 cm from the main nest) belonged to two of the three laying females and the group males were generally in attendance at both nests. This is certainly an interesting phenomenon and I would be grateful for information concerning similar behaviour in this and other bird species.

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European Golden Plovers in the UK in October 2003

In winter, northwest Europe may support around 1.8 million European Golden Plovers *Pluvialis apricaria* from three distinct breeding populations: *altifrons* from Iceland, *altifrons* from Fennoscandia, and *apricaria* from Ireland, Britain, Denmark and Germany (Stroud *et al.* 2004). All three populations may mix on the wintering grounds in Britain & Ireland (Byrkjedal & Thompson 1998; Stroud *et al.* 2004). However, there is limited monitoring of these birds, and trends in numbers and distribution are not clearly known (Gillings 2003). On 11th and 12th October 2003, a survey of passage Golden Plovers took place in northwest Europe (Rasmussen 2004). The survey was centred on the Wadden Sea (The Netherlands, Niedersachsen, Schleswig-Holstein and Denmark), where many of the birds of Fennoscandian/Russian breeding origin are thought to be present at that time. Numbers in Britain & Ireland typically peak from November onwards but significant flocks of Golden Plovers are already present in October. This note summarises the UK results of the October survey. Although this was not a comprehensive survey, there has not been a previous assessment of the species in autumn and so the results are of some interest.

Though most Golden Plovers in the UK in winter are found in flocks, the distribution of those flocks is widespread and somewhat unpredictable. Consequently, a national census is impractical here, in contrast with areas around the Wadden Sea, where birds are highly localised. We relied on data from two sources to gain an estimate of minimum numbers. Firstly,

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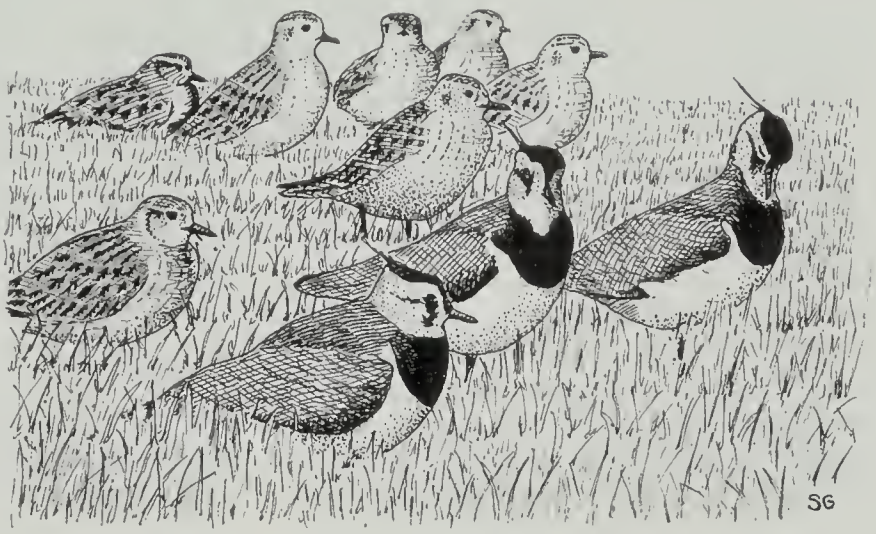
the international count weekend coincided with the October WeBS count (BTO/WWT/RSPB/JNCC Wetland Bird Survey), when volunteers counted waterfowl on estuaries and inland wetlands. In most coastal localities, such counts are made at high tide and will have included Golden Plovers on coastal grazing marshes or agricultural fields. Secondly, we made a request (via BTO regional organisers, RSPB staff and various websites and internet newsgroups) for submissions of casual records of flocks of Golden Plovers for the week 8th–15th October. We used grid references to minimise duplication of counts. In instances of obvious duplication, the higher count was used. In some instances, correspondence with observers helped to clarify possible duplicate counts.



Simon Gillings

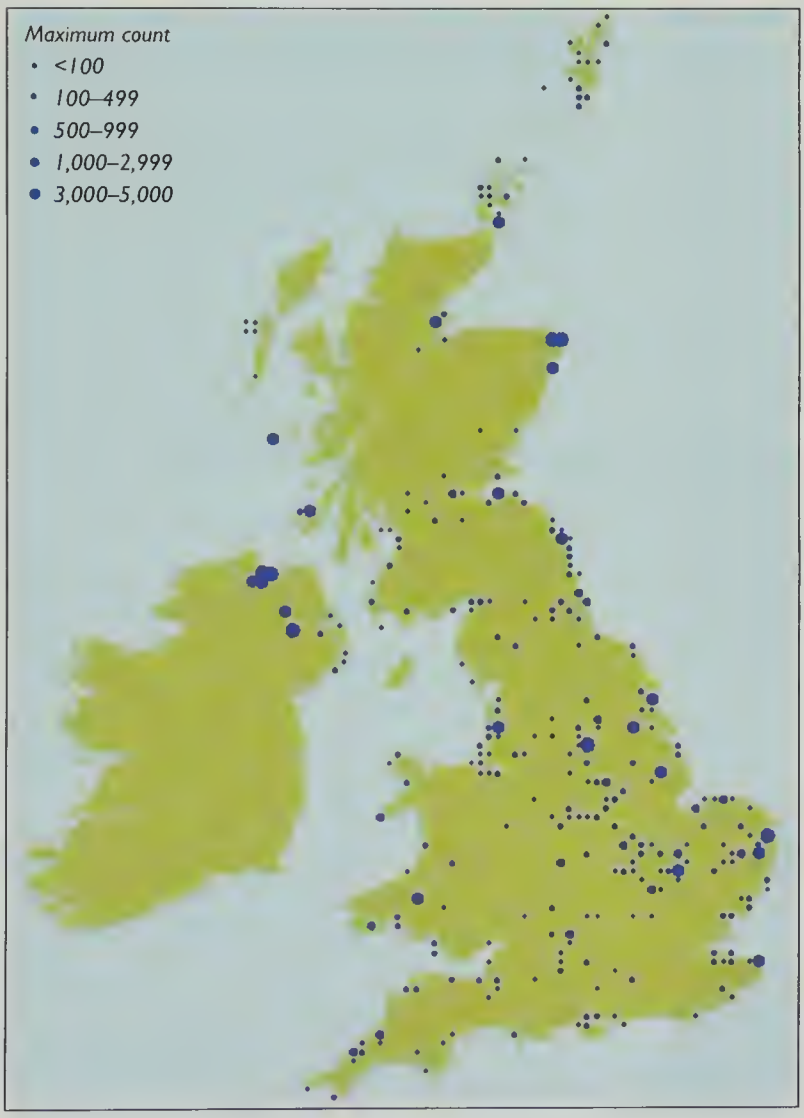


Fig. 1. Distribution of European Golden Plovers in the UK during October 2003, based on systematic counts from wetlands (WeBS data) for 11th–12th October and casual records for 8th–15th October.

In total, 65,763 Golden Plovers were reported on WeBS count sites. In addition, 159 observers submitted 305 casual records totalling 120,387 birds. This number included many instances of the same observer sending updated counts over a period of several days. There were no instances of different observers submitting casual records of the same flock. However, there was duplication between casual records and WeBS counts such that, once duplicates were removed, the estimated total count from the two sources combined was 142,983 (57% in England, 23% in Scotland, 16% in Northern Ireland and 4% in Wales). Fig. 1 shows the distribution of records.

The count of 143,000 does not constitute a new population estimate for October. Although birds on wetlands were counted assiduously, there are likely to have been large gaps in coverage on lowland farmland. The absence of duplicate counts for farmland indicates that these counts represent a minimum. Site duplication

occurred where casual records were received from wetland sites that had also been counted for WeBS. The casual record was often greater than the WeBS count, probably because the latter are constrained to high tide whereas casual visits occurred at any time and so were capable of registering large flocks of Golden Plovers found on some mudflats at low tide. Future surveys of Golden Plovers need to consider movements between wetland sites (where birds often roost only) and farmland feeding areas carefully. As part of ongoing work on this species, the BTO will organise a thorough survey of Golden Plovers and Northern Lapwings *Vanellus vanellus* in Britain from October 2006 to February 2007 (for more information see www.bto.org/goto/wgpls.htm).

Hopefully, the international survey of which this exercise was a part is the first step towards a more co-ordinated approach to monitoring Golden Plovers in Europe. It is evident from national surveys that the distribution of Golden Plovers may be changing, perhaps in response to the tendency for milder winters (Gillings 2003), and synchronous monitoring in several countries is the only way to determine the true trends. A workshop on the monitoring of Golden Plovers in the non-breeding season (as part of the International Wader Study Group conference) was held in Ireland in October 2005. After presentations on the status of current and past monitoring in Denmark, France, The Netherlands, Ireland, the UK, Portugal, Italy, Germany, Poland, Iceland and Sweden, it was concluded that a repeat survey in northwest Europe in October 2008 is desirable (Gillings 2005).

Acknowledgments

First and foremost, thanks to the volunteers who sent in casual records and who participated in WeBS. Thanks to Sarah Jackson for collating the WeBS returns and to Rowena Langston for circulating a request for sightings to RSPB reserve staff.

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The 1885 Greenland breeding record of Ross's Gull

In their fascinating paper on the discovery of the breeding grounds of Ross's Gull *Rhodostethia rosea*, McGhie & Logunov (2005) omitted to mention a breeding record from west Greenland in 1885 which preceded the discovery of the Siberian breeding grounds by Buturlin in 1905. Densley (1999, pp. 45–46) reviewed the fate of this pair of birds and their two eggs, which he stated were discovered on a small island near the settlement of Ikamiut in Disko Bay, west Greenland, by Paul Müller on 15th June 1885. Densley's account is, however, misleading in certain respects, continuing a long history of confusion that has surrounded this first well-documented breeding record from Greenland. Given the rarity of breeding by Ross's Gull in Greenland (Kampp & Kristensen 1980; Boertmann 1994), it seemed worth trying to establish exactly what is known regarding the record and its documentation.

Dalgleish (1886, p. 274) recorded that Müller had discovered a nest of the species on 15th June 1885 in the Christianshåb District, and that: 'The female bird was shot off the nest, which, when found, contained two eggs. Of these one was unfortunately broken, and the other, which was also damaged, is now in the possession of Herr Weller of Copenhagen.' A report of the 2nd February 1886 meeting of the Zoological Society of London noted that: 'Mr. Henry Seebohm exhibited a fully adult male [and a coloured photograph of the egg] of Ross's Gull (*Larus rossi*) which had been shot on the 15th of June, 1885, in the neighbourhood of Christianshaab on the south shore of Disco Bay in Greenland, about latitude 69°. It was shot at the nest, and both bird and egg were sent by Mr. Paul Müller to Copenhagen' (Seebohm 1886, p.

82). Together with a comment in an *Ibis* book review (Sclater & Saunders 1886), these appear to be the earliest published accounts of the discovery, and the first-mentioned provides an explanation for the comment of Densley (1999, p. 45) that '... for some reason only one egg appears to have been collected'; clearly, both were taken, but one was too badly damaged to be saved, as noted by Vaughan (1992). However, they raise a further conundrum in that each refers to only a single bird, but of opposite sex; from information below, it seems probable that both records, in fact, refer to the female.

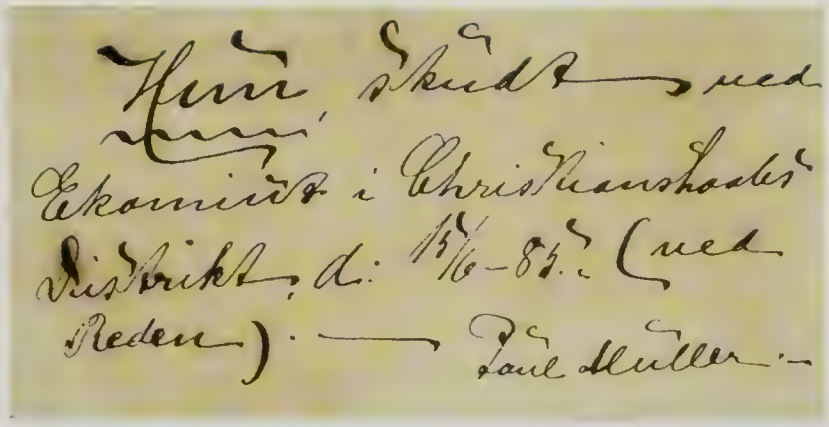

Fig. 1. Paul Müller's note in the BMNH register.

Harry Taylor © Natural History Museum

Soon after the 1886 Zoological Society meeting, Seebohm presented his specimen to the then British Museum (Natural History) (BMNH), where it was registered as 1886.3.30.1, which suggests that it had been accessioned before the end of March of that year. Only minimal details are written in the BMNH register (reg. no., species name, Seebohm's name and address, and 'Greenland' as a locality), but a small note in Danish and signed 'Paul Müller' is stuck alongside (fig. 1), which in translation reads 'Female, shot near Ekamiut in the district of Christianshaab on 15/6-85 (by the nest).' Despite its interest as the first Ross's Gull specimen received by the BMNH, no mention of the sex of the bird was made in the BMNH catalogue of birds (Saunders 1896, p. 169, specimen a), which does, however, reveal that by this time the specimen was already mounted ('st.') rather than being a skin ('sk.').

For many years, the mounted specimen was on display in the BMNH public galleries in London, as noted by Ticehurst (1933), who refers to it as a female in breeding dress with patches suggestive of brooding patches. Although it is no longer on display, Densley (1999, p. 45) is incorrect in his comment that 'Its present whereabouts seem to be unknown' as it is currently held in The Natural History Museum bird research collections at Tring (plate 92). This misapprehension may well have arisen because, for a period between being removed from display in London and incorporated in the research collection at Tring, the specimen was held with many other former display mounts in a museum annex in Tring, where it would not have been available for study.

Although only a single bird was recorded as being collected by Dalgleish (1886), it would appear from the account of Helms (1933), who had access to Müller's original notes, that both members of the pair were in fact taken at the nest (see also Sclater & Saunders 1886) but that Müller had not personally found the nest or collected the specimens. Quoting from Müller's notes, Helms (1933, p. 19) wrote (in translation): 'The 20th June 1885 I received a male and female from the islands near Ikamiut plus one egg. The birds were shot by the nest and by closer inspection I found them to have large brood patches. Male as well as female.' The egg, damaged as noted by Dalgleish (1886), is now in the Zoological Museum, Copenhagen University, and, despite doubts which have been implicitly or explicitly expressed regarding its identity (Dresser 1906; Helms 1933; Vaughan 1992), is almost certainly that of a Ross's Gull (Salomonsen 1950; J. Fjeldså *in litt.*).

92. The 1885 specimen of Ross's Gull *Rhodostethia rosea*, BMNH reg. no. 1886.3.30.1.

Harry Taylor © Natural History Museum

While it thus appears irrefutable that the first breeding record came from Greenland, the distinction of finding the regular breeding grounds of Ross's Gull remains with Buturlin. A number of loose ends still remain unanswered regarding the Greenland record. Where now is the other member of the pair that was collected? What has happened to Müller's notes, which might throw further light on this? Who was Herr Weller of Copenhagen, and do any records remain as to how and where he disposed of the specimens he received?

Acknowledgments

I am most grateful to Jon Fjeldså and Frank Steinheimer for supplying information and furnishing a translation from the Danish.

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Dark-breasted Barn Owl in Devon

The occurrence of the dark-breasted form of Barn Owl *Tyto alba guttata* as a scarce vagrant in Britain is well documented (e.g. Wernham *et al.* 2002). While most of these sightings no doubt refer to genuine migrants from the normal range of *guttata* (central Europe east to southwest European Russia), there is a strong possibility that some of these birds are simply dark birds born within the nominate *alba* population. While working for the Barn Owl Trust, I came across the following instances of dark Barn Owls during the course of routine ringing operations in Devon.

Barn Owl Trust

93. Dark-breasted-type Barn Owl *Tyto alba* chick with normal-coloured sibling, north Devon, 2002.

The first discovery, in the summer of 2002, involved a brood of two chicks at a site in north Devon. While one of the chicks was normal and white, the second showed the typical coloration of *guttata*, with dark-buff breast, belly, flanks and underwing, darker feathering around the eyes and darker grey feathers on the upperparts (plate 93). Unfortunately, the parents of this pair

were not seen, so the possibility of one of the adults being dark-breasted remains. However, in the summer of 2003, another brood of two Barn Owls was ringed, at a site 22 km away from the first site. This time, both chicks were coloured as *guttata*, but perhaps most interestingly, both parents were seen to be white-breasted, normal *alba* (plate 94).

Kevin Keatley

94. Dark-breasted-type Barn Owl *Tyto alba* chick being fed by normal-coloured adult, north Devon, 2003.

Whether these owlets had *guttata* genes from a recent ancestor, or whether they were just abnormally coloured is open to debate. It is also possible that one of their recent ancestors was a released Barn Owl of mixed parentage. Whatever the true reason, these records clearly throw doubt on the provenance of an unringed *guttata* in Britain, especially those that are away from typical coastal locations.

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An example of polygyny in the Marsh Tit

Polygyny is uncommon among most species of tits, being recorded regularly only in Blue Tits *Cyanistes caeruleus* and occasionally in Great Tits *Parus major* (*BWP*), although it has also been recorded in Black-capped Chickadees *Poecile atricapillus* (Clemmons 1994). J.-A. Nilsson (pers. comm.) observed a case of polygyny in the Marsh Tit *P. palustris* in Sweden during the 1980s, but there appear to be no published examples of polygyny in this species. However, during a colour-ringing study of breeding Marsh Tits in Monks Wood, Cambridgeshire, in spring 2005, I recorded the following example.

An adult male Marsh Tit (M1) was captured and colour-ringed on territory A (fig. 1) on 12th March 2004. M1 and an unringed female bred successfully there during 2004, and remained together in the territory throughout the following winter. The female (F1) was eventually caught, colour-ringed and aged/sexed as an adult female on 11th January 2005. M1 and F1 were seen together the following day, but on 8th March F1 was foraging alone and M1 had disappeared.

On 22nd March 2005, M1 was recorded 300 m outside his territory, in the vacant territory C, accompanying a first-winter female (F3) which had arrived in the wood during the previous week. On 31st March, M1 and F3 were defending the border of territory C against an unpaired adult female (F2), which was resident in territory B. The following day, M1 was back on territory A, accompanying F1 once more. Two hours later, however, M1 was observed chasing away a neighbouring male (M2) that had travelled from his own territory (D) to sing on territory C. On 4th April, M1 was again singing in territory C, in the company of F3, who was nest-building; F1 was alone in territory A. On 5th April, M1 was seen to arrive from territory A to meet F3 in territory C. M1 had, therefore, apparently paired with both F1 and F3, and was commuting between territories A and C to maintain both females. Around this time, F2 was predated, probably by a Eurasian Sparrowhawk *Accipiter nisus*, leaving territory B vacant. M1 now began singing on this third territory, effectively linking territories A and C. Ownership was clearly demonstrated on 13th April when M1 was seen to sing frequently, and unopposed, while moving through all three territories.

On 25th April, F3 left her nest in territory C

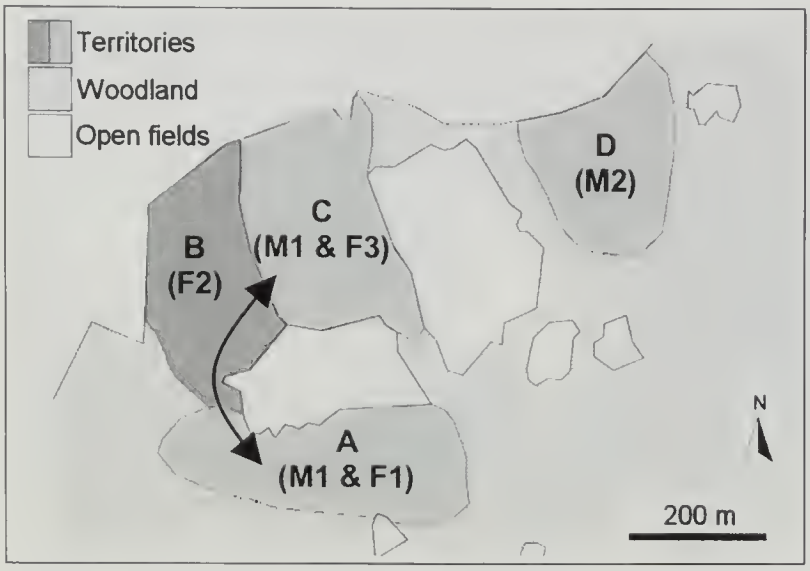

Fig. 1. Location of Marsh Tit *Poecile palustris* territories (and occupying birds), with arrow indicating commuting route of the polygynous male M1; Monk's Wood, Cambridgeshire, 2005.

three times during a one-hour period in response to calls from M1 and was fed by M1. F3 employed the characteristic begging calls associated with courtship-feeding during laying and incubation (Morley 1953). M1 was again in territory C on 29th April, but was not seen to interact with F3. From 5th May, however, M1 was observed back in territory A feeding young in a nest with F1; M1 and F1 both attended this nest for three weeks, and were seen feeding fledged young on 26th May.

F3 was observed feeding six young of c.12 days old at her nest in territory C on 17th May, although there was no sign of M1. On 18th May, however, neighbouring male M2 was present at F3's nest. M2 had nested 400 m away with another female, but the chicks and female had all been predated by a Weasel *Mustela nivalis* between 12th and 16th May. During 45 minutes of observation, M2 remained in close proximity to F3, who was busy foraging and feeding the young. M2 occasionally joined F3 in giving scolding and mobbing calls in response to my presence. On one occasion, M2 carried food into the nest cavity, although his attentions appeared to be focused on a largely unreceptive F3 rather than on the nest. M2 remained with F3 for one more day before leaving the territory, and was not seen there again. F3 continued to attend the nest alone, and the young fledged on or around 28th May. Both F3 and M2 were alone on their respective territories during June.

It appears likely that M1 had paternity of the young in the nests of both F1 and F3. This is supported by the observations of continued commuting between the two females during courtship, laying and incubation; the defence of F3 and territory C against M2 and F2 while also maintaining a presence in territory A; the courtship-feeding of F3 during incubation; and the feeding of young in F1's nest. F1 was never seen in the company of another male, and M1 abandoned F3 and the second nest once F1's young had hatched, indicating that F1 was the primary female (Webster 1991; Kempenaers 1995). M1's behaviour with F1 and the nest in territory A, once the young had hatched, indicated paternity.

While the neighbouring male M2 was once seen to approach F3 during the early stages of the nesting cycle, this male was otherwise engaged in a monogamous breeding attempt some distance away on territory D. That M2 appeared to try and pair with F3 once his own nest and mate had been predated is perhaps straightforward in that M2 was attempting to attract the nearest unaccompanied female (F3 had by then been abandoned by M1). The defence by M2 of F3's nest and the carrying of food into the cavity may also have been due to the sudden recent termination of his own breeding attempt and the stimulus of chicks similar in age to those he had recently lost. This behaviour was not repeated. With F3 pre-occupied with feeding young, M2 clearly gave up trying to pair with this female. While an extra-pair copulation between M2 and F3 cannot be ruled out, the behaviour of M1 during the courtship and incubation stage strongly suggests paternity of this second nest.

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Recent marked decline in Corn Bunting numbers in northeast Essex

The UK Corn Bunting *Emberiza calandra* population declined by 89% between 1970 and 2003, the most recent total population estimate being 10,400 breeding pairs in 1993 (Eaton *et al.* 2005). It is considered that reduced availability of winter foods – through the loss of winter stubbles and the lack of weed seeds, owing to herbicide usage, in those stubbles remaining – has most affected Corn Bunting populations (Donald & Evans 1994; Donald 1997).

In a survey of Corn Buntings in the Tendring district of northeast Essex over the five years 1994–98, ten tetrads (40 km^2) were surveyed and mean densities ranged from eight to 15 males per 10 km^2. The distribution was patchy, with one tetrad never holding Corn Buntings, while the most populous held a peak density of 75 singing males per 10 km^2 (Mason & Macdonald 2000; Mason 2005). There was some evidence of a decline over the five-year period, in line with national trends. Corn Buntings showed a strong preference for field boundaries without hedges and an avoidance of tall hedges. There was little preference for particular crops during the breeding season. A full survey of the district in 1997–98 located 278 singing males in 247 km^2 of farmland, some 2–3% of the UK population and therefore of national significance. During the winter, Corn Buntings showed a strong preference for the small amount of grass in the district, and in the late winter for stubbles, which then made up only 3.5% of the land cover (Mason & Macdonald 1999, 2000). It was suggested that a lack of feeding opportunities in the winter was critical to the survival of the species in this area, supporting the views of Donald & Evans (1994).

Casual observations in 2002 and 2003 led us to believe that the population was in decline; Corn Buntings appeared to be absent where previously we had routinely recorded them. We therefore decided to resurvey the ten tetrads in the springs of 2004 and 2005. In 2004, tetrads were surveyed twice, in June and July. In 2005, surveys were conducted on four occasions, in May, twice in June, and in July. All singing males were plotted on maps. Territories were assigned as in Mason & Macdonald (2000).

The numbers of territories recorded in 1994–98, 2004 and 2005 are shown in fig. 1. There has been a marked decline over the period. A regression of numbers against year is statistically significant and indicates a decline in population of 48% per decade. Regressions for individual tetrads with initial starting populations greater than ten singing males showed declines ranging from 23% to 90% per decade.

There is no obvious reason for the decline. Although not formally quantified in 2004–05, there appeared to be more abandoned weedy land within the tetrads than in the earlier survey period, though crops themselves appeared cleaner. There were considerably more field margins put down to grass. The continued decline may be related to the absence of winter food as suggested above. In one tetrad (St Osyth), the farmer was involved in the RSPB Bird Aid Project, providing winter feed (tail corn) at weekly intervals during the winters 2000/01 to 2002/03 (Guy Smith pers. comm.). At best, the winter feeding held the population stable, with 14, nine and 14 singing males in 2000, 2002 and 2003, respectively (Guy Anderson and Chris Durdin, RSPB, pers. comm.), and with 14 singing males in both 2004 and 2005. The peak count in this tetrad was 30 singing males (1995) and the decline of 53% per decade is close to the district average.

The decline is of especial concern because, unlike species such as the Song Thrush *Turdus philomelos*, whose rapid decline on farmland is buffered by thriving popu-

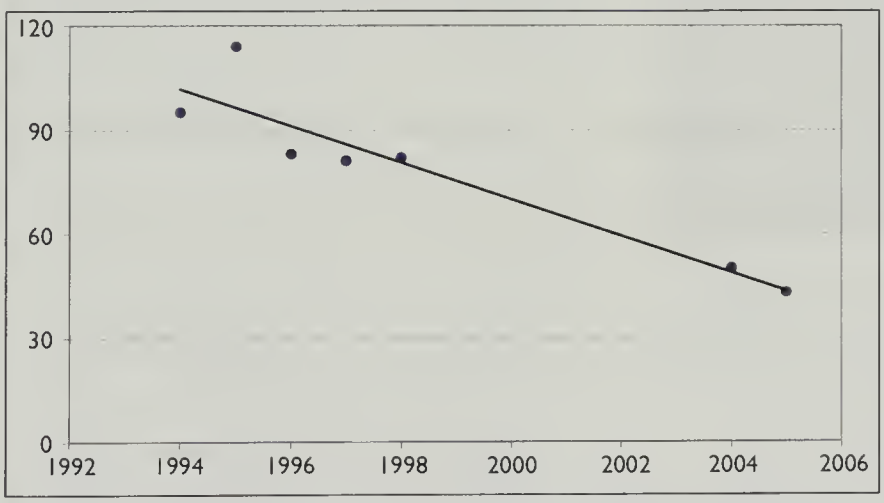


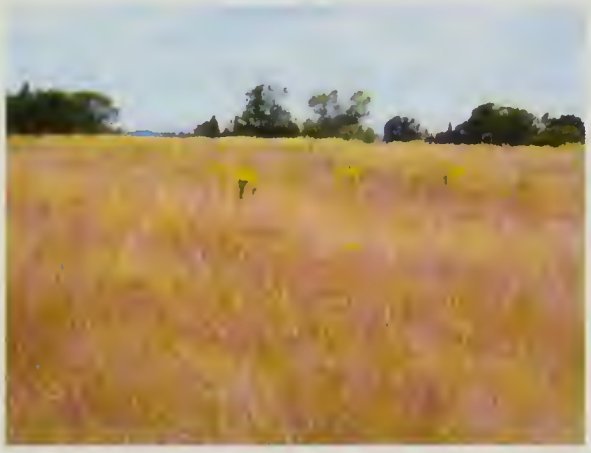
Fig. 1. Number of singing male Corn Buntings *Emberiza calandra* in ten tetrads in northeast Essex, 1994–2005. The decline shown is significant; $r = 0.94$, $t = 5.98$, $p < 0.01$.

Chris Mason

95. This isolated bush has been the centre of a Corn Bunting *Emberiza calandra* territory in all seven years of the study (July 2005).

Chris Mason

96. New hedges such as this in a key Corn Bunting *Emberiza calandra* tetrad are likely to prove inimical to the species (July 2005).



Chris Mason

97. This field, of some 31 ha of weedy set-aside, supported only a single singing male Corn Bunting *Emberiza calandra* in 2004 and 2005, compared with 5–8 singing males in 1994–98 when it was under intensive arable cultivation (July 2005). Low-level cultivation without the use of biocides, rather than abandonment, might be the answer for Corn Buntings.

lations in gardens (Mason 2000), Corn Buntings are confined almost entirely to these arable barrens throughout the year. Although it is unwise to give too much credence to forward projections from regression lines, the current rate of decline suggests that this population, only a decade ago considered amongst the densest in Europe, could largely disappear by 2013. Urgent *targeted* conservation measures are required to prevent such an event. General agri-environment programmes, such as the planting of hedgerows, are likely to be inimical to this Corn Bunting population, but extensive new hedgerow creation has occurred in one tetrad that formerly held a large Corn Bunting population. One approach might be to set aside one field within Corn Bunting hotspots for planting with spring cereals that will not be treated with herbicides, allowing the development of a diverse arable weed community. The crop could be harvested as late as possible and the stubble left over winter before replanting with a cereal crop, i.e. the field should be cultivated more or less as it might have been 50 years ago. Clearly the farmer would be compensated for the lack of yield. Some farmers may be willing to try such radical solutions for, as the farmer, Guy Smith, at St Osyth has stated: 'If they want to pay farmers to farm Corn Buntings rather than cows and sheep, it's fine by me' (Anon 2000).

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Reviews

HANDBOOK OF THE BIRDS OF THE WORLD. VOL. 10. CUCKOO-SHRIKES TO THRASHERS

By Josep del Hoyo, Andrew Elliott & David Christie (eds.). Lynx Edicions, Barcelona, 2005. 896 pages; 81 colour plates; 427 photographs; distribution maps.
ISBN 84-87334-72-5.
Hardback, £120.00.

Well, here it is: the latest instalment of this monumental work from Lynx! Writing a review for Volume 10 in this amazing series is almost impossible. What do you compare it with? The series has redefined the gold standard for bird books, and all one can say is that it is every bit as good as we have come to expect.

Volume 10 covers a glorious group of birds which embraces some of the most spectacularly beautiful and charismatic families, including cuckoo-shrikes and minivets (Campephagidae), fairy-bluebirds (Irenidae), waxwings (Bombycillidae), and chats and forktails (Turdidae) – along with some of the most grindingly difficult; the bulbuls, brownbuls and greenbuls (Pycnonotidae) particularly spring to mind. Throughout, the text is authoritative, the plumage descriptions are accurate and concise, the maps and illustrations are up to the consistently high standard of previous volumes, and the photographs are simply stunning. And, I am sure that I am not the first to say that the inclusion of a section on Status and Conservation for every species is truly invaluable.

As usual, there is an introductory section that does not relate directly to the species covered in the main body of the book. This time, it explores the ecology and impact of non-indigenous birds, and presents an interesting and comprehensive synthesis of our current views on alien introductions.

A real attraction of HBW is that front-rank authors have been given the remit to write widely on each family, covering far more than the usual summaries of distribution, ecology, habitat, etc. As a result, I learnt something on almost every page (did you know that 49 subspecies of Island Thrush *Turdus poliocephalus* are currently recognised?). Male Robin Accentors *Prunella rubeculoides* peck their mate's cloaca (it's true, there's a photo!), stimulating the ejection of a drop of sperm from a previous mating. In species where a female has more than one male partner, this may convince each that he has fathered her brood, and so encourage him to help to feed the nestlings. While not wishing to appear to be obsessed with sex, it was interesting, in the introductory section on the thrushes Turdidae, to read a section on extra-pair fertilisation: Bluethroat *Luscinia svecica* wins, with up to 40% of progeny being extramarital! And as a complete change of scene, a few pages further on, there are extracts from poems, including the following lines from Tennyson:

Summer is coming, summer is coming,
I know it, I know it, I know it.
Light again, leaf again, life again, love again!

Spot on! It could only be a Song Thrush *Turdus philomelos.*

Turning to the species accounts, the taxonomy is a mix of the adventurous and the conservative. Although probably not intended as a concession to the lister, Red-throated *T. ruficollis* and Black-throated Thrushes *T. atrogularis* are split, as are Dusky *T. eunomus* and Naumann's Thrushes *T. naumanni*, despite extensive overlap and intergradation in both pairs. Conversely, the eastern and western forms of Black-eared Wheatears *Oenanthe hispanica* remain conspecific, with the added suggestion that Pied Wheatear *Oe. pleschanka* may also belong in this species. In addition, Common Stonechat *Saxicola torquatus* is retained as a single species, despite recent molecular evidence for differentiation into at least three species. These are all problems currently vexing the BOU's Taxonomic Subcommittee, and we are clearly not alone in struggling for uniformity. The authors are absolutely correct that further research is essential.

This is a wonderful book, well up to the standard of earlier volumes. Although they are appearing with bank-balance-worrying regularity, the publishers are to be congratulated on keeping to their schedule. Volume 16 is due in 2011 – just in time for my 70th birthday!

David T. Parkin

RAPTORS OF THE WORLD: A FIELD GUIDE

By James Ferguson-Lees and David Christie. Christopher Helm, London, 2005. 320 pages; 118 colour plates.
ISBN 0-7136-6957-8.
Paperback, £19.99.

In 2001, these same authors brought us the long-awaited *Raptors of the World*, suggested by some to be a field guide but, of course, nothing of the sort, running to 992 pages and weighing in at 2.5 kg! Now they have addressed that 'problem' by producing a much smaller, portable paperback with less than one-third of the pages of the original work and weighing only 640 grams. This book can indeed be used in the field. All of the plates in the original book are used again here and are supplemented by a number of additional plates, plus some extra illustrations added to the existing plates. Taxonomy has moved on in the intervening four

years and we are now given an additional 25 species, one of which is new to science (Cryptic Forest-falcon *Micrastur mintoni*), with the rest resulting from 'splits'. All of these are now illustrated and comprise most of the new plates.

The bulk of the book is taken up with the plates, opposite each of which is a page of text which includes a distribution map for each species (along with a number to indicate world population size). The text gives measurements, ratio of male to female size expressed as a percentage, a brief description of habitat, altitudinal range, a concise species description, notes on flying habits and behaviour, and references to similar species. This is followed by numbered notes describing each of the illustrations and highlighting the important identification features. Clearly, this has been well thought through, and as a consequence contains a wealth of information in a comparatively small space.

Preceding the plates are 77 pages of text covering a whole host of subjects, including a full list of all the species and subspecies, with their ranges summarised (which amounts to 27 pages), an introduction, a guide to using the book, and sections covering raptor topography, measurements, size and shape differences, identifying raptors, raptor migration, moult patterns, age criteria and polymorphism (by Carl Edelstam), taxonomy, English names and, finally, a three-page biography.

My only real criticism is that I would like to have seen some of the original illustrations replaced with new images, as has been done in a number of guides in second or third editions (for example, the National Geographic Society's *Field Guide to the Birds of North America*). Inevitably, when a team of artists work on a guide to the birds of the world, some artists end up illustrating species they have never seen in the field and, to my eye, some of illustrations in this guide make that fairly obvious. This short review is not the place to go into great detail and it would be unfair to single out specific examples, but a few of the perched birds have the shapes and proportions so wrong as to make them of questionable use for identification purposes. Details of plumage are, I am sure, pretty accurate, having been checked against skins and other references, but I sometimes think that artists could benefit from checking the proportions of their birds (e.g. head size) and stance against photographs.

Nevertheless, the authors have done an excellent job of synthesising the mass of information in the original work into this field-guide version and they are to be commended. This is an excellent portable source of information for raptor fans, and I am sure that most keen birders visiting raptor watchpoints, or countries with big raptor lists, will be taking a copy of this with them on their future travels.

David Fisher

THE BIRDS OF HONG KONG AND SOUTH CHINA

By Clive Viney, Karen Phillipps and Lam Chiu Ying. Information Services Department, Hong Kong SAR Government, 2005. 255 pages; 102 colour plates, line-drawings and maps. ISBN 962-02-0347-X. Paperback, £20.95.

The eighth edition of this popular field guide represents a complete revision of the last edition, published in 1996 and long since out of print. This guide commenced life in the late 1970s as a field guide to the birds of Hong Kong, but as birders explored the neighbouring Chinese provinces, particularly Guangdong and Fujian, it was realised that a wealth of birds occurred here which were largely or entirely absent from Hong Kong. This book sets out to illustrate and describe all the species which occur in southern China, south of the Yangtze River and west to Hainan Island.

The introductory section contains a brief summary of some of the more interesting sites within this region, from the internationally important Mai Po Marshes, to lesser-known locations in Guangdong, such as Che Ba Ling NNR (well known for its Blyth's Kingfishers *Alcedo hercules* and White-eared Night Herons *Gorsachius magnificus*) and Nan Ling NNR with its Cabot's Tragopans *Tragopan caboti* and Silver Orioles *Oriolus mellianus*.

The nomenclature and English names used are those adopted by Carey *et al.* (*The Avifauna of Hong Kong*, Hong Kong Birdwatching Society, 2001), except where a species has not occurred in Hong Kong, when MacKinnon & Phillipps (*A Field Guide to the Birds of China*, OUP, 2000) has been followed. Three coded circles are used to denote the status of those species recorded from Hong Kong: widespread and common, local but not uncommon, and very local or rare. Unfortunately, many species recorded from Hong Kong, some of which occur regularly, including Swinhoe's Egret *Egretta eulophotes* and Baer's Pochard *Aythya baeri*, have not been awarded status circles in this edition, but were in previous editions, while many scarce but regular migrants (e.g. Schrenck's Bittern *Ixobrychus eurhythmus*, Oriental Scops Owl *Otus sunia* and Siberian Blue Robin *Luscinia cyane*), and both recent and long-standing rarities (e.g. Slavonian (Horned) Grebe *Podiceps auritus* and Japanese Robin *Erithacus akahige*) lack any symbol. To establish whether a species has been recorded from Hong Kong, reference to the text is essential.

Throughout, the text and plates are laid out on adjacent pages, enabling readers to compare both illustrations and text. All species, except a handful 'recently recorded' (and listed in an addendum) from this region are now illustrated in

colour, and this includes the Hainan Island endemics, which have their own colour plates. On the other hand, some species yet to be recorded from China are illustrated. Many new plates, or at least images, have been added by Karen Phillipps, and some of her recent work (e.g. shorebirds, gulls and laughingthrushes, etc.) is a great improvement on earlier images retained from previous editions, some of which date back to the third (1983) edition. By contrast, the warbler plates are only likely to confuse. However, most illustrations are clear and precise, and generally do accurately portray differences between similar species. The text is limited to a maximum of eight lines per species, including sections on field notes, status and range. Again, the text is an improvement over that in earlier editions, and focuses on criteria useful in separating tricky species, as well as distinctive behavioural characters. Space limitations and the need to keep plates and text together have limited greater discussion, which would be useful for some of the more tricky or lesser-known species.

For anyone visiting Hong Kong, this remains the only guide that covers all the species likely to be encountered. Hong Kong still retains its excitement and thrill; nothing has changed since 1997 except the government. A week here combined with a week in southern China makes a mouthwatering prospect, and this book provides all the encouragement needed.

Peter Kennerley

EVERYTHING YOU ALWAYS WANTED TO KNOW ABOUT BIRDS... BUT WERE AFRAID TO ASK!

By Stephen Moss. Christopher Helm, A&C Black, London, 2005. 192 pages; cartoons. ISBN 0-7136-6815-6. Paperback, £9.99.

As the wife of a lifelong birder, I grabbed this book with great joy. At last, I can outwit my other half at dinner parties by coming out with unprompted comments that will leave him both stunned and impressed! As he is so obsessed with seeing endemic birds wherever we go on holiday, I decided that this was going to be my specialist subject. This book came to my rescue and I quickly found the answers to 'what is an endemic species?', 'which region has the most endemic families?', and 'do some bird's ranges change over time?' I could have sold ringside seats at the next dinner party when my other half started off on a monologue about endemics and I helpfully chipped in with the fact that there are 27 endemics in Jamaica! Clearly, this book is written for birders, but if you are a birding widow or widower this will answer many questions for you too. There are ten sections, covering everything you want to know, with some 450 questions in total.

Esther Betton

MERLINS OF THE SOUTH-EAST YORKSHIRE DALES

By Peter M. Wright. Tarnmoor, Skipton, 2005. 100 pages; colour photographs; tables, maps, figures. ISBN 0-9551277-0-X. Paperback, £10.00.

There must be something particularly engaging about Merlins *Falco columbarius* because so many of Britain's most diligent fieldworkers have chosen to study their biology. Like many before him, Peter Wright quickly fell under the Merlin's spell in the Yorkshire Dales, where, from 1973 to 2002, he tracked down over 51 nesting areas in three study plots on Barden Moor, Barden Fell and the Grassington/Coniston Moors. In this book he describes a long-term study of a splendid, dashing raptor and provides a wealth of information on the age of first breeding, regularity of site occupancy, laying dates, weight gain in chicks and post-breeding ringing recoveries. Regular inspection of plucking posts enabled the author to compile an impressive list of prey species, and confirm that Meadow Pipits *Anthus pratensis* and juvenile Common Starlings *Sturnus vulgaris* are the real 'bread and butter' of the Merlin's diet.

The book is arranged with all the figures and tables at the back, which makes it somewhat tiresome to check tables against the text. Comparisons are made with the well-documented Merlin studies in Northumberland, and this revealed consistently higher hatching rates in the Dales than Northumberland birds achieved. As with studies in Northumberland and Co. Durham, reference is made to the higher productivity and higher occupancy rates of ground-nesting pairs on keepered moorlands. It is acknowledged, however, that the impact of natural predation on Merlin productivity is unknown, and no attempt has been made to investigate the effects of ground and avian predators properly. More studies on Foxes *Vulpes vulpes*, crows (Corvidae) and mustelids are needed. Shorter heather-burning cycles on managed moors may affect Merlins, as fewer rank areas of heather *Calluna* are available as nest-sites. So, moorland management for Red Grouse *Lagopus lagopus* may not necessarily be the optimum for breeding Merlins.

All Merlin specialists will want a copy of this well-researched book, and it is a fine example of one man's interest and dedication to his chosen subject. The book is available directly from the author at 32 Tarn Moor Crescent, Skipton, North Yorkshire BD23 1LT; e-mail: wright.tarnmoor@tesco.net

Tim Cleeves

THE BEDSIDE BOOK OF BIRDS: AN AVIAN COMPENDIUM

By Graeme Gibson.
Bloomsbury, London, 2005.
370 pages; colour and black-and-white illustrations.
ISBN 0-7475-7812-5.
Hardback, £20.00.

The author is a Canadian writer and bird enthusiast who has spent 15 years gathering poems, literary quotes and artistic impressions that describe or comment on birds, both wild and domesticated. Some of his collection reflects the pleasure so many people experience on seeing birds, while other items focus on our ability to kill or exploit birds for our benefit. There are poems by Aesop, Shakespeare, Poe, Coleridge, Borges, and Eliot, and serious entries from the likes of Darwin and Hudson. There are over 100 illustrations from great artists such as Audubon, Lansdowne, Catesby, Morris and Gould, together with sketches from many obscure sources. Like other 'bedside' works that have gone before it, this is the kind of book you can dip into as you lie in bed. If it was also designed to send the reader to sleep, then I must congratulate the author on succeeding! As a birder, I did not really find this book to my liking. It is clearly designed for those who devour English literature with enthusiasm. With all the publicity that has surrounded its launch, however, this is set to become a bestseller among people who simply find birds and literature fascinating.

Keith Betton

AIG AN OIR/AT THE EDGE

By Robert Burton and The Society of Wildlife Artists.
Langford Press, Peterborough, 2005. 167 pages; over 180 images in various media.
ISBN 1-904078-18-4.
Hardback, £35.00.

Over the years, the Society of Wildlife Artists has been involved in several projects where groups of artists have visited a site and produced work inspired by it, thereby promoting interest in the area and highlighting its challenges. The Aig an Oir project is such a venture, where the Atlantic oakwoods in western Scotland came under scrutiny. The wet woodlands here have a special character of their own, and efforts are now being made to 'put things right' after post-war enthusiasm for fast-growing conifers changed the unique character of much of the land.

Three areas were investigated by three groups of artists who stayed on site for a week and worked extensively in the field; works were completed in situ or material gathered for later studio work. Local artists were also involved and some artists made return solo trips. The reader is led through the images by the text of Robert Burton. His readable and informative style lends structure to the book through a series of six chapters explaining the existence of the woods and factors governing them, the wildlife and habitats and how Man has exploited and used these woodlands. The last chapter describes the present situation and the move to restore the woods to their former glory. Finally, there is an informative short section of artists' profiles giving a bit of background to their working lives.

It is, of course, the art which *is* the book. In all, over 40 artists contributed and the amazing range of styles is powerful indeed, from boldly abstract works by Greg Poole, the naive designs of Carry Akroyd, atmospheric oils by Martin Ridley, the so skilfully economic paintings of Darren Rees and John Busby to the Cezanne-like images from Dafila Scott. David Bennett's looser work captures brilliantly moments in time. New to me is Darren Woodhead, whose apparently rapidly executed watercolours are delightfully fresh and vigorous. If you need to be convinced that there can be an infinite number of ways to interpret wildlife, this book will do it. The individual works are captioned by artist, title, media and size. Some are further enlightened by an artist's narrative; I wish that there were more (I guess that some artists fairly believe that their creations should not warrant a commentary).

Looking through the images, I got a real feel of the place, even though I have never been there. My only slight disappointment is that of around 180 images, 84 of them (my count) are without any fauna. I am well aware that wet woodland is a difficult habitat in which to observe wildlife, let alone draw it, and some artists hint at inclement weather challenging their short visit.

These SWLA-based projects deserve our support, especially if you enjoy having your senses stimulated by wildlife art. The production and design is of the highest quality and seems characteristic of all Langford Press books that I have seen. A care and awareness of each work in relation to its size, components and influence on neighbouring images is evident in the sympathetic design, making this book a delight to browse through, perhaps as you plan your own visit to Scotland's west coast.

Alan Harris

LANDMARKS AND SEA WINGS

By John Busby. The Wildlife Art Gallery, Lavenham, Suffolk. 160 pages; 187 illustrations. ISBN 0-9526-2369-2. Hardback, £45.00. Available from The Wildlife Art Gallery, 97 High Street, Lavenham, Suffolk CO10 9PZ; www.wildlifeartgallery.com

Although John Busby is well known as a bird artist, his artistic interests extend beyond wildlife, although few may realise that he is equally passionate about landscapes and landscape art. His latest book contains several landscape studies and his thoughts on the influence of landscape on both his life and his art.

In this work, spanning several decades, Busby takes us on a journey from his native Yorkshire to East Lothian and beyond, to several island groups including Shetland, Aldabra and the Galapagos. Included are over 180 drawings and paintings of the landscapes and wildlife, along with a section on rock pools. The landscapes and rock-pool studies invite you to look further, greatly enhancing this book and providing a real sense of place to the wildlife images. There is some beautiful work here, and the more you look, the more you appreciate just how well observed they are, capturing mood, the interplay of light on the landscape and the fleeting shadows of clouds as they pass overhead. The rock-pool studies are equally enjoyable, where changes in a single rock pool were recorded over several visits. There are also explorations of abstract shapes within landscapes, and aerial views based on observation and imagination, which add interest and an extra dimension to the work presented. It is particularly refreshing to see what will be categorised as a wildlife art book incorporating other subject matter in different media.

As ever, the wildlife studies are brilliant. Using an incredible economy of line, Busby captures the character, movement and behaviour of individual species. His images are alive, full of energy, and occasionally humour, fleeting glimpses captured with a remarkable artistry. They look effortless, but are the product of years of careful observation and a great passion and understanding of the subject. Alongside the drawings and sketches are several oil paintings, produced mainly in the studio, although backed up by direct observation, thus maintaining the vitality and energy of the fieldwork.

Landmarks and Sea Wings is an excellent collection of work by a great talent and my only complaint is that the book is too short! Design and layout are also excellent but, at £45.00, this book is not cheap. If you like Busby's work, you will not be disappointed and you might even be surprised!

Howard Towll

BIRDS OF KUWAIT: A PORTRAIT

By Abdullah F. Alfadhel. Kuwait Environmental Protection Society, 2005. 304 pages; over 400 colour photographs. ISBN 99906-76-77-1. Hardback, £29.95.

This large-format book is, first and foremost, a pictorial guide to the birds of Kuwait. Over 400 colour images of some 150 species are presented, ranging in size from about a quarter-page to double-page spreads. All were taken by the author and, impressively, almost all were taken during just one year, 2004.

The introductory pages, by George Gregory, are written in both English and Arabic, and provide an all-too-brief summary of a range of topics relevant to Kuwait and its environment. These include the value of birds, threats, protection, the environment of Kuwait, and important aspects of Kuwait's birdlife. This is followed by a guide to 34 birdwatching sites throughout the country, again written in both English and Arabic. Each site is described in just one or two sentences, and this is followed by a long list of birds to be expected, with both English and scientific names. As the following section includes a complete listing, in a tabular format, of all birds recorded from Kuwait, with both English and scientific names, along with the species' primary status, this duplication has resulted in a lost opportunity to include a more detailed description of each site along with a map of Kuwait showing its location. We are told that 380 species of birds have been recorded in Kuwait, but the list runs to 358 only, and even with an additional 17 species of captive origin, this still does not quite bring the total to 380.

The bulk of the book comprises a superb collection of bird photographs from Kuwait. It is simply a delight to browse through these images. They are well arranged and the reproduction is excellent. There are some truly spectacular pictures, such as those of a Water Rail *Rallus aquaticus* attacking a Common Whitethroat *Sylvia communis*, and a pair of White-cheeked Terns *Sterna repressa* exchanging a fish. The photographs of Grey Hypocolius *Hypocolius ampelinus* and Yellow-throated Sparrow *Petronia xanthocollis* are the best I have ever seen. It is a great shame that the extensive captions are in Arabic only, especially since there is plenty of space on each page for an English translation. Thus an opportunity has been lost for making the book appeal to a wider audience. At least the date for each photo is in English, and English and scientific bird names have been included.

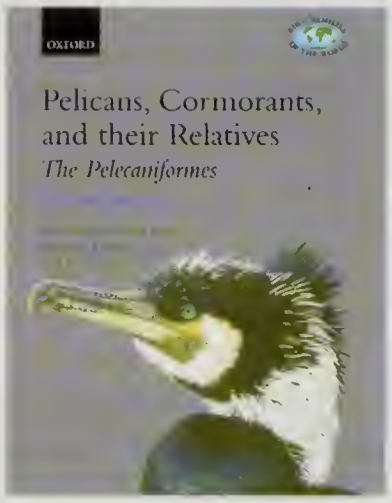
This book is a welcome addition to the limited number of wildlife publications from the

Middle East, and will surely increase the awareness and appreciation of birds in Kuwait and throughout the region. Abdullah Alfadhel is to be congratulated on obtaining such a superb collection of bird photographs. How did he achieve this Herculean task in just one year? I wholeheartedly recommend this book as an introduction to the birds of Kuwait, and it is sure to whet your appetite. I am seriously tempted to go there myself.

Jens Eriksen

PELICANS, CORMORANTS, AND THEIR RELATIVES: THE PELECANIFORMES

By J. Bryan Nelson. Oxford University Press, Oxford, 2006. 661 pages; 12 colour plates; numerous black-and-white photographs; line-drawings; distribution maps and diagrams throughout. ISBN 0-19-857727-3. Hardback, £95.00.



This impressive work, which forms part of the 'Bird Families of the World' series, summarises our current knowledge of the biology of the Pelecaniformes, encompassing 65 species in six families, including pelicans (Pelecanidae), cormorants and shags (Phalacrocoracidae), darters (Anhingidae), gannets and boobies (Sulidae) and their distant relatives, frigatebirds (Fregatidae) and tropicbirds (Phaethontidae).

For this work the author has chosen a three-tiered approach. The first examines aspects relevant to the order as a whole, with chapters on evolutionary relationships, breeding behaviour, breeding ecology and the birds' relationships with Man. The second tier comprises family accounts, covering such topics as behaviour, flight and moult, while the third tier presents individual species accounts. The individual species accounts focus on identification, measurements and species-specific behaviour and ecology.

As one would expect, because of the large variation in available information for each species, the species accounts vary greatly in detail. For example, 12 pages cover various aspects relating to the range and status, foraging and food, and habitat and breeding biology of Great Cormorant *Phalacrocorax carbo*, whilst there are just two pages on the closely related Indian Cormorant *Ph. fuscicollis*, for which information on the basic biology of the species is still lacking. The particularly large account for Northern Gannet *Morus bassanus*, extending to over 30 pages, reflects the available information, and no doubt Bryan Nelson's particular research interest and extensive knowledge of this species.

Whilst the species account for the Northern Gannet and several other species here are outstanding, I was a little disappointed in the treatment of my 'focus' species: Great Cormorant, where, in a few cases, the literature has been misinterpreted. For example, an estimate for the breeding population of *Ph. c. sinensis* in England for 1995 includes both inland breeding *Ph. c. carbo* and *Ph. c. sinensis*, and the timing of breeding for Britain quoted as between mid March to early July applies to coastal breeding cormorants only (inland breeding cormorants start breeding considerably earlier). A bigger problem with this species is the poor coverage of the post-1995 literature, perhaps a result of the long delay between writing and publication. In particular, estimates of breeding and wintering population sizes are inaccurate based on today's populations. In addition, there has been considerable work over the past ten years that improves our understanding of Great Cormorant taxonomy, breeding biology, movements and survival which is not covered here.

Line-drawings, black-and-white photographs, distribution maps and illustrative figures found throughout the text are extremely informative, although it would have added to the appeal of the book immensely if the photographs were in colour. Particularly superb are the line-drawings by John Busby, illustrating various aspects of territorial and pair behaviour of the different Pelecaniformes. Colour plates covering all 65 species are reasonable, although for these difficult-to-portray species, photographs would have enabled differences between age, sex and breeding condition to be illustrated.

In conclusion, whilst it is easy to pick faults in a book as ambitious as this, Bryan Nelson has provided the most useful and complete synthesis available on the Pelecaniformes. Although the cost of this book, at £95.00, may limit access to a wider readership, I would recommend it as a reference book to anyone with a particular interest in this group.

Stuart Newson

News and comment

Compiled by Adrian Pitches

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

Bird flu spreads

Last September, N&c posed the question 'Will bird flu migrate to Europe?' (*Brit. Birds* 98: 502). Then, it had spread to Central Asia from its southeast Asian birthplace. Now, of course, it has reached Europe – and Africa too.

At the time of writing (mid March), the virulent H5N1 strain of bird flu has yet to be detected in the UK. More than 3,400 wildfowl have been tested for the disease (including live captures by WWT and birds shot by wildfowlers) and Britain remains disease-free, although infected wild birds have been logged in Sweden, Germany and France. The situation will have changed markedly by April, particularly with the onset of spring migration, and Britain may be in the grip of bird flu frenzy as you read this. But here's a snapshot of recent developments.

In mid February, the first dead wildfowl infected with H5N1 to be recorded in the EU were picked up in Greece, Italy and Slovenia. Almost all of the dead birds were Mute Swans *Cygnus olor* that had moved into southern Europe in response to freezing weather conditions around the Black Sea (there were subsequent reports of H5N1 in swans on the Black Sea coast of Georgia, close to the Turkish border, while dead swans were found on the Caspian Sea coast of Iran).

BirdLife noted that: 'It is possible the swans caught the disease from other wild birds, although this is unlikely given the tens of thousands of waterfowl that have tested negative for H5N1 over the last decade. A more likely route is through contact with infected poultry or their faeces. Mute Swans, like wild geese but unlike most ducks, often feed by grazing on agricultural fields. The practice of spreading poultry manure onto fields as fertiliser is widespread in many parts of eastern Europe, and this is a possible source of infection.' Swans seem particularly susceptible to bird flu. Mute Swan deaths were previously reported in Russia and Croatia in autumn 2005. Then the deaths were on fish ponds that may have been 'enriched' with poultry manure.

Within a fortnight of the first bird flu deaths in southeast Europe, infected wildfowl were reported in Hungary, Slovakia, Bulgaria, Bosnia, Austria, Switzerland, Germany and France. France then had to report the first infected poultry farm in the EU, close to the wetland in the southeastern Ain region where a dead Common Pochard *Aythya ferina* was found.

Meanwhile, an isolated outbreak in northern Nigeria was linked to illegal poultry importation from Asia. Nigeria's Agriculture Minister, Adamu Bello, said: 'Birds come every day from China, Turkey, into Nigeria, and from Europe and also from Latin America. So Nigeria is exposed. Illegal importation of poultry by people who have farms, bringing in poultry from places and smuggling them in... could also have been a cause.' BirdLife's director of science, Dr Leon Bennun, said: 'Globalisation has turned the chicken into the world's number one migratory bird species. Movements of chickens around the world take place 365 days a year, unlike the seasonal migrations of wild birds.'

Besides the isolated outbreak on chicken farms in Nigeria and neighbouring Niger, there was a similar 'one-off' in India. Again, the intensive poultry-rearing industry was implicated. The central role that industrial poultry production has played in the spread of H5N1 is exposed in a damning report by the sustainable farming pressure group GRAIN: 'Fowl play: the poultry industry's central role in the bird flu crisis' www.grain.org

Back in Europe, H5N1 spread around the Baltic in early March. More than 100 dead wildfowl and gulls were found on the German island of Ruegen. Poland reported H5N1 in dead swans and Sweden's first H5N1 cases were two Tufted Ducks *Aythya fuligula*. However, it was the death of a cat *Felis catus* on Ruegen that sparked most interest as this was the first mammal to be killed by H5N1 in Europe; it was presumed to have fed on infected dead birds. A Stone Marten *Martes foina* was subsequently found to have died of H5N1 on Ruegen, while in Sweden a dead Mink *Mustela vison* was found near Oskarshamn where suspected H5N1-infected wildfowl were logged.

A list of nine mammal and 88 bird species, including Emu *Dromaius novaehollandiae*, known to have been killed by H5N1 worldwide has been compiled by the US National Wildlife Health Centre: www.nwhc.usgs.gov/disease_information/avian_influenza/affected_species_chart.jsp

The roll call of affected European countries in the second week of March was swelled by Serbia (dead swans) and Albania (chicken farm), although deaths of wildfowl on the west coast of Norway were thought not to be due to bird flu.

On 10th March, the human death toll in Asia, where the present outbreak started in late 2003, looked set to pass the 100 mark with three deaths in Azerbaijan likely to be from bird flu.

Ravens sent to the Tower

The future of the British monarchy has been safeguarded as bird flu moves west across Europe. The famous Common Ravens *Corvus corax* at the Tower of London have been taken inside to protect them from exposure to the H5N1 virus, should it reach the UK. As all British schoolchildren know, if the Ravens ever leave the Tower – voluntarily or in a clinical waste sack – then the United Kingdom will fall.

There are presently six Ravens at the Tower: Branwen, Hugine, Munin, Gwyllum, Thor and Baldrick. It was not Baldrick's cunning plan to take the birds indoors but rather that of the Tower's Yeoman Raven Master, Derrick Coyle. He said: 'It's purely precautionary. I always said that if bird flu got as far as Germany, I would put the birds inside.'

The Tower of London has been home to Ravens for 900 years. Mindful of the legend – and perhaps for insurance purposes – King Charles II decreed in the seventeenth century that there must always be six Ravens at the Tower. Normally they roam freely during the day and sleep in cages at night. The birds' flight feathers are clipped to prevent them flying away, although occasionally they do escape. According to the Tower's notes, a Raven called Grog was last seen outside an East End pub called the Rose and Punchbowl in 1981.

The birds are presently housed in custom-built indoor aviaries in the medieval Upper Brick Tower. Mr Coyle visits at 05.00 hrs every day to give them their regular diet of raw meat, blood-soaked biscuits and the occasional rabbit. 'The first day was very stressful for them, but now they're happy,' Mr Coyle said. 'When I walked in this morning, Thor – the one who talks – said "Good Morning".'

Another dead Eagle Owl

Following the killing of the female Eagle Owl *Bubo bubo* from the North Yorkshire breeding pair (*Brit. Birds* 99: 166), another member of the family has been found dead, this time on an infamous Peeblesshire estate. The female bird was one of the offspring from the North Yorkshire pair which has reared more than 20 young since 1997.

The latest incident was on the Barns Estate near Kirkton Manor, the same estate where more than 20 birds of prey were found poisoned two years ago. At Selkirk Sheriff Court in August 2004, gamekeeper Stephen Muir admitted killing 16 Common Buzzards *Buteo buteo* and a Northern Goshawk *Accipiter gentilis*. He was fined £5,500.

Police officers have yet to establish whether there was any foul play with this latest find. Mark Rafferty, wildlife officer with Lothian & Borders Police, said: 'I can confirm that a large female Eagle Owl has been found dead near Peebles. From its ring we can tell that it was bred in April 2004 in North Yorkshire and our enquiries are continuing.' The bird had not been shot, but the police were awaiting results from toxicology tests in Edinburgh to see if any traces of poison had been found. PC Rafferty said: 'The bird had probably come up to the Scottish Borders to establish its own territory. To my knowledge this was the first wild Eagle Owl in this region.'

Germany 2006

It happens every four years, the greatest event of its kind on the planet, and this summer it's taking place in Germany. It's... the International Ornithological Congress (oh yes, and the World Cup is taking place in Germany this summer too!). The 24th IOC will be held in the Hamburg Congress Centre during 13th–19th August 2006 and is hosted by the Institute for Avian Research 'Vogelwarte Helgoland', Wilhelmshaven, and the German Ornithologists' Society. The IOC, with considerably more than 1,000 participants, is a major event which can be held only in a large conference centre. The programme consists of over 400 lectures and presentations, including 12 plenary sessions, two of which concern ornithology in Germany (the 'History of Ornithology in Germany and its Influence on Ornithology Worldwide' by Jürgen Haffer and 'Developments in Central European Avifauna over the Past 100 Years' by Einhard Bezzel). In addition, there are over 800 poster presentations, a plenary podium discussion on 'Intensification of Co-operation between Scientific Ornithology and Practical Protection of Species', and more than 20 discussions on specialised current ornithological themes. In an era of increasing specialisation, with ornithology being no exception, the IOC attempts, through diversity and selection of themes, to fill the role of a world forum for scientific ornithology and to facilitate closer relationships between the different disciplines, which otherwise rarely meet. The practice of holding the IOC on a different continent every four years is part of this policy. Visit the IOC website (www.i-o-c.org).

Gulls as radioactive waste

As the debate over building new nuclear power stations in the UK gets underway, it appears that the current repository for much of the waste from Britain's existing sites includes a stockpile of gulls. Of course, the outfall of cooling water from a nuclear power station has a powerful attraction for gulls – and terns. 'The Patch' at Dungeness has an excellent track record, including Britain's first Audouin's Gull *Larus audouinii*, in May 2003. But the nuclear reprocessing complex at Sellafield in Cumbria has a fatal attraction for Laridae, and within its walls there is a freezer packed with a growing mountain of radioactive gulls that no-one has a clue what to do with. It's the result of a controversial culling policy operated at Britain's most notorious nuclear site for more than a decade.

The explanation is simple: gulls and pigeons land at Sellafield and then fly on, potentially carrying hazardous radiation. Stung by criticism from local people, the managers at BNFL (British Nuclear Fuels) employed sharpshooters to kill any birds which were rash enough to land on the premises. Those killed are designated as low-level nuclear waste and have to be put in a freezer because of contamination worries. Normally, BNFL would dump its low-level waste at the nearby Drigg facility. But, since the gulls would decay if simply flung on the pile of other waste, like staff overalls and gloves, they were deemed 'putrescent' and had to be stored in a large industrial freezer, similar to those used by supermarkets to transport frozen foods.

A BNFL spokesman could not say exactly how many gulls and pigeons were in the deep-freeze but was willing to speculate: 'We are adding to the store all the time so we don't count them. But given the size, I'd say it was in the hundreds.' A special landfill site may have to be excavated for this 'hazardous waste' but as yet, the freezer continues to fill up.

Domino sparrow's final resting place

Readers who were outraged at the summary execution of a House Sparrow *Passer domesticus* which flew into a Dutch TV studio and threatened to topple millions of dominoes lined up for a world record 'topple' (*Brit. Birds* 99: 51) may be interested to learn that the bird will be immortalised at the Rotterdam Natural History Museum. The museum's curator of birds, Kees Moeliker, lobbied the Counsel for the Prosecution in The Hague to transfer the dead sparrow to his museum.

The unfortunate bird had been seized by the authorities after it was shot in November and – pending an investigation into the killing of a protected species – was kept in a ministerial freezer. After the exterminator was sentenced to a €200 fine, the bird was handed over to the museum in December. The bird, a first-year female, was mounted on top of a box of dominoes and bears catalogue number NMR 9989-00002269. Starting on 14th November 2006, exactly one year after the fatal shot, the 'Domino Sparrow' will be shown to the public as the centrepiece of a major exhibition about *Passer domesticus* in the Rotterdam Natural History Museum (www.nmr.nl).

Scopoli's survey

An international survey of 'Scopoli's Shearwater' *Calonectris diomedea diomedea* and other birds is being planned by Lega Italiana Protezioni Uccelli (LIPU), on the small island of Linosa, in the Sicilian Channel. The island is one of the top hotspots in the Mediterranean for migration and vagrants, being just 160 km from the African coast. Surveys will run from spring through to the autumn, and volunteers are required. A small fee will be charged, but accommodation is provided. For details, contact LIPU lipuct@libero.it or Andrea Corso voloerrante@yahoo.it

Iraq marshes exhibition in Norfolk

Over the past two years, BirdLife International has been helping to train Iraqi biologists to carry out bird and other wildlife surveys of the internationally important Mesopotamian Marshes. Funded by the Canadian Government, the training has, for reasons of security, been carried out in Syria and Jordan. The Iraqi team are from a new NGO, Nature Iraq, and already one summer and two winter surveys have been undertaken. Although only a shadow of their former selves, owing to drainage during the Saddam Hussein regime, the marshes of southern Iraq are still extremely important for their breeding and wintering bird populations. They hold 18 globally threatened species as well as three endemics. Now that a reflooding and rehabilitation programme has started, there is great optimism for their future.

During these surveys, one of the Iraqi biologists, took photos of the marshlands depicting their moods and the way of life of the Marsh Arabs. These are to be featured in an exhibition hosted by BirdLife and the new BIRD*scapes* Gallery in Glandford, near Cley in north Norfolk. It will run from 22nd April to 2nd May 2006 and all are welcome. Anyone wanting further details should contact Steve or Liz Harris at BIRD*scapes* (01263) 741742.

(Contributed by Richard Porter)

Birds in Romania

Birders interested in the avifauna of Romania should know that there is an up-to-date website about the country (in English and Romanian) run by the Milvus Group. It includes the most recent checklist of the birds of Romania (at present there is no official Rarities Committee in Romania so no definitive checklist). See www.milvus.ro/English/BirdofRomania/BirdofRomania.htm

Return of the prodigal bustards

Further to the dispersal of reintroduced Great Bustards *Otis tarda* from Salisbury Plain, Wiltshire (*Brit. Birds* 99: 166–167), we understand that birds are returning for the breeding season. In mid March, two males which spent the winter in Dorset returned to the release site, and one has been seen displaying to a female that stayed on the Plain.

The Eric Hosking Trust

The Eric Hosking Trust is looking for applications for its 2005 bursaries. The aim of the Trust is to sponsor ornithological research through the media of writing, photography, painting or illustration. Bursaries of up to £500 are awarded to suitable candidates once a year, and the closing date for applications is 30th September 2006.

In 2005, the Trust awarded two bursaries. The first was to Niall Riddell, for Project Flamingo, to document photographically the flamingos of the Altiplano of South America and the effects of ecotourism, increasing mining pressure and hunting on their population (www.projectflamingo.co.uk). The second went to Emma Stone, from the University of Bristol, for her work on African Wild Dog conservation in Luangwa National Park, Zambia.

Details are available from The Eric Hosking Trust, Pages Green House, Wetheringsett, Stowmarket, Suffolk IP14 5QA; tel: (01728) 861113; e-mail: david@hosking-tours.co.uk

Requests

'Birds in Scotland 3' – a final request for rare-bird photographs

Following previous requests for photographs of rare and scarce birds taken in Scotland, a large number of high-quality images have been supplied for this forthcoming book. We are now seeking images of species for which no photograph has been submitted (even a 'record shot' would be sufficient) or, in a few cases, better images of certain species. The species for which photographs are still required are listed below, as are the names of photographers who we wish to contact. If you can help with providing photographs or contact information, please let me know as soon as possible; the cut-off date for submitting images is 31st December 2006.

Harry Scott, 51 Charlton Crescent, Aboyne, Aberdeenshire AB34 5GN; e-mail: picades@ifb.co.uk

Species still required: Lesser White-fronted Goose, Golden Pheasant, Cory's Shearwater, Balearic Shearwater, American Bittern, Purple Heron, Marsh Harrier, Sora, Marsh Sandpiper, Greater Yellowlegs, Spotted Sandpiper, Bridled Tern, Whiskered Tern, Great Spotted Cuckoo, Common Nighthawk, Chimney Swift, Wood Lark, Marmora's Warbler, Eastern Bonelli's Warbler, Spanish Sparrow, Trumpeter Finch, White-crowned Sparrow, Cretzschmar's Bunting, Pallas's Reed Bunting, Cinnamon Teal, Red-headed Bunting, Pallas's Rosefinch.

Species to be improved upon: Ruddy Shelduck, Garganey, Blue-winged Teal, Surf Scoter, Pied-billed Grebe, Squacco Heron, Little Crake, Avocet, Black-winged Pratincole, Broad-billed Sandpiper, Franklin's Gull, Sabine's Gull, Caspian Tern, Lesser Crested Tern, Black-billed Cuckoo, Yellow-billed Cuckoo, Calandra Lark, Tawny Pipit, Red-throated Pipit, Common Nightingale, Dusky Thrush, Great Reed Warbler, Melodious Warbler, Radde's Warbler, Southern Grey Shrike, European Serin, Chestnut Bunting.

Photographers we are trying to contact: F. Young (Amur Falcon); David MacLeman (Spotted Sandpiper); Nick Wall (White-throated Needletail); Mary MacIntyre (Chimney Swift); Noel Kerns (American Robin); Alan Josey (River Warbler); M. H. Blattner (Trumpeter Finch); and George Winslow (Cretzschmar's Bunting).

Counts of Great Northern Divers

Surveys over the past few winters have indicated a substantial decrease in the number of Great Northern Divers *Gavia immer* wintering in Shetland. A population estimate of c. 430 birds was derived from extensive coverage of the coastline in the winter of 2001/02, together with data gathered in the 1990s from coasts not surveyed in 2001/02. Reduced numbers became apparent in 2003/04 and surveys this past winter have confirmed this, with an overall 50% decrease in numbers in the key wintering areas. These areas held almost 75% of divers counted in 2001/02, and we are as confident as we possibly can be that the birds are simply missing and not being overlooked

or wintering along other coastlines within Shetland.

There is no obvious local explanation for this reduction in numbers. Before publishing a review of 30 years of monitoring wintering numbers of Great Northern Divers in Shetland, we are keen to hear from anybody who has been making systematic counts in other parts of their European wintering range. Perhaps you have counts for particular areas from earlier surveys which could usefully be revisited? In Shetland at least, adult Great Northern Divers are believed to be faithful to their wintering locations and while a shift to winter quarters elsewhere cannot easily be ruled out, this is thought unlikely. Similarly, if anyone has knowledge of recent changes in numbers on the likely breeding grounds of Scottish wintering birds, in Iceland, Greenland or Arctic Canada, we would be keen to receive information.

Martin Heubeck and Mick Mellor, Sumburgh Lighthouse, Virkie, Shetland ZE3 9JN; e-mail: martinheubeck@btinternet.com

Rarities Committee news

Electronic submission of records

At the 2006 AGM, held in March, BBRC decided that it would aim to deal entirely with records in an electronic format from 1st January 2007. While we will continue to accept paper submissions from individuals after that date, we hope that all counties and most individuals will submit their records by e-mail or via the internet. Any paper submissions will have to be scanned in by the BBRC secretary prior to circulation, which has a significant time and cost element, so we do ask for the support of as many people as possible when submitting records.

We will pilot the electronic system for 2006 records, and we would prefer *all* records to be submitted via e-mail from 1st January 2006. However, we realise that this could have significant implications for some County Recorders and their records committees who may not be able to put changes in place to comply with this time frame. Consequently, a dual system will operate in 2006. For those able to submit records by e-mail, we would prefer descriptions in Word, but any accompanying photos or sketches as separate jpegs and not embedded in the document. Please send all record submissions to: secretary@bbrc.org.uk

Obituary

Andreas J. Helbig (1957–2005)

Following a short but severe illness, Professor Dr Andreas J. Helbig, the eminent German ornithologist, died on 19th October 2005, at the age of 48. He had become widely recognised as a prolific and hard-working scientist who had made substantial contributions to the literature in the fields of bird migration and molecular phylogeny.

Born in Berlin on 28th July 1957, Andreas developed an early interest in birding, bird distribution and bird biology. As a student at the Gymnasium in Enger (near Herford), he published his first papers, on the occurrence of local birds. After leaving college, Andreas studied for a diploma degree in biology at the University of Bielefeld, during which he spent 18 months at San Diego State University, USA. He graduated from the University of Frankfurt with a diploma thesis in 1983, and went on to study the inheritance of migratory orientation in Blackcaps *Sylvia atricapilla*, under the supervision of Prof. Dr Peter Berthold, at the Vogelwarte Radolfzell. He

Dorit Liebers-Helbig

98. Andreas Helbig, with his son Adrian, 2005.

gained his doctorate from the University of Frankfurt, graduating with 'summa cum laude' ('with highest honours') in July 1989, his dissertation receiving the award of best of the faculty.

After obtaining his PhD, Andreas joined the Vogelwarte Radolfzell to continue his research into the genetics of migration. Supported by a grant from the Deutsche Forschungsgemeinschaft (DFG), he joined my group at the University of Heidelberg in 1990, with the ambitious goal of finding the 'migratory direction gene' in Blackcaps. At that time, we had started our research programme into molecular evolution using nucleotide sequences of marker genes to unravel phylogeny and phylogeography. Andreas soon realised that the search for the elusive 'migration gene' was premature and not realistic. He therefore transferred to the phylogeny team, where he thought that the chances of finding something challenging and exciting were much higher; and here he became instrumental in developing methods of analysis and phylogenetic tree reconstruction. His own studies were focused on warblers, especially of the genera *Phylloscopus*, *Sylvia*, *Acrocephalus* and *Hippolais*; a significant early discovery was the realisation that sequences of the mitochondrial cytochrome-*b* gene of chiffchaffs inhabiting the Iberian Peninsula differed from those of Common Chiffchaff *Ph. collybita* elsewhere in Europe. This distinction, combined with vocal differences, established Iberian Chiffchaff *Ph. ibericus* as a 'good species'.

Stimulated by this early success, Andreas went on to establish that several warbler taxa were genetically differentiated to such an extent that they also merited specific status. In addition, he was instrumental in defining the guidelines on how to use genetic evidence in bird systematics and taxonomy. While studying at Heidelberg, Andreas met his first wife, Ingrid Seibold, who was studying the molecular systematics of raptors.

As his research came to the attention of a wider audience, his reputation grew and, in 1993, he was appointed as head of the Vogelwarte Hiddensee, and also became a lecturer at the University Greifswald. On Hiddensee, he established his own DNA laboratory and, together with several research students, made substantial contributions to phylogeny and phylogeography of sylviids, raptors, gulls (Laridae), skuas (Stercorariidae), and several other taxa. Andreas passed his 'habilitation' at the University of Greifswald in 1997, mainly on account of his post-doctoral research at Heidelberg, and obtained a *venia legendi* (the right to be a professor) in zoology.

During his career, he was awarded many accolades for outstanding achievements, including the Stresemann prize of the Deutsche Ornithologen Gesellschaft (DOG), of which he was an active member and held several offices, including head of the research commission. He was a member of the editorial boards of several highly respected ornithological journals, including the *Journal of Ornithology*, *Vogelwelt*, *Berichte der Vogelwarte Hiddensee*, *Journal of Evolutionary Biology*, just to name a few. In addition, he held the post of secretary of the European Ornithologists' Union for five years.

Andreas was a talented and gifted lecturer. His public and scientific talks were always excellent, being well attended and entertaining. In March 2003, he was awarded the title of apl. Professor (equivalent to a reader in the English system) from the University of Greifswald. Being a passionate ornithologist, he was able to successfully combine the role of a respected scientist with that of an enthusiastic birder, enabling him to bring scientific ornithology to amateur ornithologists in a way that few others could.

Andreas was diagnosed with cancer in July 2005 and died in October. He leaves behind his second wife, Dr Dorit Liebers-Helbig, a successful scientist in her own right, and two children.

Prof. Dr Michael Wink

[As part of the Taxonomic Subcommittee of the BOURC, Andreas Helbig co-authored several papers which have been published in *British Birds*, the latest of which appears on pp. 183–201. *Eds*]

Recent reports

Compiled by Barry Nightingale and Eric Dempsey

This summary of unchecked reports covers early February to mid March 2006.

White-fronted Goose *Anser albifrons* Influx into southern England in early February, with up to 330 Minsmere (Suffolk), 188 Sandwich Bay (Kent) and 120 Grove Ferry (Kent), and several flocks of up to 40 in inland areas (in record modern-day numbers for some counties). Black Duck *Anas rubripes* Tresco (Scilly), 12th February to 12th March; Kilcolman (Co. Cork), 4th March. Lesser Scaup *Aythya affinis* Grimley/Westwood Pool (Worcestershire), 11th February to 7th March; Cotswold Water Park (Gloucestershire), 25th February and 4th–5th March; Ballysaggart and Eskragh Loughs (Co. Tyrone) 2nd–5th March; Milton Loch (Dumfries & Galloway), 11th March; Ouse Washes (Cambridgeshire), long-stayer to 4th March; Drift Reservoir (Cornwall), long-stayer to 21st February, possibly the same College Reservoir (Cornwall), 25th February to 12th March; Caerlaverock (Dumfries & Galloway), long-stayer to 10th March. King Eider *Somateria spectabilis* Moray Firth (Highland), 18th–21st February; Wester Quarff (Shetland), 28th February and 7th March; Fetlar (Shetland), 10th March; Peterhead (Northeast Scotland), long-stayer to 6th March; Mousa Sound (Shetland), long-stayer to 22nd February. Barrow's Goldeneye *Bucephala islandica* Quoile Pondage (Co. Down), long-stayer throughout.

Red-throated Diver *Gavia stellata* Notable passage along the south coast of England, with

Graham Catley

Kit Day

99 & 100. Sora *Porzana carolina* Gibraltar Point, Lincolnshire, March 2006.

565 east past Dungeness (Kent) on 23rd February and 180 east on 28th February, with smaller numbers past Portland (Dorset) during the same period. White-billed Diver *Gavia adamsii* Between St Mary's and Samson (Scilly), 12th February; Hornsea (East Yorkshire), 17th February.

Great White Egret *Ardea alba* South Uist (Western Isles), 13th–15th and 24th–27th February. Sora *Porzana carolina* Gibraltar Point (Lincolnshire), 5th–12th March. Long-billed Dowitcher *Limnodromus scolopaceus* Hayle Estuary (Cornwall), long-stayer to 13th March.

Laughing Gull *Larus atricilla* At least two adults remained in Devon throughout, with other long-staying birds at Reading (Berkshire), Ardrossan (Ayrshire) and Glaslyn Marshes (Gwynedd), while at least five remained in Ireland. Franklin's Gull *Larus pipixcan* Northam Burrows Country Park (Devon), 12th–13th February; Dargan Bay (Co. Antrim), 21st February and 4th March; Bideford (Devon), 11th March. Bonaparte's Gull *Larus philadelphia* Cobh (Co. Cork), long-stayer seen again on 5th March. Forster's Tern *Sterna forsteri* Two long-stayers remained in Ireland, one at Nimmo's Pier, the other moving between Ballycotton and Pilmore Strand (Co. Cork).

'Black-throated Thrush' *Turdus ruficollis atrogularis* Swansea (Glamorgan), long-stayer to 13th March. Hume's Warbler *Phylloscopus humei* Whitley Bay (Northumberland), long-stayer to 10th March.

Penduline Tit *Remiz pendulinus* Rainham Marsh (London), four long-stayers to 16th February, with at least three to 5th March; Stodmarsh (Kent), presumed long-stayer, 4th–7th March. Rose-coloured Starling *Sturnus roseus* Berrow (Somerset), 25th February.

European Serin *Serinus serinus* North Foreland (Kent), 7th March. Arctic Redpoll *Carduelis hornemanni* Near Bretton Country Park (West Yorkshire), two, 6th February, one to 8th February and again 20th February; Shell Ness (Kent), 8th–11th February; Rendlesham (Suffolk), 11th February to 13th March; Exbury (Hampshire), 18th February; Little Thornage (Norfolk), at least one, 19th and 25th February and 12th March; Aberlady Bay (Lothian), long-stayer to 7th March; Icklingham (Suffolk), long-stayer to 8th February. Common Rosefinch *Carpodacus erythrinus* Sheffield (South Yorkshire), long-stayer to 12th March. Little Bunting *Emberiza pusilla* Dursley (Gloucestershire), 29th January to 9th February; between Morston and Stiffkey Fen (Norfolk), long-stayer to 17th February.

Michael McKee

101. Adult Laughing Gull *Larus atricilla*, Reading, Berkshire, March 2006.

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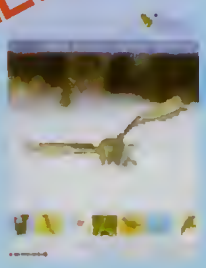

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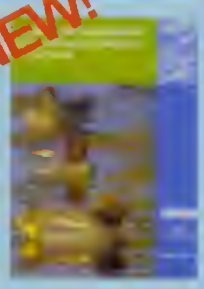

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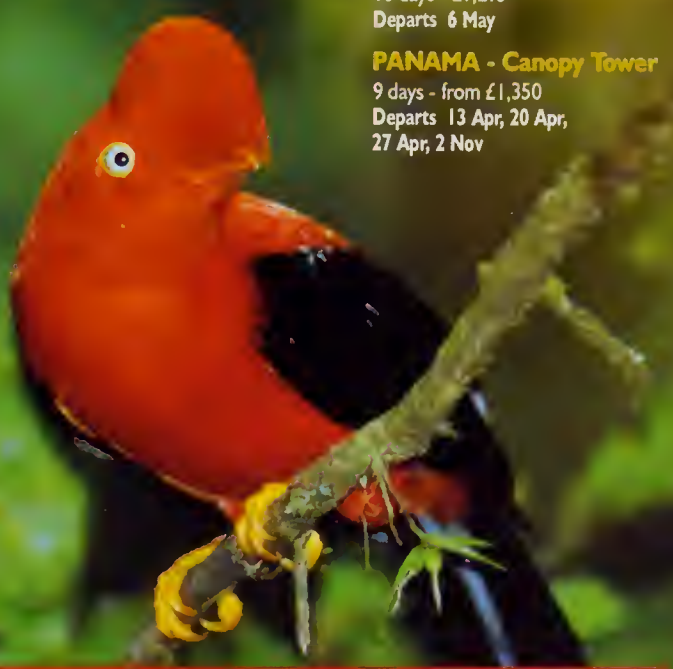

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May 2006 • Vol.99 • 229–278

Common Guillemots

Rufous-tailed Robin

Greenland White-fronted Geese

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Laying a big egg on a little ledge: does it help a female Common Guillemot if Dad's there?

Michael P. Harris and Sarah Wanless

ABSTRACT Female Common Guillemots *Uria aalge* face the challenge of laying a large egg on a cliff ledge, often surrounded by tetchy neighbours. We documented the laying of 754 eggs, during 82% of which the male was present. The presence of the male had no effect on either the short-term survival of the egg or the chances of a chick successfully leaving the colony. Male attendance at laying may be largely fortuitous, resulting from the long periods that he is present for other purposes.

In most bird species, the actual process of laying an egg is extremely difficult to observe because the female is usually hidden from view and, consequently, there are relatively few detailed descriptions of the event. Opportunities are greater in certain species, however, including the Common Guillemot *Uria aalge* (hereafter simply 'Guillemot'), which lays large eggs (c. 11% of the female's weight; Gaston & Jones 1998), breeds in the open and does not build a nest. It has long been known that immediately prior to and during laying, the female Guillemot shows characteristic behaviour that alerts an observer to imminent laying of the egg (e.g. Williams 1971). The female normally takes the first incubation stint but the male is often present at laying (Wanless & Harris 1986). The reason for the male's presence is unclear but, given the high density at which this species breeds, one possible advantage is that he could protect his mate from disturbance or harassment from neighbours during the 5–10 minutes that it usually takes her to lay the egg and so reduce the chances of breeding failure.

Over a 22-year period, we collected information on the laying of 754 Guillemot eggs. In this paper, we present data on male attendance at laying, and test the hypothesis that the presence of the male is associated with an increased chance of the pair rearing a chick, either directly via protection of the female at laying or indirectly as an indication that the members of the pair have their breeding schedule well synchronised.

Observations

The study was carried out at the Guillemot colony on the Isle of May, Fife. Each year between 1982 and 2005, we made daily checks from permanent hides of 800–1,100 occupied breeding sites in five study areas of varying cliff type and bird density (Harris & Wanless 1988). During the main laying period, the frequency of checks was increased to three to five times per day. Thus we were able to determine the dates of laying of all pairs breeding in these areas and whether or not they reared a chick.

Adult Guillemots attend the breeding colony from late March onwards, but in the two weeks

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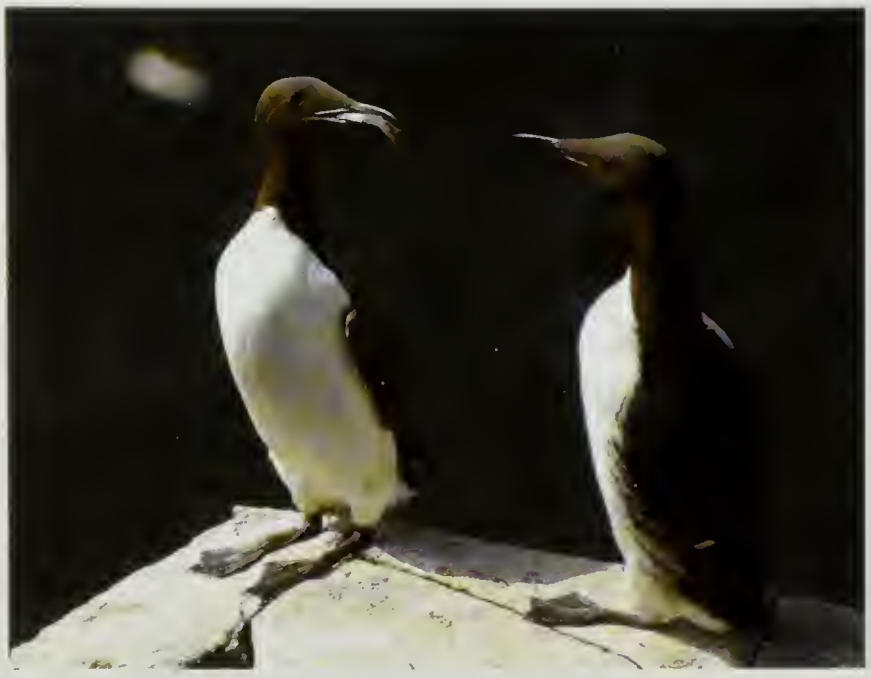
102–105. Common Guillemot *Uria aalge* in the act of laying an egg, Isle of May, Fife, May 1986. The male is in attendance and is showing more-than-usual interest in the proceedings. The egg is laid pointed end first and appears to be prevented from slipping off the ledge by the tail. This is a safe site, and in the last frame (105) the female has stepped back from the egg. The colouring and markings make the egg individually identifiable, so perhaps she is showing the egg to her mate so that he can later recognise it. This sequence of pictures spanned about a minute. The male soon departed, leaving the female to undertake the first incubation stint.

prior to laying, the female spends progressively less time ashore whereas the male spends most of the day at the site, though he is still absent at night (Wanless & Harris 1986). The male usually returns to the breeding site soon after dawn and, apart from the occasional short visit to the sea, remains at the site for much of the day. Because we were making intensive observations, we were usually aware when a female left the colony and were alert to her return. By focusing our attention on sites where females returned after an absence of one or more days, we were able to make observations on the laying of 754 eggs. It was usually obvious whether or not the male was present since a female arriving at the colony immediately evicts any trespasser from the site. Such behaviour was confirmed repeatedly using a sub-sample of individually marked birds of known sex. We ignored cases where we were unsure whether or not the male was present and where birds were laying a replacement egg following the loss of the first egg.

Analysis

For each laying event we calculated a relative laying date (RLD) standardised against the mean laying date for the relevant study area and year. The data were grouped into four 4-day periods plus an early period (RLD –9 to –14) and a late period (+9 to +46 days). An index of breeding density was taken as the number of incubating neighbours in body contact with the focal bird when all pairs had laid.

There was no significant difference in the frequency of male attendance at laying among the five study areas ($\chi^2_4 = 1.50$, $P = 0.8$), so the results were pooled. For 67 instances of laying in 1982 and 1983, details of the date and time of laying and subsequent success were destroyed in a fire, so these records were included only in the annual frequencies of mate attendance. To test whether annual differences in laying behaviour were associated with other aspects of breeding, we collated information on the mean laying date and nesting success of pairs in the same



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106. Two non-breeding Common Guillemots *Uria aalge*, one of which is carrying a small fish that it is using for display. Note that normally the tarsi are flat on the ground. Isle of May, Fife, 2005.

area as the laying data were collected, the return rate (the proportion of colour-ringed adults seen the previous year that returned in that year), the mean weight of adults rearing chicks, the proportion of chicks that had both adults present during daily checks, and the mean weight of chicks old enough to leave the colony. Analyses were made using χ^2 tests and logistic regression on arcsine-transformed proportions weighted by the sample sizes.

Behaviour at laying

On land, Guillemots normally move around with the tarsi flat on the ground, which gives them a distinctive shuffling gait. However, during egg-laying, a female stands erect, with the tarsi vertical and the weight on the foot so that when the egg emerges it just touches the ground before finally leaving the cloaca (Williams 1971). For some minutes prior to laying, the female holds the wings well away from the body in a very distinctive, phoenix-like posture as obvious contractions force the egg downwards until it is laid, pointed-end first, on the rock. The pointed end then tends to slip backwards but the egg appears to be prevented from rolling off the ledge by the bird's tail curving downwards. It is unclear whether the tail actively pushes the egg inwards or whether the movement of the tail is a response to the sudden closing of the cloaca as the broad, rounded end of the egg passes out of the bird (Williams 1971). The time elapsing between the egg first being visible and the completion of laying is usually only a couple of minutes. However, twice we saw females having major problems at laying. These birds alternated between the typical erect stance and lying collapsed on the ledge. In these cases, the laying process took more than 30 minutes. After laying, the female repeatedly looks down at the egg before dropping down onto it and assuming the typical incubation posture with the egg held against the

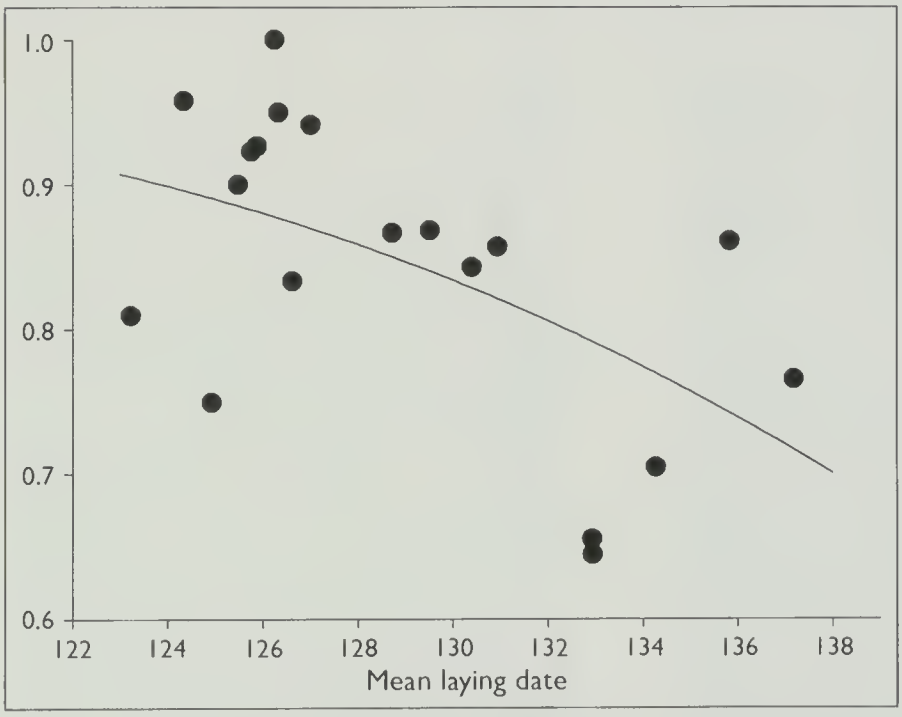

Fig. 1. The proportion of female Common Guillemots *Uria aalge* that had a male in attendance at laying in relation to the mean annual date of laying (1 = 1st January). Data from the Isle of May, Fife, in 19 years between 1982 and 2005. This relationship is statistically significant: logit (proportion males attendance) = 14.0 – 0.0954 mean Julian laying date (n = 19 years, P < 0.001).

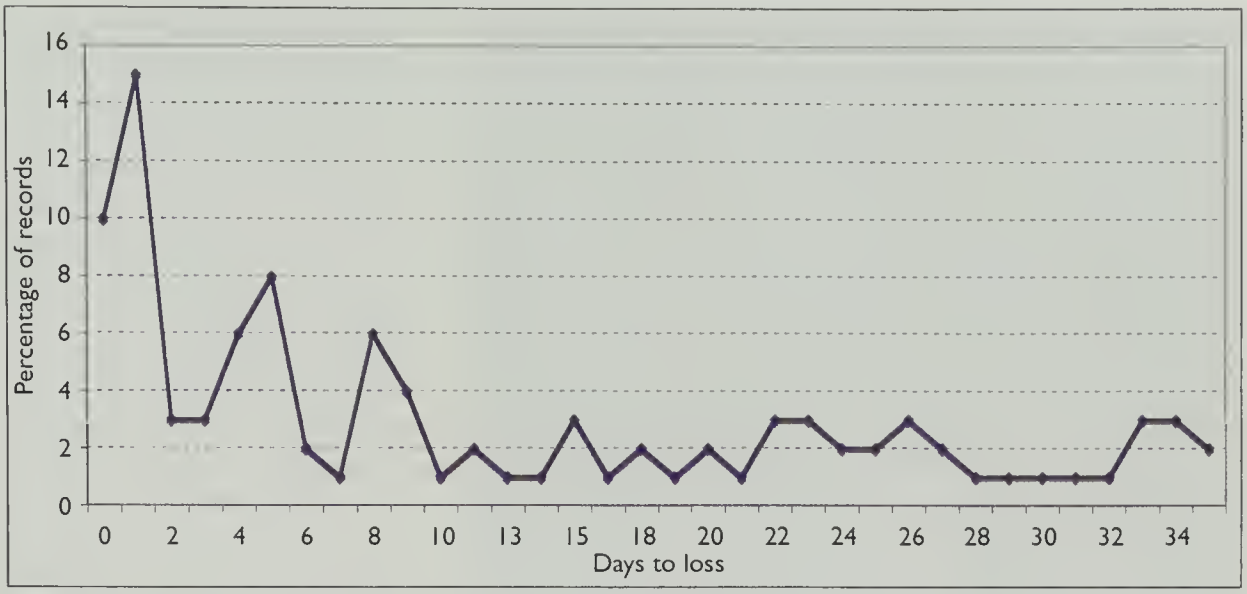

Fig. 2. Frequency of egg loss in relation to time since laying of 101 eggs of Common Guillemots *Uria aalge* that were lost within the normal maximum incubation period of 35 days. 0 = loss on day of laying. Data from the Isle of May, Fife, in 19 years between 1982 and 2005.

single large central brood-patch.

The behaviour of the male during laying is variable. Many take little notice of the female's exertions, even to the extent of remaining asleep; others are more attentive and periodically preen the female's head and neck. Occasionally, a male positions himself between his mate and their neighbours, apparently protecting her; but he also often appears to get in the way or gets involved in fights with neighbours. The female sometimes shows the newly laid egg to the male, who generally appears interested in it. However, the male usually departs on a feeding trip within two hours of laying, leaving the female to take the first incubation stint (Wanless & Harris 1986). Few eggs are laid during the hours of darkness, but there is otherwise no marked diurnal pattern of laying (S. Lewis pers. comm.).

Male attendance at laying

Males were present at 82% of the 754 layings observed. There was no evidence of any diurnal variation in male attendance (χ^2_{13} = 14.5, P = 0.49) or of any within-season variation in relation to RLD (χ^2_5 = 8.0, P = 0.156). Similarly, there was nothing to suggest that the number of neighbours (0, 1, 2, 3, or more) influenced whether or not the male was present (χ^2_4 = 4.35, P = 0.36). There were, however, significant year-to-year differences, and the proportion of layings with the male present varied from 0.64 in 1998 to 0.96 in 1991 (χ^2_{15} = 40.1, P < 0.001). Male attendance declined significantly over the study period (logistic regression; P < 0.0001) and during this period the mean laying date of Guillemots on the Isle of May became later, so the proportion of males present at laying was significantly lower in years when breeding was late (fig. 1). Mean annual breeding success on the Isle of May was highly correlated with mean laying date (r = –0.517, P = 0.023) and so this also declined significantly over the study period. However, after allowing for the effect of mean laying date, the effect of breeding success on the proportion of males present at laying was not significant (P = 0.47). None of the other variables considered (breeding density, return rate of adults, mean adult and chick weights) showed a significant association with male attendance. In 123 out of 152 cases (81%) where we had information, the female took the first incubation shift.

Given the challenges associated with incubating an egg on a cliff ledge, hatching success in Guillemots is remarkably high, averaging 83% over the study period on the Isle of May. The chances of an egg being lost were highest on the day of laying and the following day (fig. 2). Observations suggested that on the day of laying, losses were due to the egg rolling off the ledge, getting wedged in a crack or being knocked off in a fight, while those on the next day were more likely to occur during the first change-over of incubation duties. The probability of an egg being lost within 24 hours was not associated with male presence (20 losses from 562 cases) or absence (5 losses from 133 cases) at laying (χ^2_1 = 0.01, P = 0.91). Similarly, whether or not the male was in attendance had

Mike Harris

107. Female Common Guillemot *Uria aalge* in the 'phoenix position' and undergoing abdominal contractions immediately prior to the egg appearing, Isle of May, Fife, May 2005. The male, to her left, took little interest in the proceedings. The preening bird in the foreground is a male occupying a nest-site; his female returned and laid the next day.

no significant effect on the eventual breeding outcome – male present (n = 562): 76% fledged a chick, 14% lost chick, 10% lost egg; male absent (n = 133): 76% fledged a chick, 10% lost chick, 14% lost egg ($\chi^2_2 = 0.34$, P = 0.84).

Discussion

Although most females (82%) had a mate in attendance during laying, we found no support for the hypothesis that such pairs were more successful than those where the male was absent, despite the relatively high rate of egg loss during the 24 hours following laying. However, the proportion of sites with mates in attendance at laying varied markedly from year to year, with attendance declining in the latter years of the study. Timing of breeding also became later, suggesting that factors affecting the female's ability to produce an egg also influenced the likelihood of the male being present at laying. However, after allowing for date, male attendance was not associated with any other measure of breeding performance considered, nor was it related to adult survival over the previous winter. Male attendance therefore seems to be sensitive to conditions during the pre-laying period but does not reflect conditions either over the preceding winter or during the subsequent season. Timing of breeding of Guillemots on the Isle of May is influenced by large-scale weather patterns in the North Sea, with laying being earlier in years dominated by mild, westerly winds (Frederiksen *et al.* 2004) but currently we know too little of the behaviour or diet of Guillemots at this time of year to understand the mechanism controlling when individuals actually lay.

Observations at the colony indicate a weakly cyclic pattern of site attendance in the early part

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108 & 109. Bridled Common Guillemot *Uria aalge* in the act of laying, with the egg just emerging (108), and looking at the egg immediately afterwards (109). The male is in attendance, preening the female (108), about to look at the egg (109). The three incubating birds show no interest. Isle of May, Fife, 2005.

of the breeding season, with members of the pair present for several consecutive days and then away at sea for a similar period. However, two to three weeks before laying, the sexes start to show strongly diverging behaviour, with the male spending longer and longer at the site while the female greatly reduces her time ashore and may not be present at all on some days (Wanless & Harris 1986). The high level of site attendance by the male has been suggested to have at least four functions that are not mutually exclusive: (i) to retain ownership of the site since there is intense competition for the best sites; (ii) to ensure the paternity of the egg by minimising the chances of his female being inseminated by another male; (iii) to mate with other females (Birkhead *et al.* 1985; Wanless & Harris 1986); and (iv) to maximise his chance of seeing the egg, since Guillemots recognise their own egg by its colour and markings (Tschanz 1959). However, the male must presumably balance the advantages of being in the colony against the need to go to sea to feed. Although we did not record how much time males were spending at the site each year directly, reduced attendance at laying seems likely to be associated with lower overall attendance, thus increasing the probability that the female returned to an unattended site. In some seabirds, such as some shearwaters and petrels (Procellariidae), the male takes the long, first incubation stint, leaving the female to return to sea to feed. This is not the case in the Guillemot but, as long as the male returns before too long, his absence at laying does not invariably result in breeding failure.

We conclude that the presence of the male at laying is largely fortuitous, resulting from the long periods that he is present at the site for other purposes.

Mike Harris

110. Razorbill *Alca torda* laying, Isle of May, Fife, May 2005. Laying is much harder to observe in this species but, as in the case of the Common Guillemot, the wings are slightly spread and the tarsi are vertical. In 25 layings documented in our study, the male was present in 20 instances.

Acknowledgments

We thank Sheila Russell and many other people who helped with the fieldwork, Sue Lewis and Chris Thaxter for unpublished data and useful discussions, and Scottish Natural Heritage for allowing us to work on the Isle of May National Nature Reserve. Part of the fieldwork was carried out with funding from the Joint Nature Conservation Committee's integrated Seabird Monitoring Programme.

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Rufous-tailed Robin on Fair Isle:

new to Britain

Deryk N. Shaw

ABSTRACT A first-winter Rufous-tailed Robin *Luscinia sibilans* was discovered on Fair Isle, Shetland, on 23rd October 2004. This represents the first record of this species for Britain and the Western Palearctic. Its occurrence coincided with an exceptional influx into Shetland of birds originating from Siberia and Central Asia, suggesting that all were affected by the prevailing weather conditions at that time. The timing of migration and weather patterns over northern Scotland are reviewed.

With a light breeze blowing from the northeast, conditions seemed promising for vagrant birds on Fair Isle, Shetland, on 23rd October 2004, and it was with my usual optimism that I headed out on the morning census to cover the northern part of the island. Other than a few thrushes and some cracking 'Northern Bullfinches' *Pyrrhula p. pyrrhula*, however, I had not seen a lot to shout about by the time I reached the top of Ward Hill at about 11.00 hrs. Meanwhile, Mike Wood (one of the Directors of Fair Isle Bird Observatory) was ambling south along the road from the Observatory with his wife, Angela, and two young daughters (Emily and Kate), when he spotted a bird resembling a juvenile Robin *Erithacus rubecula* hopping along the roadside by Bull's Park. The only person in sight was Mark Newell, and Mike went over to ask him if this was possible in late autumn. Mark replied 'No!' and they returned to look for the bird.

As I descended from the top of the hill towards Lower Station, my mobile phone rang and an out-of-breath (but still running) Alan Bull (my Assistant Warden) was shouting down the phone: 'Mark has just described to me what sounds like a Veery [*Catharus fuscescens*] at Bull's Park – well a *Catharus* thrush anyway! I'm on my way to check it out but there's no point you coming down yet. I'll keep you informed!' 'Okay! Thanks!' I replied and immediately started down the hill. I did not care whether it was a Veery or not; any *Catharus* thrush would be a lifer and definitely worth running for. By the time I arrived, it had been identified as a Veery, and was showing well behind an old gate leaning against the dry-stone dyke. As I looked, I could see a small bird with a heavily mottled breast, a rufous tail contrasting with cold, olive-brown upperparts and pink legs. At this stage, I did not think it seemed quite right for Veery and thought it looked more like a Hermit Thrush *C. guttatus*, except that the breast pattern was more like that expected of a Veery. As I had not (and still haven't!) seen any of the *Catharus* thrushes, I thought it best to just take in the features of this bird. It was feeding close to the base of the dry-stone dyke and would periodically disappear into it for several minutes at a time. Discussion about its identity continued among the dozen or so people present, and although only one person had previously seen both species, his opinion strongly favoured Hermit Thrush. No other species were even considered at this time!

Regrettably, with my mind firmly fixed on a *Catharus*, I did not consider that it could be anything else and I tentatively put the news out that we had found a possible Hermit Thrush. The debate continued until lunchtime, when we returned to the Observatory for lunch and to check more references. It was over lunch that

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Rebecca Nason

111. First-winter Rufous-tailed Robin *Luscinia sibilans*, Fair Isle, Shetland, October 2004.

Nick Dymond casually mentioned that it 'looked a bit like a Rufous-tailed Robin [*Luscinia sibilans*]', but added that 'it couldn't be that 'cos they are small, the jizz wasn't right and besides they are from southeast Asia'. Pandemonium ensued as references for Rufous-tailed Robin were sought, and shortly afterwards I was staring with incredulity at a picture I had found on the internet. Alan Bull came in with a similar picture in a copy of *Birding World*. We looked at each other in disbelief. That was it! Incredibly, it looked like we had another first for the Western Palearctic!

We were confident that this was our bird, but thought we had better see it in the flesh again to be absolutely certain. Mark, who had stayed behind to keep tabs on the bird, had not seen it since we left for lunch but, fortunately, a walk along the wall soon relocated it and doubly confirmed our suspicions. The next few moments will live with all of us forever – a feeling of relief that the bird was still here, then stunned shock as the realisation sank in that it really, truly was a Rufous-tailed Robin, followed by cheers and other such signs of elation! Now that the identification had been confirmed, I phoned out the updated news. This included a distorted telephone call to Paul Harvey, who was aboard the *Cyfish* with the Shetland crowd heading our way – not knowing if they were coming to see a Veery or a Hermit Thrush!

Once all had soaked in the moment, I decided that it could be easily trapped and that it should be examined in the hand to be absolutely sure of the identification and to check for signs of captivity. A net was erected next to the wall and the bird was gently coaxed into it. A glance at the underwing to check that we were not making some horrendous faux pas showed it to be plain buffish-white. In the hand I was amazed at how small it felt – even smaller than a Robin! Back in the ringing room, measurements and a brief description were taken. It was in good condition with no feather, claw or bill damage and was aged as a first-winter based on the retained juvenile greater coverts, which were brown with obvious small deep-buff tips (although the innermost two had been moulted, and were more olive and lacked buff tips), and distinctly pointed tail-feathers.

After ringing, it was photographed and then released back at the same site, where it remained until dusk. As it had been feeding voraciously throughout the day and was in good condition when examined, it was no surprise that it had departed by the morning, following a clear night.

Detailed description

A small chat with plump, round body, large beady eye, long pale-pink legs, and a relatively short tail. Reminiscent of Veery or Hermit

Hugh Harrop

112. First-winter Rufous-tailed Robin *Luscinia sibilans*, Fair Isle, Shetland, October 2004.

Thrush and (to those that had seen them) Siberian Blue Robin *Luscinia cyane*. Cold olive-brown upperparts with contrasting rufous rump and tail, and dirty buff-white underparts with extensive olive-brown scaling. With nothing alongside to compare it with, the small size (similar to Robin) was not immediately apparent to me, although if I had had previous experience of *Catharus* thrushes, I may have noticed that it was smaller. On examination in the hand, it showed absolutely no signs of captivity, having fresh, unbroken remiges and rectrices, and undamaged claws and bill.

Behaviour Kept very close to the dry-stone dyke and often disappeared into it for spells at a time. Typical chat-like behaviour, hopping along the ground and suddenly stopping to pick something from the ground. Often raised its tail to about 75 degrees and 'bounced' it down again, with a little 'shiver' at the end.

Head Crown olive-brown. Buffish-grey supercilium, barely discernible behind the eye. Lores grey-brown. Ear-coverts olive-brown with buff flecks giving a mottled appearance. Distinct buff-white eye-ring. Whitish submoustachial but feathers fringed olive-grey, giving scalloped effect, and merged with rest of underparts. Faintest of thin dark malar stripes formed a division between submoustachial and less scalloped whitish chin/throat.

Upperparts Mantle, back, scapulars olive-brown as crown. Rump contrasting lighter brown colour. Tail distinctly rufous, like a Common Nightingale's *Luscinia megarhynchos*. This was very obvious in good light or when sun shone, but became quite hard to see as the light faded or in deep shade. Wings were brown, contrasting with mantle. Greater coverts had small buff tips (like those of a young Robin and other chats), except the innermost two, which had been moulted and were more olive and lacked buff tips (noted in the hand). The innermost tertial had a small buff tip (also noted in the hand).

Underparts Chin whitish (noted as being very lightly fringed olive-grey in the hand). Throat and breast whitish with heavy olive-grey scalloping (fringes to feathers), lightest on lower breast. Flanks heavily mottled grey, extending onto sides of belly. Central belly and undertail-coverts white. Underwing buff-white but with thin olive fringing on some axillaries.

Bare parts Bill dark with pale-pink gape and base to lower mandible. Legs pale pink, quite long. Eye showed dark brown iris, grey orbital ring and distinct buff-white eye-ring.

Call A Robin-like screech was made as it was extracted from the mist-net. Otherwise silent.

Age It was aged as a first-winter by the unmoulted juvenile greater coverts (all but the innermost two) and pointed tips to the tail feathers. The pale base to the lower mandible may also be a feature associated with first-winter birds.

Biometric data

Wing length	69 mm
Tail length	50.5 mm
Weight	17.3 g
P2	=P6/P7
Emarginated primaries	P3, P4, P5
Wing point	P4
Primary projection	17.1 mm
Fat score	2+/8
Pectoral muscle	2+/3

Primaries numbered ascendantly (P1 being the shortest, outermost primary)

Weather conditions

October 2004 was notable for its anomalous pressure patterns. The mean Icelandic low-pressure area was displaced some 750–1,000 km further southeast than normal. This led to more frequent frontal depressions passing over Scotland, accompanied by record rainfall and more frequent winds with easterly components over the northern UK, Fennoscandia and northwestern Siberia. Consequently, weather patterns over the region were particularly changeable. It is not possible, therefore, to predict the route or timing of the arrival of the Rufous-tailed Robin with any great precision. It had probably arrived in the northern North Sea sector no later than 20th or 21st October, and may have possibly arrived as early as 16th or 17th October, when an east-northeasterly airstream extended from the Baltic region to northern Scotland, and which coincided with the arrival of the Chestnut-eared Bunting *Emberiza fucata* on Fair Isle one week earlier.

The supporting cast

Throughout September, weather conditions across Shetland had been largely unsuitable for the arrival of birds from eastern Europe and Siberia, making this one of the worst early autumn periods on record. Although Whalsay enjoyed Britain's fourth Brown Shrike *Lanius cristatus* from 19th to 24th September, little else of interest (by Shetland standards) was discovered during the month. Things began to change for the better on 29th September, when a Red-flanked Bluetail *Tarsiger cyanurus* was discovered on Fair Isle, followed on 1st October by the first of three Pallas's Grasshopper Warblers *Locustella certhiola* (surprisingly all on Foula this year, on 1st; 1st to 5th; 2nd) and the first of four White's Thrushes *Zoothera dauma* (Out Skerries, on 1st; Voe, Mainland, on 2nd; Maywick, Mainland, on 7th; Swining, Mainland, between 10th and 22nd). There then followed a procession of superb birds from the east, which appeared throughout the length and breadth of Shetland during the month, making this perhaps the most exhilarating late autumn on record for Britain's northernmost county. Along with the Pallas's Grasshopper Warblers and White's Thrushes came an almost daily onslaught of exciting rarities, including Yellow-breasted Bunting *Emberiza aureola* (Toab, Mainland, from 1st to 2nd), Blyth's Reed Warbler *Acrocephalus dumetorum* (Foula, from 2nd to 7th; Skaw, Unst, on 15th), Lanceolated Warbler *L. lanceolata* (Fair Isle, on 4th; Bressay, on 26th), Booted Warbler *Hippolais caligata* (Fair Isle, on 5th), Pechora Pipit *Anthus gustavi* (Foula, from 5th to 12th and 9th to 20th), Citrine Wagtail *Motacilla citreola* (Foula, on 7th), Pied Wheatear *Oenanthe pleschanka* (Whalsay, on 10th; Scousburgh, Mainland, on 23rd), Chestnut-eared Bunting (Fair Isle, from 15th to 20th), Isabelline Shrike *Lanius isabellinus* (Vidlin, Mainland, on 17th), Dusky Warbler *Phylloscopus fuscatus* (Fair Isle, from 18th to 19th), Olive-backed Pipit *A. hodgsoni* (Fair Isle, on 20th) and Isabelline Wheatear *Oe. isabellina* (Sumburgh Head, Mainland, from 22nd to 25th) (Rogers 2005). This wealth of rarities was accompanied by a host of scarce migrants that included several Richard's Pipits *A. richardi*, four 'Siberian Stonechats' *Saxicola*

Hugh Harrop

113. First-winter Rufous-tailed Robin *Luscinia sibilans*, Fair Isle, Shetland, October 2004.

torquatus maurus, Yellow-browed *Ph. inornatus* and Pallas's Leaf Warblers *Ph. proregulus*, Red-breasted Flycatcher *Ficedula parva*, Little *E. pusilla* and Rustic Buntings *E. rustica*, and an unprecedented arrival of 'Northern Bullfinches'. Britain's first Rufous-tailed Robin (and Chestnut-eared Bunting) could scarcely have better supporting credentials, although how a Common Yellowthroat *Geothlypis trichas* made it to Foula on 9th to 10th October in these conditions is, perhaps, the greatest mystery of all.

Distribution and migration

The breeding range extends across much of south-central and southeastern Siberia, from central and northern Sakhalin in the Sea of Okhotsk, west to the upper reaches of the Yenisey River, and north to 62°N along the Tunguska River (Vaurie 1959). Consequently, its range overlaps with those of many species which regularly occur in western Europe in late autumn, including Dusky and Pallas's Leaf Warblers. The wintering range extends from southeastern China to northern Vietnam, Laos and northern Thailand (Robson 2000; Carey *et al.* 2001).

Departure from the northwestern region of the breeding range commences in early September (Dement'ev & Gladkov 1954) and by mid October most birds have left, the mean daily maximum temperatures over central Siberia having usually fallen below 0°C, although it is possible that the recent marked climate warming may have resulted in later departures. To the east, migrants commonly pass along the east coast of northeastern China from mid September onwards. Although shy, it is numerous at Beidaihe and Happy Island, Hebei Province, in late September and into the first few days of October. Migrants presumably remain at these latitudes until cold weather forces them to move south, so passage through China appears to be slow and protracted. To the south, it is an uncommon passage migrant through Hong Kong, Guangdong Province, where the earliest autumn occurrence is 16th October, but October occurrences here are particularly unusual. Migrants typically start to appear in Hong Kong in early November and new arrivals peak around the third and fourth weeks of the month, before passage tails off in early December (Carey *et al.* 2001).

Acknowledgments

My thanks go to Norman Elkins for preparing a summary of the prevailing weather conditions across northern Europe for the days leading up to the discovery of the Rufous-tailed Robin.

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EDITORIAL COMMENT

Europe's first Rufous-tailed Robin caught many observers by surprise, both because of its unexpected occurrence and because it was a species that many were unfamiliar with. This situation changed overnight and for observers across Europe a new target had appeared on their rarity radar. Armed with this new knowledge, it took just over a year for Europe's second to be found. Unexpectedly, however, this was not an autumn vagrant at a migration hotspot, but was found hopping along an unfrozen ditch by a sewage-farm at Białystok, eastern Poland, on 30th December 2005. It remained until the following day and was also seen by just a handful of birders.

Colin Bradshaw, Chairman of the British Birds Rarities Committee, commented: Given the quality of the submission, which included description, photographs and biometrics, this bird was easier to assess than to identify initially. Confusion with Veery is understandable as this is the only other similar species that shows the extensive scalloping on the underparts. In addition, as the photographs show, the long but robust pink legs, the rotund body shape and the relatively short tail are all more in keeping with a *Catharus* thrush than most of the chats we are familiar with. Once the observers had set

their thoughts in this direction, it took a while to rectify the initial mistake but, fortunately, this didn't cause any major problems.'

Eric Meek, Chairman of the British Ornithologists' Union Records Committee, commented: 'So, yet another long-distance migrant from Siberia makes it to our shores! Is it just the fact that I have lived on the east coast all my life that makes a Siberian vagrant even more exciting than a transatlantic one? I don't think so – it's the thought of the sheer remoteness of where this bird probably originated that makes it so special. That, together with the fact that this bird is such a skulker of the woodland floor (if my experience of one at Beidaihe is anything to go by) that it was going to have to turn up somewhere as devoid of vegetation as Fair Isle to stand any chance of being found!

'The paucity of migrants in the early autumn of 2004 was notable, but Deryk Shaw's paper clearly shows how this situation altered during the latter part of that migration season, with an almost continuous run of Siberian passerines arriving in Shetland, of which the Rufous-tailed Robin formed a part. The breathtaking excitement of the find and the understandable initial belief that it must be a *Catharus* thrush are all there. But spare a thought for the undocumented story of a certain editor of *British Birds* who, believing the bird to be a Hermit Thrush, a species which he had previously seen on Fair Isle, opted not to travel on the *Cyfish*!

'Members of the BOURC were unanimous in accepting the record onto Category A of the British List.'

Rebecca Nason

114. First-winter Rufous-tailed Robin *Luscinia sibilans*, Fair Isle, Shetland, October 2004.

The rise and fall of the Greenland White-fronted Goose:

a case study in international conservation

Tony D. Fox, David Stroud, Alyn Walsh, John Wilson, David Norriss and Ian Francis

ABSTRACT Greenland White-fronted Geese *Anser albifrons flavirostris* breed in west Greenland and winter in Britain & Ireland, staging in Iceland on spring and autumn migration. The population declined from the 1950s until the 1970s, but legislation in 1982 removed hunting pressure on the wintering grounds and the population doubled to 35,600 between then and 1999. However, studies at key wintering sites suggested that factors other than hunting regulated local abundance in several cases. Since 1999, the whole population has shown widespread decline. This paper considers possible reasons for the sustained reduction in breeding output that has caused the population decline. There is no evidence for greater predation of nesting attempts, and the declining proportion of potential breeding birds that return to wintering grounds with young is probably related to female body condition and ability to reproduce. Several factors, including June weather and increasing intraspecific competition, show some correlation with falling breeding success, but none convincingly explains the trends. The arrival in Greenland of breeding Greater Canada Geese *Branta canadensis*, and the consequent interspecific competition with Greenland White-fronts, seems the most likely explanation for the population changes, but hard evidence for this on a large scale is also lacking. If the spread of Canada Geese is responsible, there are few conservation actions that could be taken to help the Greenland White-front. The autumn hunt in Iceland was not originally implicated in the recent decline, but with dramatically falling numbers it may now be important; controlling this hunt may be one feasible way to ease pressure on the population. It must be hoped that White-fronts can find a way of coexisting with Canada Geese in west Greenland, as they do throughout much of the central Canadian Arctic, although the population levels of the former will probably be lower than they were in the late 1990s.

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The dark coloration and distinctive morphology of the Greenland White-fronted Goose *Anser albifrons flavirostris* make it one of the more readily identifiable of the four traditionally recognised races of the circumpolar [Greater] White-fronted Goose *A. albifrons* (Ely *et al.* 2005). The Greenland White-front has a disjunct breeding and wintering distribution, a distinctive feeding ecology and unusual population dynamics. While only a small proportion of potential breeding birds return with young, they typically produce large families, show exceptional extended parent–offspring associations (which may persist for nine years or more; Warren *et al.* 1993) and are older than birds in most other goose populations when they first breed (Warren *et al.* 1992a).

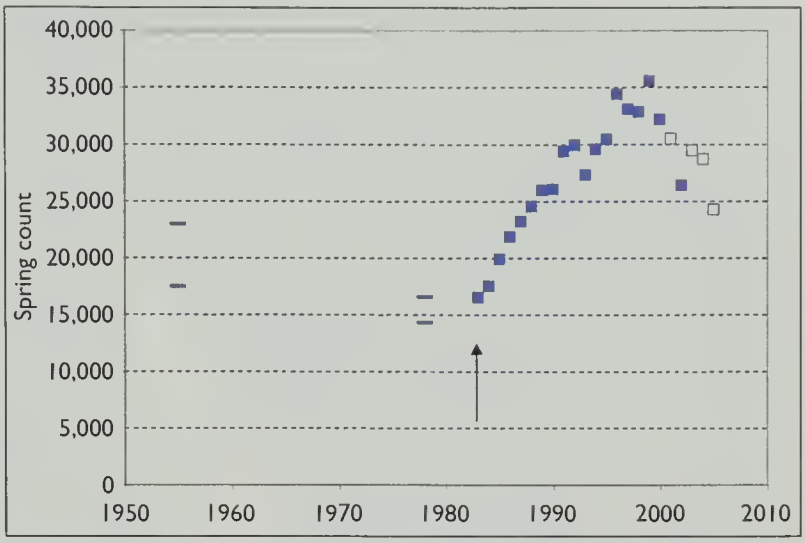

Fig. 1. Changes in estimated world population size of the Greenland White-fronted Goose *Anser albifrons flavirostris* since the population estimates of Ruttledge & Ogilvie (1979; shown here as upper and lower estimates for the 1950s and 1970s). These are based on co-ordinated spring (late March/early April) counts undertaken at all known regular localities since spring 1983. The arrow indicates the point at which the population was protected from winter hunting. Note that the missing value for 2001 (due to access restrictions during the foot-and-mouth epidemic) was estimated from a regression model predicting spring numbers from autumn counts (which explained 97% of the variance in the years 1982–2000). Missing values for 2003–2005 are estimated (because of uncollated counts from the rest of Ireland) on the basis of a regression model using total British and Wexford counts in other years (which explained 99% of the variance in the relationship between 1983 and 2000).

In 1999, the recovery of the Greenland White-fronted Goose represented a conservation success story. The small, geographically restricted population had declined between the 1950s and 1970s (from 17,500–23,000 to 14,300–16,600 birds; Ruttledge & Ogilvie 1979; fig. 1), which led to protective legislation in 1982 to protect the bird from hunting on the wintering grounds (almost exclusively in Britain & Ireland; Stroud 1992). The 1980s were also a period of extensive site-safeguarding for the population, including the designation of breeding areas in west Greenland as Ramsar sites, thought to safeguard one fifth of all summering birds (Stroud 1992). Local management agreements covering several of the wintering areas were negotiated and wintering sites (especially night-time roosts) were designated as Ramsar sites and Special Protection Areas (under the EU Birds Directive, 1979) in Britain & Ireland (protecting the habitat of 59% of the British total, 28% of the whole population). The combination of hunting restrictions and site protection enabled the world population to increase from 16,500 in 1982/83 to 35,600 in 1999/2000 (fig. 1).

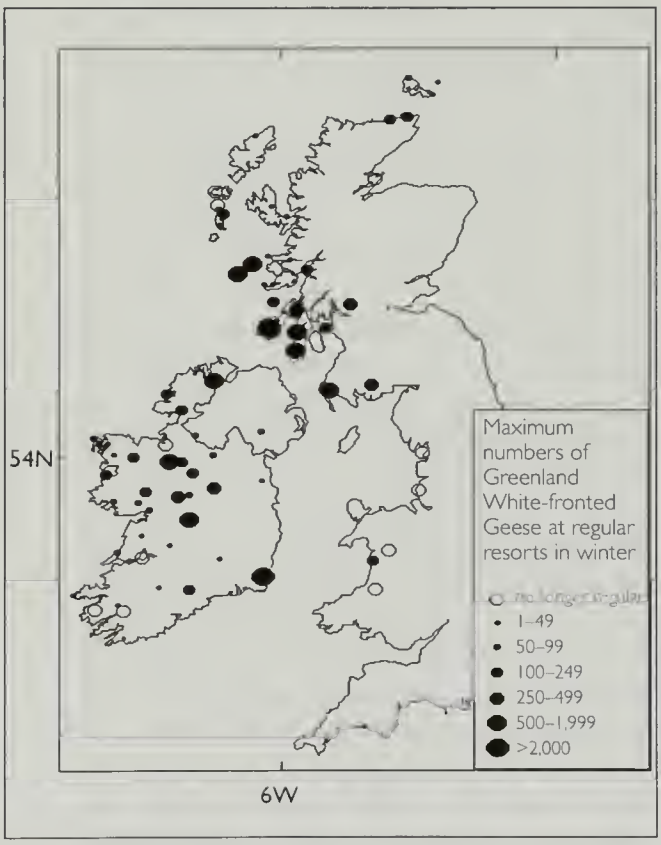

Fig. 2. Map showing the current wintering distribution of the Greenland White-fronted Goose *Anser albifrons flavirostris* in Britain & Ireland. Open symbols indicate former regular wintering sites abandoned since 1982.

A. J. Walsh

115. Greenland White-fronted Geese *Anser albifrons flavirostris* at Wexford North Slob, Ireland.

Management of hunting

The removal of winter hunting mortality was the key factor in the Greenland White-front population recovery in the 1980s and 1990s. Co-ordinated counts throughout the winter range (see fig. 2) were not available prior to 1982, when the network covering all known wintering sites was first established in Britain by the Greenland White-fronted Goose Study (GWGS; Stroud 1984) and in Ireland by the National Parks and Wildlife Service (supported by the RSPB in Northern Ireland). Subsequent counts showed increases at the two numerically most important wintering sites: Wexford Slobs in southeast Ireland and Islay in the Inner Hebrides (fig. 3). These sites, for which earlier counts also exist, have together supported approximately two-thirds of the global wintering population since 1982/83. At Wexford Slobs, retrospective analysis showed that the crude annual adult survival rate (based on census data and annual age-ratio sampling in the flocks) was negatively correlated with the size of the local Wexford winter hunting bag, indicating that the hunting kill was fully additive (see below; Fox 2003). This is important, because if restrictions on hunting are to be used as a management tool, we need to understand whether the hunting kill adds to annual mortality ('additive mortality'), or whether it is merely 'compensatory', in the sense that the same number of birds as those shot would have died that year anyway from some other cause, perhaps some density-dependent effect (see Newton 1998, and below). The indications from the Wexford data were, however, that the kill was not removing a harvestable surplus in the population, but rather adding to natural mortality.

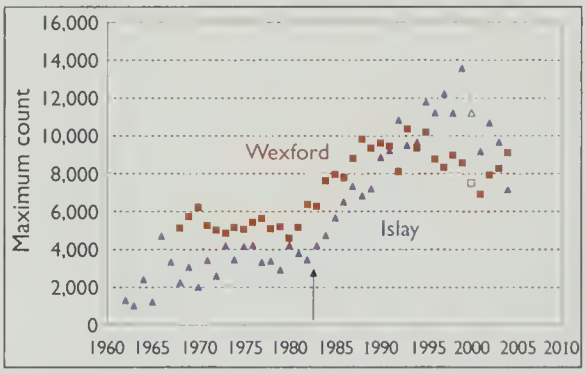

Fig. 3. Changes in maximum counts of Greenland White-fronted Geese *Anser albifrons flavirostris* at Wexford Slobs (southeast Ireland, solid squares) and Islay (Inner Hebrides, solid triangles) since regular counts began (data courtesy Parks and Wildlife Service Ireland and NCC, SNH and Dr Malcolm Ogilvie, respectively). Data for spring 2001, missing owing to foot-and-mouth disease, have been substituted with inferred values based on the regression models of previous autumn counts for both sites. The arrow indicates the point at which the population was protected from hunting on the wintering grounds.

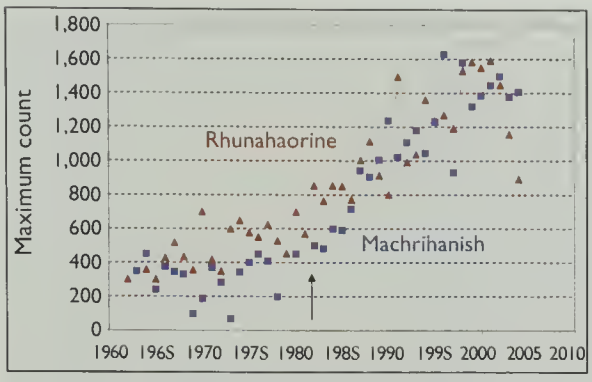

Fig. 4. Changes in maximum counts of Greenland White-fronted Geese *Anser albifrons flavirostris* in the two major flocks on Kintyre (southwest Scotland) since regular counts began. Flocks are at Rhunahaorine (solid triangles) and Machrihanish (solid squares). The arrow indicates the point at which the population was protected from hunting on the wintering grounds.

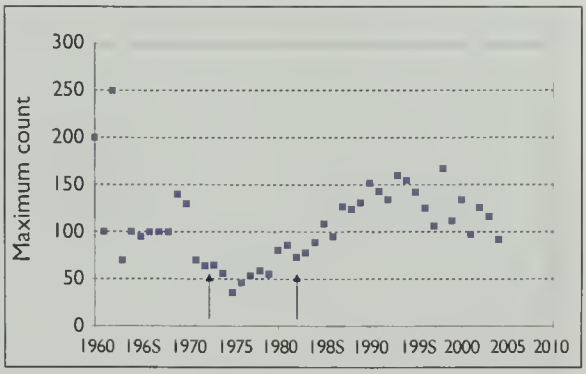

Fig. 5. Changes in maximum counts of Greenland White-fronted Geese *Anser albifrons flavirostris* on the Dyfi Estuary (mid Wales) since regular counts began. The left-hand arrow indicates the point in 1972 at which the population was protected from hunting by a local voluntary ban instigated by the local shooting club; this ban continues to the present day. The right-hand arrow indicates the point at which the population was protected from hunting on the Scottish and Irish wintering grounds.

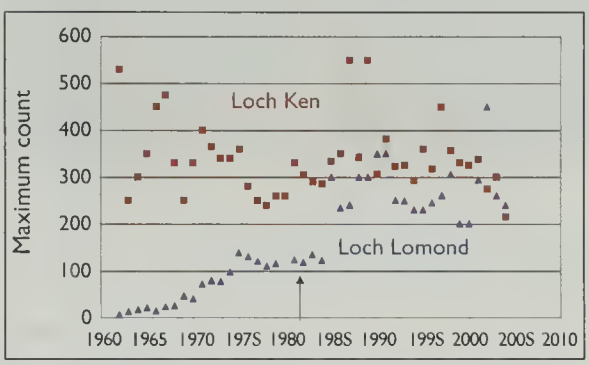

Fig. 6. Changes in maximum counts of Greenland White-fronted Geese *Anser albifrons flavirostris* at two sites in southwest Scotland – Loch Ken (squares) and Loch Lomond (triangles) – since regular counts began. The arrow indicates the point at which the population was protected from hunting on the wintering grounds.

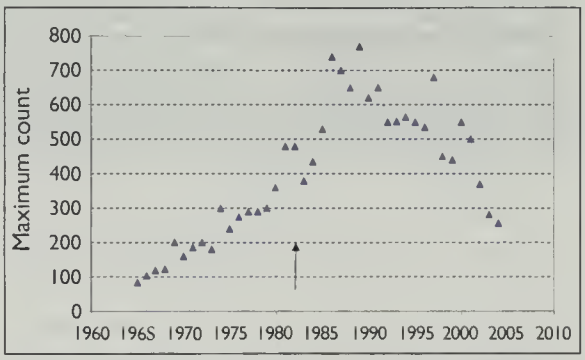

Fig. 7. Changes in maximum counts of Greenland White-fronted Geese *Anser albifrons flavirostris* at Stranraer (southwest Scotland) since regular counts began. The arrow indicates the point at which the population was protected from hunting on the wintering grounds.

It would have been tempting to conclude that here was a population which had been limited by hunting below a theoretical potential population threshold. Released from the limitation of winter shooting mortality, the population could expand to a level where overall numbers were limited by some other mechanism. However, this does not explain the changes in abundance at other wintering sites. At some key sites, Greenland White-fronts were counted every year prior to the start of co-ordinated winter counts in 1982/83. From these data, we know that numbers at some sites (Wexford Slobs, Islay and two flocks on Kintyre, at Machrihanish and Rhunahaorine; figs. 3 & 4) showed no clear trends in the years prior to 1982/83 but increased following the changes in hunting legislation (Fox *et al.* 1998b). Birds at the Dyfi Estuary, in mid Wales, had shown longer-term declines since the 1950s; this flock had been the subject of a local voluntary shooting ban since 1972 and so had shown an earlier recovery after the removal of local hunting pressure (fig. 5). These findings appeared to support the hypothesis that hunting mortality kept numbers below their potential. However, two flocks using protected lochs in southwest Scotland (Loch Ken, SSSI and part RSPB reserve, and Loch Lomond, SSSI and part National Nature Reserve; fig. 6) showed either an increase up to 1982 followed by no significant trend after the hunting ban was introduced (Loch Lomond) or no significant trend either before or after 1982/83 (Loch Ken). Furthermore, in southwest Scotland, the wintering flock at Stranraer showed a significant increase before *and* after 1982, but the rate of increase declined after protection; moreover,

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116. A typical first-winter family party of Greenland White-fronted Geese *Anser albifrons flavirostris* gathering for a drinking bout at Wexford North Slob, Ireland. Note the more conspicuous white facial 'frons' and black belly-bars of the two adult parent birds to either side, compared with the more restricted frons and lack of pronounced belly-barring on the five first-winter birds in the centre of the group.

as at Wexford Slobs, numbers at Stranraer apparently started to decline from as early as the late 1980s (fig. 7). Clearly, factors other than hunting mortality were affecting winter population levels at a local scale, although at those sites where shooting pressure was heaviest (Wexford, Islay and Kintyre), the hunting moratorium had an immediate effect on local numbers.

Population growth in the 1980s–90s and variation among sites

We are now confident that Greenland White-fronted Geese wintered regularly at some 80 sites in Britain & Ireland in the early 1980s (fig. 2). However, even during the period of increase (at an average rate of c. 5% per annum for the population as a whole; Fox *et al.* 1998b), numbers at different sites showed different trends. At the peak period of overall increase, in the mid 1990s, 20 sites showed a significant rise in wintering numbers after protection, 35 showed no significant trend, 18 showed a significant decrease, and flocks at seven sites had disappeared since 1982 (Fox *et al.* 1998b). At that time, local factors seemed to affect the propensity of a wintering flock to increase or decrease. Studies in Ireland revealed that flocks experiencing low disturbance from human activities (e.g. agriculture or recreation) and with many alternative feeding areas generally showed higher rates of increase than those using a restricted number of sites where disturbance rates were high (Norriss & Wilson 1988, 1993). However, because individuals show high levels of site loyalty (Wilson *et al.* 1991), there is limited potential for recolonisation of deserted sites, or for large-scale immigration from other areas to supplement declining flocks. Only two apparently new sites have been 'colonised' as winter resorts by Greenland White-fronted Geese since 1982 (Sullom Voe, Shetland, and Stabannan, Co. Louth); interestingly, neither of these flocks has persisted after the late 1990s. There are also consistent records of small numbers wintering in Rogaland, southern Norway. This is therefore a classic metapopulation, where wintering numbers at various sites show different trends in abundance that contribute to an overall pattern in global numbers.

Because of the long-established conservation interest associated with this population, there are extensive data from ringing recoveries, resightings of marked individuals and satellite telemetry. Marking schemes using leg rings or

neck-collars show that very few individuals are seen at more than one wintering site within a season, and most examples involve geese reported briefly at staging points within the non-breeding range en route to their main winter quarters (Warren *et al.* 1992b). The same site-loyalty generally holds between winters, and site-interchange of marked Greenland White-fronted Geese is relatively unusual; most adult birds return to the same fields on the same farms, winter after winter. Nonetheless, 14% of all marked birds seen in consecutive winters changed site, mostly after (re-)pairing, when one member of a newly formed pair-bond is likely to have to change wintering site (Warren *et al.* 1992b). Results show that birds in the south of the wintering range tend to breed in the north of the breeding range, while those wintering in the north (Scotland) nest in the southern part of west Greenland – a classic 'leapfrog' migration pattern (Salomonsen 1950; Boyd 1958; Fox *et al.* 1983; Kampp *et al.* 1988; Fox *et al.* 2003). Non-breeders caught together during moult in Greenland disperse throughout the wintering grounds, so birds associating in winter may not constitute stable groups maintained at other stages of the annual cycle. Family relationships are exceptionally strong in the Greenland White-fronted Goose, however, unusually so among wild geese (Warren *et al.* 1993 and unpubl. data). Family bonds persist during spring and autumn migration in Iceland (Fox *et al.* 2002) and on the breeding grounds, where non-breeding associates assist with vigilance and nest defence against predators (Stroud 1981; Fox *et al.* 1995).

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117. Kentra Moss in Argyll, an outstanding example of an oceanic raised bog system showing the pronounced pool-and-hummock structure so attractive to feeding Greenland White-fronted Geese *Anser albifrons flavirostris*. The birds traditionally forage on the below-ground parts of Common Cottongrass *Eriophorum angustifolium* and White Beak-sedge *Rhynchaspora alba*, which thrive in the wet *Sphagnum* moss-filled hollows of such landscapes.

During the mid 1990s, the conservation status of the Greenland White-fronted Goose seemed favourable. The flyway conservation management plan (Stroud 1992), drafted with the support of the National Parks and Wildlife Service of the Republic of Ireland and Wetlands International (although never ratified by the Range States), had made maintenance of range and status throughout the wintering range a priority objective. Even during this period of most rapid population expansion, however, the decline and disappearance of some local flocks hinted at challenges to meeting such targets (Fox *et al.* 1998b).

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118. Greenland White-fronted Geese *Anser albifrons flavirostris* foraging on Kentra Moss, Argyll. Bog-feeding geese can remain well hidden and are often extremely difficult to find in this habitat.

The long-term decline in breeding success

At the same time as the global population of the Greenland White-front was expanding, a more subtle change was becoming apparent, one which was to affect all wintering flocks, most conspicuously at the major aggregations at Wexford Slobs and on Islay. At Wexford, numbers peaked in the early 1990s and began to decline thereafter, although numbers have stabilised and shown some recovery since 2000 (fig. 3). The local causes were not immediately apparent, as the site was managed sympathetically for wintering geese. Although there was no significant trend in the proportion of young recorded in sample counts of autumn flocks prior to the hunting ban, a long-term decline in this measure gradually became apparent after 1982 (fig. 8). Over the same period, resightings of marked individuals enabled age- and year-specific survival rates to be estimated using capture-recapture techniques (Burnham 1993) and the multi-stage models of Hestbeck *et al.* (1991). These analyses showed that there had been no significant change in annual adult survival or emigration from Wexford over the period (Fox 2003). In relatively long-lived birds such as geese, overall population abundance is more sensitive to small changes in annual survival than it is to relatively larger changes in reproductive success (Tombre *et al.* 1997; Pettifor *et al.* 1999). The discovery that the decline in abundance at Wexford was the result of a long-term decrease in the production of young, and not of falling survival, was unexpected.

The proportion of each year-class of goslings captured and marked in their first winter at Wexford and which survived to breed *at all* during their lifetime has fallen since marking began, from c. 15% in 1983 to less than 5% in the early 1990s (Fox 2003). This is an extraordinary statistic (assuming that marked birds are representative of the population as a whole), which suggests that, even in the population's heyday, 85% of Wexford Greenland White-fronted Geese *never* bred successfully during their lifetime. This highlights the important distinction between 'actual' and 'effective' population size (the latter being the number of birds that do in fact contribute offspring to the next generation). The question of whether marked birds are truly representative of the population as a whole is extremely difficult to answer, but there are indications that collared birds had larger brood sizes and greater reproductive success than unmarked birds, probably because baiting for cannon-net catches attracted behaviourally dominant individuals and family groups (i.e. already successful breeders; S. M. Warren unpubl.). Among the same sample of neck-collared cohorts, there was also an increase in the mean age of first breeding, from 3.5 years among goslings hatched before 1988 to c. 5 years in subsequent years (Fox 2003). Because the species is so long-lived and shows delayed recruitment, it is not possible to compile these statistics on more recent cohorts. Nevertheless, following the hunting ban, geese were breeding successfully progressively later, and as time went on, fewer and fewer individuals were breeding successfully at all in their lifetime. It thus appears that some mechanism was, and apparently still is, operating that increasingly precludes young geese from becoming successful breeders.

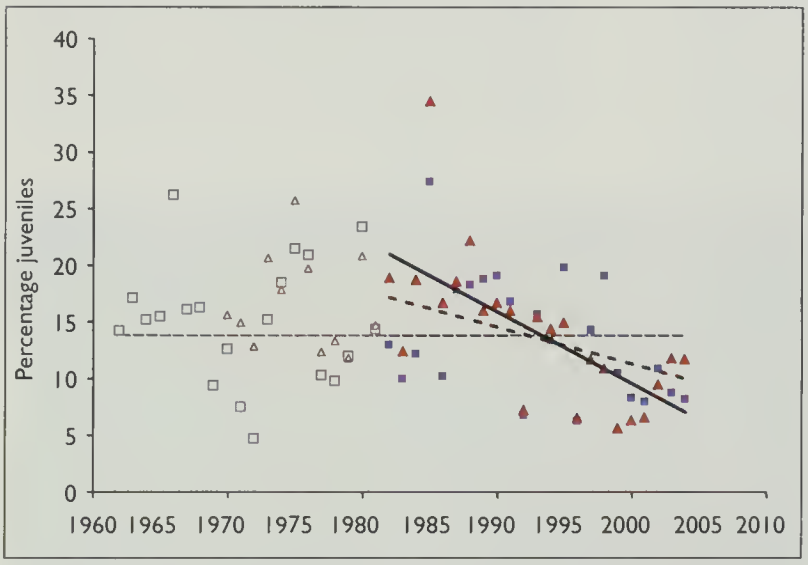

Fig. 8. Long-term changes in the proportions of young Greenland White-fronted Geese *Anser albifrons flavirostris* sampled in winter from Wexford Slobs and Islay (data courtesy Parks and Wildlife Service Ireland and GWGS/Dr Malcolm Ogilvie, respectively). Open symbols indicate values prior to protection from winter hunting in Scotland and Ireland, solid symbols post-protection. Squares represent data from Wexford, triangles those from Islay. The horizontal dotted line indicates the overall mean value; the solid line the significant decline at Wexford since protection; and the sloping dotted line the regression model for Islay, which is almost statistically significant.

Clearly, a decline in the proportion of birds breeding successfully may not be a problem in an expanding population, espe-

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119. Many Scottish Hebridean Greenland White-fronted Goose *Anser albifrons flavirostris* flocks are associated with low-intensity pastoral agriculture, which represents such an important landscape for a variety of nature conservation interests. This photograph shows a typical flock exploiting rushy, unimproved pastures near Loch Assapol on Mull.

cially while, in absolute terms, more birds are reproducing. Ultimately, however, if the absolute production of young in any one year at a site fails to balance the losses from (i) death and (ii) the difference between emigration and immigration, local numbers will decline. This was the case at Wexford after the early 1990s (but perhaps not since 2000; fig. 3). By the late 1990s, the same pattern was becoming evident at other sites as well, with a gradual slowing in the rate of increase among many winter flocks. Although not immediately obvious, the production of young by birds wintering on Islay has also declined, until overall numbers began to fall there too in the early part of the twenty-first century. This phenomenon now seems widespread among the wintering flocks and, as a result, the population as a whole is now in decline.

So what are the causes of this most recent downturn in fortunes, and, in particular, why is breeding success declining? Greenland White-fronted Geese are protected from hunting on the wintering grounds and benefit from the

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120. Many wintering flocks of Greenland White-fronted Geese *Anser albifrons flavirostris* are still heavily reliant upon natural wetland and seasonally inundated areas, especially as overnight roost sites. The Loons RSPB reserve, Orkney, is one such site which also remains an important feeding area, despite use of adjacent farmland for alternative feeding areas.

provision of wildfowl reserves, positive management and site safeguard, particularly of roosts. Large areas of the breeding grounds are protected and the spring shoot was closed in Greenland in the 1980s (Stroud 1992). It is likely that several varied, interacting and often conflicting factors could potentially contribute to the lowering of reproductive success (and ultimately numbers) of the geese, and these are considered below.

Potential causes for the decline in breeding success

Density dependence

Perhaps the most plausible explanation is that the increase in overall numbers of Greenland White-fronted Geese since the early 1980s has inhibited reproduction in some way. Perhaps higher densities on the breeding areas filled the available capacity of the environment to support their reproductive output at previous levels. Food limitation might be one obvious constraint (see Box 1), such that competition among individuals (i.e. intraspecific competition) now limits the number of breeding pairs and/or their capacity to produce and raise young.

Trinder *et al.* (2005) showed some evidence for density-dependent regulation on Islay but, using winter numbers as a proxy measure of density, there was no statistically significant relationship between the numbers of geese in any one year and the percentage of young returning the next since hunting protection was conferred, either at Wexford Slobs or on Islay. The same analysis showed no significant effect using global population size (the estimated total population) versus the production of young by birds wintering on Islay, although there was a significant result for the Wexford population. These conflicting results do not prove whether local density-dependent effects exist or not, but this uncertainty strongly suggests that the increase in the overall abundance of the population is not the only reason that reproductive success has fallen. Since 2002, numbers of the population as a whole have continued to fall sharply; this should mean that density-dependent regulation would be relaxed and breeding success would begin to recover. Yet there is no evidence for such a recovery; on the contrary, the percentage of young returning to the winter quarters has continued to fall. Consequently, while density is likely to play some role in the regulation of breeding, it seems unlikely to be the whole explanation.

Box 1. 'Capital' versus 'income' breeders

Recent studies suggest that Arctic-nesting geese adopt a mixed 'capital/income' breeding strategy. They produce eggs that are derived from nutrients obtained from both food ingested on the breeding areas ('income') and resources they have brought with them, accumulated at least on the staging areas and possibly from the winter quarters ('capital'). By measuring the ratio of different stable isotopes of specific elements present in the eggs, it is possible to show from what source the female obtained vital nutrients that she later invested in formation of her clutch. This is because of distinctive geographical patterns in stable isotope ratios or those present in specific food items consumed at key stages in the annual cycle (Gauthier *et al.* 2003). We also know that female geese undergo rapid follicle development (when many of the key nutrient stores are laid down in the developing egg follicles) well in advance of laying the first egg. Based on dissection of shot birds and the satellite-tracking of individual geese, we know that many geese start this process on staging areas, well before arrival in the breeding areas. In the case of Svalbard Pink-footed Geese *Anser brachyrhynchus*, this occurs on Norwegian staging areas before their final ocean crossing to nesting areas in Svalbard (Glahder *et al.* in press). This has also been demonstrated for Greenland White-fronted Geese, since a female was recently shot in spring on migration in east Greenland (en route to the nesting grounds) with well-developed follicles in the ovarian ducts (J. Nyeland *in litt.*). This female had thus already invested nutrients in the egg bodies developing in the oviducts as a basis for her clutch by using the nutrients derived during her period of staging in Iceland, potentially supplemented with resources brought from the wintering quarters. Food limitation affecting reproductive success may therefore not be confined to the breeding areas, but could potentially occur at any stage during the late winter or on spring staging areas.

Feeding ecology

Gill *et al.* (2001) showed that Black-tailed Godwits *Limosa limosa* on the wintering grounds have 'filled up' the best habitat first. This means that, with further increases in the population, birds are displaced to poorer quality habitat, which is associated with reduced survival and reproductive success. One conspicuous feature of winter habitat use of Greenland White-fronted Geese in recent years has been the declining use of their traditional winter domain – peatland and bog habitat. Their use of this habitat may well explain the Greenland White-front's restricted distribution since, in former times, they were confined to oceanic patterned (quaking) mires along the western fringe of Europe, where traditional food items were abundant. These were predominantly the lower stems of the Common Cottongrass *Eriophorum angustifolium* and overwintering bulbils of White Beak-sedge *Rhynchospora alba* (Ruttledge 1929; Cadman 1953, 1956, 1957; Pollard & Walters-Davies 1968; Fox *et al.* 1990). These food items are extracted from below ground level, in bog pools and floating *Sphagnum* moss lawns. The high rainfall necessary for the formation of such mires and open pool systems is confined to Britain, Ireland, Iceland and Scandinavia, but north of Britain & Ireland these ecosystems are frozen in winter, precluding extraction of below-ground plant parts, and are thus effectively denied to the geese as winter foraging habitat. Consequently, prior to human agriculture, Greenland White-fronts were probably confined to natural wetlands in Ireland and western Britain in winter.

Since the early twentieth century, Greenland White-fronted Geese have foraged increasingly on agricultural habitats (Ruttledge & Ogilvie 1979; Mayes 1991; Fox *et al.* 2005). In the 1950s, almost half the known wintering flocks used peatlands (often as daytime feeding areas), but less than 20% do so now, and mostly as nighttime roosts rather than as primary feeding sites. Increasingly, the population exploits spilled grain in autumn and early winter and moves to intensively managed, reseeded grassland for most of the winter, supplemented (where available) by root crops in midwinter, when grass growth rate slows. Many flocks still exploit rushy pasture and low-intensity grassland, but the trend has increasingly been to shift to more intensively managed, high-energy, agricultural habitats and away from natural wetlands and low-intensity farmland.

The 'junk food' hypothesis therefore states that Greenland White-fronted Geese have been able to increase their rate of food intake and

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121. Greenland White-fronted Geese *Anser albifrons flavirostris* at Ardnaclach, Lorn, Argyll. In Lorn, the geese use a network of small improved and semi-improved fields around Loch Creran, flying between them when disturbed.

exploit high-energy food-plants by shifting to farmland habitats on the winter quarters; but that these benefits are offset by some cost to body condition which has influenced breeding success. It might, for example, reflect a lack of critical nutrients (rather than energy), which are less abundant in agricultural crops and grasses than in more natural food-plants (Reed 1976). If this was the case, we would expect that flocks exploiting natural peatland habitats in winter would produce more young than those on farmland. In fact, the opposite is the case – flocks wintering on intensive farmland produced, on average, 10% more young each year than those feeding almost exclusively on peatland habitats (Fox *et al.* 2005). Furthermore, since flocks using farmland were far larger than those using peatlands, they produced substantially more young in absolute terms. As a result, flocks on the best agricultural land in the 1990s (such as those on Islay and Kintyre) were those showing the most rapid increases and flocks on less intensive agricultural areas were declining or stable (Fox *et al.* 2005). In contrast, even during the period of increase in the 1980s and 1990s, the small flocks associated with bogland habitats in Ireland were those showing declines. Consequently, birds exploiting the artificial habitats of our farmland landscape comprise an increasing proportion of the total population, now far exceeding those using natural habitats.

The consequences of these patterns are not clear, especially since we know that birds wintering together do not necessarily associate on the breeding areas. It may be that birds leaving the winter quarters in good condition after feeding on rich agricultural habitats are more likely to select high-quality staging areas in Iceland and Greenland. It may also be the case that their good condition gives them a competitive advantage in agonistic interactions at spring staging areas, where good foraging habitat is known to be highly limited in time and space (e.g. on arrival in Greenland; Glahder 1999; Glahder *et al.* 2002). In contrast, a goose exploiting low-quality winter habitat, departing in poor condition in spring, will probably fail to displace fitter individuals from the best spring-foraging opportunities en route to breeding areas. Such an individual is therefore likely to perform less well during the breeding period than a goose that fed well during the winter. In this way, conditions experienced on the wintering grounds may further affect foraging

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122. Increasingly, Greenland White-fronted Geese *Anser albifrons flavirostris* have adapted to more intensively managed grasslands throughout their winter range. This example is from Big Isle, Lough Swilly in Co. Donegal, the fields in this photo holding 600 feeding Greenland White-fronts when the picture was taken, in February 1995.

opportunities of an individual throughout the annual cycle and hence affect its overall fitness, in terms of reproductive potential and perhaps even survival.

A similar shift in feeding habitats has been witnessed in Iceland, where Greenland White-fronts stage on spring and autumn migration (Francis & Fox 1987; Fox *et al.* 1999, 2003). Here, geese traditionally fed on wetland habitats during both migration periods. They exploited the lower stem-bases of Common Cottongrass and the morphologically similar Lyngby's Sedge *Carex lyngbyei* that grows in dense stands in base-rich lowland fen habitats, including old wet sedge hay meadows (Francis & Fox 1987). In recent years, however, the geese have switched increasingly to grazing on drained dry grassland hayfields. These are either dominated by the native grass species Tufted Hair-grass *Deschampsia cespitosa* and Smooth Meadow-grass *Poa pratensis*, or have been reseeded with an introduced Norwegian-bred strain of Timothy *Phleum pratense* (Fox *et al.* 1998a; Kristiansen *et al.* 1998, 2000). Greater densities of geese occur on reseeded *Phleum* hayfields, where they can maintain higher intake rates of better-quality food than on fields with native grasses (Fox 2003; Nyegaard *et al.* 2001) and it seems likely that all hayfields offer geese more profitable feeding opportunities than natural wetlands. It is not entirely clear over what period this change in use of staging habitats occurred, but land-use changes have been most rapid since the 1960s. Because it is difficult to separate these effects from other changes throughout the annual cycle, it is impossible to comprehend fully the consequences of this major shift in habitat use. Nonetheless, the provision of readily available, high-quality, grassland forage, where geese can sustain much higher intake rates of energy than from natural wetlands, is unlikely to have been the major cause of recent declines in reproductive success.

Effects of global climate change on the breeding areas

Zöckler & Lysenko (2000) showed that there was a correlation between mean June temperatures in west Greenland and the production of young, as sampled on the wintering grounds at Wexford Slobs in the following autumn, raising the possibility that a cooling climate in west Greenland has reduced the reproductive potential of the geese. Global climate change models have been predicting a cooling of the climate in the northeast Canadian Arctic, Baffin Island and parts of northwest Greenland and there is evidence of this from Greenland (Rigor *et al.* 2000). However, during 1974–2002, there had been no significant trend in the May and June temperatures from Kangerlussuaq (66°59'N 50°37'W, in central west Greenland) or Ilulissat

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123. Traditionally, Greenland White-fronted Geese *Anser albifrons flavirostris* fed on Common Cottongrass *Eriophorum angustifolium* and Lyngby's Sedge *Carex lyngbyei* during their staging period in Iceland. The sedge resembles Common Cottongrass in morphology and the below-ground low-stem storage organs are highly nutritious. The plant occurs nowhere in Europe outside Iceland, but can occur in great abundance in dense stands, as seen here at Hvanneyri, in western Iceland.

(69°13'N 51°05'W, farther north in the breeding range), where Scottish and Irish birds, respectively, are thought to summer. Moreover, attempts to model four different reproduction measures (overall percentage of young, number of families, proportion of potential breeding pairs returning with young and production of young per potential breeding female) using average May and June temperatures for a longer time series from Kangerlussuaq and Ilulissat were largely unsuccessful. Of all the models, only those predicting the overall percentage of young and the number of families on Islay, based on mean temperatures in Kangerlussuaq in the preceding June, produced significant results. It would, therefore, seem that although summer temperatures on the breeding grounds do have some effect on the success of birds attempting to reproduce under some circumstances, there is no evidence for any strong wider effect of climate as an explanation for the overall decline in reproductive output.

Canada Geese on the breeding areas

One poorly studied consequence of recent expansions (and consequent temporal and spatial overlap) in the number and distribution of northern-nesting geese is the degree to which interspecific interactions, such as competition for food, may occur. After all, all northern geese are essentially herbivores with the same body plan (Box 2).

Where these interactions are unequal in nature, effects on local goose distribution and abundance may have an impact at the population level, because competition from a dominant species may affect access to the best feeding opportunities, reduce body condition

Box 2. Goose feeding ecology, the benefits of modern agriculture and the potential for competition

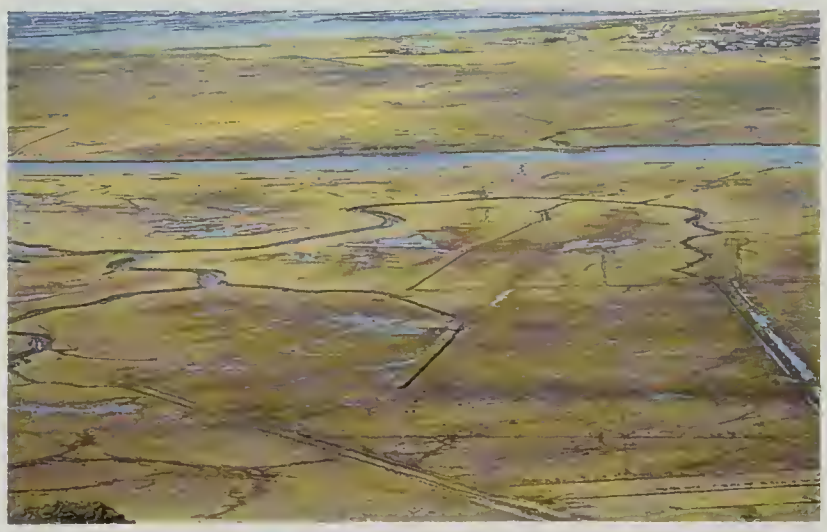
In order to minimise their weight in flight, geese have evolved a relatively simple digestive system. Unlike ruminants, they have no heavy rumen and digestive apparatus to assist with digestion of the more fibrous element of their food (sheep do not fly for good reasons!). Instead, geese rely upon a rapid and continuous throughput of plant food, which is digested less efficiently. Wild geese therefore need to maintain a sustained throughput of relatively low-quality food, from which they can rapidly extract the available soluble fraction. To do this, they typically feed by selecting the best-quality plant parts. These include storage organs where plants have accumulated protein, fat and carbohydrate for future growth (such as seeds, tubers and rhizomes) or, as in the case of grazing, the growing tips of young leaves, which typically are high in protein but low in fibre compared with most plant material. In the relatively short season and harsh conditions of the Arctic, these sources of food may be highly limited, so the likelihood for competition is potentially greater.

In contrast to most birds associated with agricultural habitats in the last 30 years, geese have increased in numbers spectacularly in the northern hemisphere. In response to the spilled grain of the autumn harvest, the plethora of root crops and especially increasing areas of farmland devoted to the production of highly digestible, specially bred, protein-rich grasses, most geese have flourished and their numbers have expanded through enhanced annual survival and breeding success. Because farmland has largely been claimed from formerly afforested areas, it seems fair to assume that there are now very many more geese on the planet than in recent millennia. While such a surfeit of food may be sufficient to avoid any limitation of numbers in the winter quarters, their Arctic breeding grounds have not changed substantially in either area or quality. As numbers of different populations have increased, so have their breeding ranges. Several species have shown dramatic extensions to their nesting grounds; in the case of the Barnacle Goose *Branta leucopsis* (formerly restricted to the Russian high Arctic), this has included colonisation of islands in the Baltic Sea, latterly spreading to nest in The Netherlands in areas where they formerly wintered only. Species that were formerly allopatric, i.e. nesting in separate geographical areas, are increasingly showing sympatry as their breeding ranges overlap. Where geese feed on completely different food items and show no aggression towards each other, this meeting is likely to have no effect on the population dynamics of either species. But where there are limits to the amount of food and the two species first encountering each other select for similar dietary items, the potential for competition for these food resources is high and interactions are likely to occur.

and ultimately reduce breeding success or survival in the weaker species. This may occur where the subordinate species loses access to favoured feeding areas because of the aggressive nature (or numerical superiority) of the dominant species. There are certainly strong indications of behavioural and other interactions between Greenland White-fronted Geese and Greater Canada Geese *Branta canadensis*, which have colonised west Greenland in recent years. Almost all populations of Canada Geese in North America have shown increases in numbers across the continent, largely as a result of unlimited winter-feeding opportunities created by intensive agriculture. The population of Greater Canada Geese *B. c. interior* nesting in northern Quebec and wintering in the eastern USA has also benefited from several years of partial protection from hunting there in the 1990s. This population has spread to west Greenland since the 1980s (confirmed by satellite telemetry, ringing recoveries and resightings, and DNA analysis; Fox *et al.* 1996; Kristiansen *et al.* 1999; Scribner *et al.* 2003). During wing moult, Greenland White-fronted Geese were observed to feed more on low-quality moss species and to show lower food-intake rates where they mixed with Canada Geese than where they foraged alone. Canada Geese were also seen to be behaviourally dominant over Greenland White-fronts in all observed encounters, regardless of relative abundance (Kristiansen & Jarrett 2002).

Since the late 1980s, in one regularly surveyed area, Canada Geese have displaced the endemic Greenland White-fronted Goose from territories where it was formerly the only goose species present (Kristiansen & Jarrett 2002). Aerial surveys of extensive areas showed that, despite favouring the same geographic region, the two species were less likely to occur together than by chance, suggesting some segregation at a local scale (Malecki *et al.* 2000). Repeat surveys of breeding areas in 2003 confirmed the continuing and extensive loss of former breeding territory to the colonist species (J. Madsen unpubl.), so a major resurvey was undertaken in June 2005. Although the final results of that survey have yet to be analysed, first indications suggest that the overall density of nesting Canada Goose pairs did not change between 1999 and 2005, but the number of breeding Greenland White-fronts was one-third of those recorded in 1999. What was striking, however, was the six-fold increase in overall numbers of Canada Geese on the survey between 1999 and 2005 compared with a halving in the overall abundance of Greenland White-fronts. Changes in the numbers of breeding White-front pairs detected on the breeding areas corresponded well to the relative changes in the numbers of families returning to the winter quarters. Furthermore, the reduction in overall numbers between the aerial surveys mirrored the global population trend in that time; hence we have some confidence that the survey results reflect what is happening on the ground.

Based on the survey areas sampled in 2005, the Greenland White-fronted Goose is still twice as abundant as the Canada Goose in west Greenland. Furthermore, the six-fold increase in Canada Geese and the halving of Greenland White-front numbers remains only a correlation. Just because Canada Geese have increased while White-fronts have declined does not provide direct evidence for cause and effect. However, the distributions of both species differed greatly in the two surveys. Both species were more common in the south of the range in 1999, when the spring thaw was delayed, compared with an 'average' season, but both were



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124. Many Icelandic wetlands were drained in the twentieth century, resulting in lowering of the water table and loss of habitat in the southern and western lowlands of Iceland used by Greenland White-fronted Geese *Anser albifrons flavirostris* during spring and autumn. Here, drainage of wetlands can be seen near Hvanneyri, in western Iceland.

more common in the north of the same surveyed range in 2005, when snow cover was more typical. This suggests that both species tend to settle in response to snow patterns, but favour the same geographical range despite large differences between years in the spring thaw. Furthermore, in both years, there was strong evidence that, at the local level, the two species were segregated. Canadas and Greenland White-fronts occurred together along the transects flown less often than would be expected by chance. Hence, despite the general selection for the same geographical areas, the two species seemed to avoid each other at a local level. There does, therefore, seem to be some circumstantial evidence to suggest that the spectacular increase in Canada Geese in west Greenland may have been exerting some effect on the local distribution of Greenland White-fronts, which in turn may be affecting the reproductive output of the latter. More detailed field studies are needed throughout the summer so that we can understand more about interactions between the two species, although the probabilities of finding the two species in sympatry to study are becoming increasingly infrequent.

Conclusions

Finding answers to relatively simple questions regarding Greenland White-fronted Geese and their population change has proved difficult, in part because the potential causes for changes in their abundance are spread along a migration corridor from the northwest corner of Greenland to the southeast corner of Ireland. It is not possible to undertake a controlled laboratory experiment to establish simple cause and effect, so we need to rely on a combination of long-term observations and modelling, and must hope to unravel the potential causes by a process of elimination. The key element in understanding the processes that affect the population's conservation status has to be the long-term international co-operation invested in survey, monitoring and research. It is becoming increasingly important to obtain reliable basic demographic monitoring data (i.e. in addition to just head-counts of abundance) if we are to be effective in targeting scarce resources into conservation effort.

In the case of the Greenland White-fronted Goose, our knowledge of reproductive patterns, hunting bags and survival has enabled some assessment of the additive effect of hunting mortality that justifies manipulation of the kill as an effective management tool for this population. Modelling has identified falling reproductive success as the long-term cause of the decline in numbers, despite the fact that modelling also shows that a relatively long-lived bird such as this is more susceptible to changes in adult survival than to changes in breeding success. Individual marking shows that an increasing proportion of young birds are failing to reproduce, while those that do breed start later in life, adding to the overall downturn in abundance. In this way, we can be quite certain that the cause of the decline is falling reproductive success owing to fewer birds of breeding age reproducing successfully, even though we cannot precisely identify the factor(s) involved. There is no evidence to suggest an increase in nest predators on the breeding grounds. It does seem likely that greater numbers of White-fronts may have had a contributory (density-dependent) effect, just as lower June temperatures seem to have some effect on

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125. A family party of eight Greenland White-fronted Geese *Anser albifrons flavirostris* in flight. The collar bears the insignia P1H, and is borne by a gosling caught and marked at Hvanneyri, western Iceland, in October 2004; the bird is seen here on 15th October with its five unringed siblings and two parents, at Hvanneyri.

some birds. The true cause of the decline is yet to be established with certainty, yet perhaps the single most important factor, looking at the current evidence, is likely to be the negative interactions with Canada Geese which they increasingly encounter on the breeding grounds.

Management implications – just what can be done?

The apparent robustness of the Greenland White-fronted Goose to adapt to novel feeding opportunities presented by the rapid changes in modern agriculture has enabled it to adjust to major changes in extent and quality of its natural habitat since 1940. It may well be that human activities have modified and fragmented its traditional peatland wintering habitats to the extent that they no longer provide adequate energy and nutrients. There is, however, no doubt that those flocks that have shifted to modern agricultural landscapes have, since the early 1980s, produced more young than those which continue to winter on more traditional bogland habitats and low-intensity agriculture. It is ironic that changes to goose management in part of another continent – the eastern USA – have encouraged the expansion in numbers of Greater Canada Geese that seems to have led to that species' colonisation of west Greenland. This extension of range may now have affected the reproductive success and population size of a similar goose species wintering far away on the western fringe of Europe.

But what can be done to stabilise the population of Greenland White-fronted Geese and maintain the current distribution and abundance of this race? If the Canada Goose *is* the problem, there is little that we in Europe can do to modify the numbers of a population that is known to winter along the Atlantic coast of North America. In Greenland, the hunting laws are designed to protect newly colonising species, but the Greenland Home Rule Authority declared the Canada Goose a huntable species there in 2004. However, geese are generally not a favoured quarry in Greenland because their dispersed nature makes them extremely difficult to kill in any number. Their arrival in spring is one of the few periods when birds are highly concentrated, at early thawing spring staging areas (Glahder 1999; Glahder *et al.* 2002). This coincides with snow melt and the break-up of sea ice, however, making human movements away from settlements generally difficult, although areas accessible on foot may still be heavily exploited. During moult, when they are flightless, geese are extremely wary and resort to the safety of water in relatively small groups, where they are difficult to catch. In late summer, we know little about their distribution and abundance but Inuit hunters in inland west Greenland (where the geese occur in greatest numbers at this time) continue to target Caribou *Rangifer tarandus* and Arctic Char *Salvelinus alpinus*, as they have done for over a century (Müller 1906), which suggests that these are preferred or easier prey than geese.

Satellite telemetry and collar-marking studies show that Canada Geese from Greenland have a distinctive migration route and timing (Kristiansen *et al.* 1999; Schribner *et al.* 2003). In north and east North America, however, as soon as they mix with large numbers of birds that gather from breeding areas in Labrador, Newfoundland, northern Quebec and Baffin Island, there is nothing to distinguish them from geese of other breeding areas. Consequently, there seems no opportunity to target the hunt on Canada Geese from Greenland on non-breeding areas in North America to reduce numbers and potentially

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126. J5U, a collared Greenland White-fronted Goose *Anser albifrons flavirostris*, photographed in flight with its unringed mate at Wexford Slobs, Ireland.

alleviate pressure on White-fronts. Perhaps we should just hope that the two species find an eventual means of coexisting in west Greenland by avoiding foraging on the same food items in similar habitats, just as they do throughout vast areas of the central Canadian Arctic (e.g. Carriere *et al.* 1999).

Greenland White-fronts remain protected throughout the majority of the wintering grounds and more or less all internationally important sites enjoy some level of site safeguard or positive management, even if some have not yet been formally designated as Ramsar sites and/or SPAs. Bag returns suggest that few Greenland White-fronted Geese are shot in Greenland, and illegal shooting is thought to be extremely low. The population continues to be hunted in Iceland in the autumn, however, where at least 3,000 per annum have been shot in recent years. It is important to emphasise that the autumn hunt in Iceland was sustained for many years in the 1980s and 1990s when the population was maintaining a steady rate of annual increase in excess of 5%. At that time, such a kill was sustainable, in the sense that it was not enough to halt the increase in numbers (even though it undoubtedly restricted the rate of increase below its full potential). Unfortunately, there were no hunting statistics gathered during the 1980s and early 1990s, but since 1995 the Icelandic Wildlife Management Institute has collated annual bag records, which show an increase in numbers killed, from 2,947 in 1996 to 3,685 in 2001, the last year for which data have been published. Because of population declines over that period, the numbers shot represented 8% of the autumn flight in 1996, but this had risen to 12% by 2001. We can only guess at the trend in the kill since that time and its effect in the face of the continued decline in total population size. It is clear, however, that the kill in Iceland at the 2001 level was approaching the total annual mortality of earlier years and if this continues at the present rate, the inevitable decrease in annual survival will further exacerbate the rate of overall population decline. While the hunting kill in Iceland was not the cause of the Greenland White-front's long-term decline, there is no doubt that a moratorium on hunting there now would substantially reduce the rate of decline, since this level of hunting is demonstrably unsustainable under present conditions.

It is frustrating that the pioneering initiative to gather the Range States involved in the conservation of the Greenland White-fronted Goose at the Wexford workshop on 4th–6th March 1992 failed to result in the formal agreement of the draft plan (Stroud 1992). The adoption of such a plan would have secured agreement on alert limits and triggered action in response to the present declines at a far earlier stage than we have reached today. As it is, after many years of sustained conservation effort, we now see the population returning rapidly to pre-protection levels of the late 1970s, with little sign of responsive conservation actions despite the possibility to do so. On a more positive note, great strides have been made through the development of a national policy framework for goose management in Scotland (Finnie & Brankin 2005). Scottish Natural Heritage has recently (March 2006) launched its Species Framework Initiative, listing the Greenland White-fronted Goose as a priority population in Scotland, one requiring urgent direct management actions to increase its range and population size. SNH is inviting written responses to its consultation paper before 30th June 2006 to concentrate and co-ordinate actions (see http://www.snh.org.uk/strategy/sr-pc00.asp). Part of these actions will necessitate research on the breeding grounds to determine whether interactions with Greater Canada Geese during the pre-breeding and breeding periods may be responsible for the observed population trends in the Greenland White-front. At present, there are moves afoot by concerned NGOs in Iceland to promote voluntary initiatives that could reduce the hunting kill, and such initiatives should be wholeheartedly welcomed. There may, however, be scope under the African-Eurasian Waterbird Agreement to encourage internationally collaborative conservation actions for the population (Appendix 1).

The case of the Greenland White-fronted Goose may offer a worthwhile lesson on the need for international collaboration, not just in research and conservation (which has shown considerable success) but also in co-ordinating international conservation actions. This may also offer useful perspectives on the flyway conservation needs for other waterbirds. As long as hunted waterbird populations continue to show stable or increasing trends, complacency about their management is a low-risk strategy, but

once in decline, the restoration of populations to favourable conservation status offers different and interesting challenges. The moral is that conservation needs to be responsive; remedial actions should be taken early – patients are typically easier (and cheaper) to treat before they reach the intensive care ward!

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Appendix 1. Opportunities for international co-operation

African-Eurasian Migratory Waterbirds Agreement

The Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA) is an international conservation treaty that came into force in 1999, currently (April 2006) ratified by 53 Contracting Parties, including the EU, the UK and the Republic of Ireland; Iceland and Greenland have yet to ratify AEWA.

Governments adopting AEWA formally recognise 'the need to take immediate action to stop the decline of migratory waterbird species' and commit to undertake a range of actions to this end both nationally and collaboratively with other countries. These actions include research and monitoring, and the development of species action plans (http://www.unep-aewa.org/documents/agreement_text/action-plan-overview.htm).

The legal requirements of AEWA for species in its highest status category, which includes the Greenland White-fronted Goose, specify that: 'hunting may continue on a sustainable use basis where hunting of such populations is a long-established cultural practice. This sustainable use shall be conducted within the framework of special provisions of a species action plan at the appropriate international level.'

Notwithstanding the fact that Iceland and Greenland have yet to ratify the agreement, AEWA gives the UK and Irish Governments a mechanism to take forward necessary conservation actions with Iceland and Greenland to restore Greenland White-fronted Geese to favourable conservation status. Indeed, the UK Government's Implementation Plan for AEWA (Defra 2002a) 'aim[ed] to conclude agreement on Greenland White-fronted Goose international plan in 2002/03', while the UK's implementation of the Ramsar Convention's Strategic Plan (Defra 2002b) stated that the UK would 'Finalise Memorandum of Understanding with Iceland, Greenland and Ireland concerning the common conservation management of Greenland White-fronted Geese by 2004, stressing particularly the role of Ramsar sites in the long-term conservation of this population.' Further, Scottish Ministers have recently stated that: 'Given the migratory nature of most of the goose populations found in Scotland, it is inevitable that some of the potential future threats to viability will arise in areas outwith the limits of our own national policy framework. Close international collaboration and partnership will be essential if migratory goose populations are to be managed effectively across the entirety of their range' (Finnie & Brankin 2005).

EU Birds Directive

Greenland White-fronts are listed on Annex I of the Birds Directive. This requires Member States to maintain the favourable conservation status of the species through a range of conservation measures and policies. The population is listed as one of a small number of species considered as priorities for funding under the EU LIFE Nature programme, in particular for the development of international plans to help to 'focus on the most urgent and important actions for the different species'. No action has been taken for Greenland White-fronts because 'an international conservation plan has been prepared for this sub-species'. Although prepared, it has never been implemented. The opportunity exists under the Birds Directive, certainly in a British and Irish context, to facilitate joint actions and perhaps beyond that to where the main conservation issues now lie.

Ireland's National Biodiversity Plan (2002–06)

Action 51 (DAHGI 2002) states that: 'Ireland will seek to ensure, in co-operation with other relevant states, that the Greenland White-fronted Goose Conservation Plan is finalised, adopted and implemented.' The interim review of the plan, in early 2005, mindful of the continuing decline in the species since the mid 1990s, commits Ireland 'to renewing contact with Range States to establish a way forward'.

The need to actively deliver these commitments is now more pressing than ever.

Letters

Black Lark or black Lark? An historical record from England

Black Lark *Melanocorypha yeltoniensis* is a bird of the Central Asian steppes which rarely straggles to eastern Europe (*BWP*), and which has only recently been admitted to the British List (Degnan & Croft 2005). Claims of this species in Britain from the early twentieth century were considered to be forgeries and removed from the British List as part of the 'Hastings Rarities' affair (Nicholson & Ferguson-Lees 1962; but see Mortlock & Collinson 2005).

The British List includes only those species observed and recorded in Britain after 31st December 1799 (BOURC 2004). Prior to this, however, a 'Black Lark' was apparently collected in Britain in the 1730s. The bird in question was described and painted under the name 'black Lark' by Eleazar Albin (1680–1742), English naturalist and illustrator, on plate 51 of the third volume of his *Natural History of Birds* (Albin 1738). The picture (below) is available online at: http://dz-srv1.sub.uni-goettingen.de/sub/digbib/loader?ht=VIEW&did=D269943

After giving a brief description of the bird, Albin provided details on the origin of the specimen, as follows:

> This Lark was taken with a Clap Net by one of the Bird-catchers in a field near *Highgate*, and brought to me by Mr. *Davenport*, which I have taken care to draw exactly from the Bird, neither adding nor diminishing in the Draught or Colouring. This being a Curiosity, I was desired by one of my Subscribers to make a plate of it.

According to Albin's inscription on plate 51, the painting was made in 1737.

The picture resembles a male Black Lark *Melanocorypha yeltoniensis* in worn plumage. It was probably painted as a freshly taken bird, so it is likely that it was collected in 1737, and the locality is given as the vicinity of Highgate (now Greater London). Given that the plumage appears almost entirely black, this individual would have been moderately worn and therefore must have been captured in the spring, as before this time the pale tips to the black body contour feathers of Black Lark would be conspicuous. The observation by Mr Davenport (whom I was not able to identify) and Eleazar Albin is, possibly, the first historical record of Black Lark.

127. The 'black Lark' (Albin 1738).

Although subsequent writers knew of this record, they generally dismissed the bird as being a melanistic Sky Lark *Alauda arvensis* (e.g. Brisson 1760: p. 340, 1763: p. 405; Buffon 1778: p. 22; Gmelin 1789: p. 792; Sharpe 1890: p. 567). Their opinions may well be correct, but without the specimen its true identity may never be known. Indeed, the bird resembles a Sky Lark in being slender and having a long tail and long hind-claw. Albin was a better painter than ornithologist (Anker 1938), however, and he has drawn the bird from a carcase, so it is perhaps not surprising that it bears some superficial resemblance to a Sky Lark. Indeed, the following characters suggest that Albin may really have had a Black Lark before him: the wing is long in comparison with the tarsus; the distance between wing-tip and tail tip is small; and there are white spots on the head, while the breast feathers are pale-fringed. It would be difficult to imagine a melanistic Sky Lark showing the last two features.

It was not until the German naturalist Johann Reinhold Forster encountered this species at Volgograd, Russia, in 1765 (Forster 1768), that the existence of *Melanocorypha yeltoniensis* became known among the European ornithological community of that era.

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The original occurrence of influenza A/chicken/Scotland/59 (alias H5N1)

In view of the current concern about avian influenza A H5N1, it should be realised that it has been here before (Bourne 1971, 1989). In the autumn of 1959, I was investigating bird migration with radar on the east coast of Aberdeenshire and saw a large arrival of migrants on easterly winds in October. Shortly afterwards, there was an outbreak of disease on a farm in the area. According to the farmer's daughter, Mrs M. A. Forsyth, it started when a strange 'small, dark' duck (Anatidae) joined the poultry and was taken into a deep-litter house with them for the winter. Chickens began to die, the farm was placed in quarantine, and the outbreak was investigated by Dr J. E. Wilson of the Ministry of Agriculture, Fisheries and Food Veterinary Laboratory at Lasswade. A strain of influenza A named 'A/chicken/Scotland/59' (and later renamed H5N1) was isolated which was lethal for poultry but had little effect on wild birds. Two other groups of fowls in adjacent deep-litter houses remained healthy, and no other bird or unusual human influenza was noticed in Scotland at that time.

When terns (Sternidae) began to die of a strain of influenza A with one of the same antigens in South Africa in 1961, it was suggested that the virus might have originated in seabirds in the eastern North Sea the previous summer (Becker 1966) as birds had been dying there. When more seabirds began to die on both coasts of Britain during bad weather in the 1961/62 winter, they were therefore tested for the influenza virus, but only toxic chemicals were found. Meanwhile, influenza-A-H5N1 antibodies had been found in a number of migrant birds at Vladivostok on the Pacific coast of Russia (*Voprosy Virusologii* 6: 695–699), so it seemed more likely that the virus came from the east. Although it attracted attention at the time, the arrival of the duck described above does not seem to have been recorded before, and in view of the recent report that Mallards *Anas platyrhynchos* may carry the influenza virus (Munster *et al.* 2005), it may be worth placing on record.

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EDITORIAL COMMENT David Stroud has commented: 'It is correct that this subtype (H5N1) of AIV occurred [in the UK], but it was a quite different genotype (strain) from the genotype(s) of East Asian lineage H5N1 now in circulation. A further infection of turkeys with H5N1 occurred in England in 1991 (Alexander, D. J., Lister, S. A., Johnston, M. J., Randall, C. J., & Thomas, P. J. 1993. An outbreak of highly pathogenic avian influenza in turkeys in Great Britain. *Veterinary Record* 132: 535–536). Dennis Alexander, in another review, pointed out that most of the 17 documented outbreaks of HPAI (i.e. H5

Notes

All Notes submitted to *British Birds* are subject to independent review, either by the Notes Panel or by the *BB* Editorial Board. Those considered appropriate for *BB* will be published either here or on our website (www.britishbirds.co.uk) subject to the availability of space.

Moulting Common Eiders devoured by Killer Whales

On the evening of 8th August 2005, I was sitting in my car, parked on the road just north of Lerwick, Shetland, overlooking the northern part of Bressay Sound. My attention was drawn to a large flock of Herring *Larus argentatus* and Great Black-backed Gulls *L. marinus* swooping down onto the water; with binoculars, I immediately picked out the fins of some Killer Whales *Orcinus orca*. There were two adults and, probably, a younger one, but it was difficult to be certain. The Orcas were moving north along the centre of the channel in a strong-flowing ebb tide and appeared to be hunting fish, as they were rounding in tight circles every now and then. The gulls were hovering above them and diving onto the surface each time the whales came up to blow.

I then noticed a raft of Common Eiders *Somateria mollissima* moving rapidly over the water surface, away from the activity in the middle of the channel and towards the Norscot Base quay, below my vantage point; this was a moulting flock, and so the birds were flightless. This tightly packed raft of 30–40 birds was about 3 m x 2 m in size. The ducks continued swimming north as fast as they could go past the Norscot quay, helped by the strong ebb tide, and appeared anxious to reach the open sea.

At this point, I drove to a new vantage point to continue watching the whales. The Orcas suddenly appeared, close in to the shore on the north side of Scottle Holm and then rushed across the surface, straight into the raft of Eiders. The birds scattered in all directions in complete panic; some even shot up into the air to avoid the whales' jaws. For the next five minutes, the Orcas thrashed around the surface, picking up the terrified Eiders one by one until there were only three or four left, and finally competed for the survivors until they too were devoured. At times, the whales were half out of the water, lunging after the birds, and they were occasionally vertical in the water with their tails high in the air, having obviously nailed an Eider under the water.

As the melee subsided, I drove a little further and then hurried over the rough ground to the high mound opposite Scottle Holm to see if there were any survivors, but there was no sign of Eiders, Orcas or gulls, and as I scanned the now-calm sea I wondered if I had had a nightmare! Driving north to the viewpoint at Luggies Knowe, north of Rova Head, I could see the Orcas going quickly north past the Brethren rocks, obviously satisfied with their supper!

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EDITORIAL COMMENT Martin Heubeck has commented: 'There was a report of four Killer Whales taking Common Eiders at Sumburgh Head on 4th July 2005, and while there have been anecdotal reports of interactions with Eiders in the past, this is the first such instance in Shetland to be written up. The Shetland population of Common Eider decreased by c. 60% between 1977 and 1991, and by a further 27% between 1991 and 2005, the latest estimate being 5,100 birds (based on a total of 4,838 counted on a survey of moult flocks, plus 5% for a scatter of birds in areas not surveyed). This recent decline appears gradual, at c. 2% per annum. However, it may well accelerate if such behaviour by the pods of Killer Whales that cruise close inshore during summer becomes more frequent, taking almost 1% of the total population in just five minutes!'

Little Grebe using air bubbles to assist with foraging

On 20th July 2004, during an early evening visit to Cley Marshes, Norfolk, I watched an adult Little Grebe *Tachybaptus ruficollis* and chick engaging in some interesting feeding behaviour. The two birds were in a ditch between the coast road and the reserve, and the chick was large, only slightly smaller than its parent, though still with stripes on its face.

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As I watched, the adult made repeated dives down to vegetation well below the water surface. I could see it easily, even when it reached the bottom of the ditch (1.5–2 m deep). The chick followed the adult on the surface, peering down into the water and calling regularly, the frequency of the calls increasing as the adult bird began to return to the surface. Each time it came up, the adult fed some small item to the chick, then dived again; I was not able to identify any of the food items.

Eventually, the adult grebe approached an area which had a thick tangle of surface vegetation (principally Various-leaved Water-starwort *Callitriche platycarpa* and several forms of algae, including *Enteromorpha* and *Spirogyra*) over mostly open water. As it approached the edge of this mat, the grebe dived down well below the surface and began releasing a stream of bubbles from its beak, at intervals of about 1 cm. As the bird was swimming in a straight line, the bubbles too appeared in a straight line; they rose to the surface among the green growth and popped, and the adult followed them up. It repeated this action many times. While I was unable to see exactly what it was doing the whole time it was underwater (my view was shielded by the vegetation once the grebe got within 30 cm of the surface), I could see the tip of its beak occasionally as it poked through the mat. After each dive, the adult returned to the clear water where its chick was waiting. Each time, it passed its catch to the chick, dived down again and began releasing a stream of bubbles as it approached and disappeared under the mat.

In all the time I had watched it in the clear water (c. 20 minutes), the adult had never released so much as a single bubble. It seemed to me that it was perhaps using the surfacing air bubbles to flush prey among the tangled vegetation. I have checked a number of references, including the *Handbook of Birds of the World* and *BWP*, and can find no reference to this method of feeding by Little Grebes.

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Purple Heron fishing in deep water

On 28th June 2005, in Andalucia, Spain, I watched an adult Purple Heron *Ardea purpurea* fly low over the middle of a wide canal and drop into the water with its legs down. It then sat on the water like a duck, at least 12 m from the nearest bank. It swam for about five minutes; some people watching it thought that its horizontal profile in the water made it resemble a Great Northern Diver *Gavia immer*, but after it stabbed at a fish, caught it and flew to the bank, it was more likened to a Darter *Anhinga melanogaster*. The bird ate the fish and then flew back over the water, circled and landed in it again to repeat the procedure, when it caught a second fish. The heron was definitely swimming, as it floated slightly downstream in the time it was on the water. The canal was too deep for it to be wading and the banks were steep.

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EDITORIAL COMMENT Similar behaviour has been recorded for other heron species (see, for example, *Brit. Birds* 98: 212), but apparently not for Purple Heron. A previous note (*Brit. Birds* 84: 506) described Purple Herons alighting on the sea, but these birds were migrants, and were not seen to fish.

Polygyny in the Eurasian Sparrowhawk

The vast majority of raptors breed monogamously, but some species occasionally exhibit polygyny or polyandry (breeding groups of single male and multiple females, or single female and multiple males, respectively). During the course of 2005, I filmed several species of nesting birds in Dorset as part of my work for the Chalk & Hawks Project (see www.chalkandhawks.org.uk). One such species was Eurasian Sparrowhawk *Accipiter nisus*, nesting in a block of mixed woodland near Buckland Newton. Images of this nesting

Jason Fathers

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128 & 129. Two female Eurasian Sparrowhawks *Accipiter nisus* together at the same nest, incubating the shared clutch (128) and feeding the chicks (129), Dorset, 2005. Images from video footage.

attempt were transmitted across fields (via microwave link) and shown in the wildlife hide of Bookham Farm.

The six eggs in this nest were due to hatch within days of the camera's installation, at which point the well-developed chicks could easily be heard 'cheeping' within the egg. Much to my surprise, the first image I viewed of adults at the nest (via the nest camera) was of two birds incubating the eggs at the same time. Normally, the parental duties of Sparrowhawks are clearly split, the male hunting to supply food for himself and the female, while she incubates the eggs. As I gathered more footage of these breeding birds, it became evident that there were, in fact, two females attending the nest. The two females incubated the six eggs simultaneously then continued to play active roles in the rearing of the five chicks that hatched.

On two occasions, female A (the females could be identified by differences in moulted feathers) was filmed bringing a prey item to the nest, closely followed by female B. The two females then disputed the role of feeding the chicks as they snatched the prey from each other several times. The male was caught on camera once at the nest, briefly dropping off a prey item to the chicks a few days before they fledged. Five chicks fledged from the nest in due course.

Newton (1979) described polygyny in eleven species of raptors, including Eurasian Sparrowhawks and, most frequently, among some species of harriers *Circus*. Polygyny in raptors tends to occur either when there is a shortage of males in the breeding population or when a particular male is able to provide enough food for more than one female (Newton 1979).

Previous records of polygynous Sparrowhawks have been of either two females laying single clutches in separate nests or two females laying a clutch in the same nest (Newton 1986), as is presumed in the Dorset record. Eggs from individual females can often be identified, as they tend to have their own distinct pattern. Close examination of photographs of the Dorset clutch clearly indicated two differently patterned egg-types, three from each female. Records of this type of polygynous egg-laying in Sparrowhawks resulting in a successful outcome are extremely rare. Newton (1986) reported seven double clutches with two known females in southern Scotland, none of which produced young, and an eighth case in Derbyshire, again with two known females, which also produced no young. However, Newton also reported four records of apparent double clutches from Berkshire, with no information on the number of females, and three out of these produced young.

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EDITORIAL COMMENT Ian Newton has commented that this record is particularly interesting because (i) it gives a definite record of a nest with two females producing young, and (ii) it is supported with photographic evidence.

European Nightjar nesting on tree stump

One summer in the early 1960s (exact date and year unknown), Gerald Westerhoff (an amateur ornithologist of considerable experience) was working in a Forestry Commission plantation at Lordswood, Hursley Forest, Hampshire. While clearing dense Bracken *Pteridium aquilinum* and Bramble *Rubus fructicosus* agg. from around rows of conifers roughly 60 cm in height, GW disturbed a European Nightjar *Caprimulgus europaeus* from a clutch of two eggs placed on top of a large Oak *Quercus* stump some 30 cm in height and 1 m in diameter. During 40 years as a forest worker, both at Hursley and in the New Forest, Hampshire (where this species is a common nester), GW has accidentally flushed sitting Nightjars from nests with eggs or young on many occasions; such nests, however, have always been directly on the ground. Although there was no bare, open ground in the immediate vicinity of the stump, typical nest-sites were available elsewhere in the wood.

GW recounted this interesting experience to me in early 2005 but, despite consulting other ornithologists and the literature available to me (*The Handbook* and *BWP*), I have been unable to find a reference to European Nightjars nesting other than directly on the ground.

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Is singing by escaping Sky Larks a Merlin-specific signal?

One of the most celebrated examples of the co-evolution of a predator and its prey is the use of song as a pursuit-deterrent response by Sky Larks *Alauda arvensis* to attacking Merlins *Falco columbarius* (Cresswell 1994). When a hunting Merlin approaches, a Sky Lark may begin a song-flight to indicate its physical fitness. Cresswell (1994) showed that Merlins chase more relentlessly and more often catch non-singing Sky Larks than those in full song (and that larks singing poorly are more likely to be caught than those singing well). This note presents observations of interactions between Skylarks and two other predators which hunt them regularly, the Hobby *F. subbuteo* (Chapman 1999) and the Great Grey Shrike *Lanius excubitor* (Lefranc & Worfolk 1997).

During the course of a study of Hobbies hunting at Sand Martin *Riparia riparia* colonies, I carried out observations at a sand-pit holding several hundred martins near Vienna, Austria, in May 2004. On one occasion, I watched a Hobby some 100 m away, approaching the colony in a fast, low flight at a shallow angle. Suddenly, a Sky Lark started its song-flight directly in the flight path of the falcon, obviously unaware of the imminent danger. The Hobby immediately dived at the Sky Lark, but pulled out of the dive after failing to take the lark at the first attempt. However, before the Hobby was able to execute a second dive, the lark restarted its almost vertical song-flight. The falcon abandoned the attack and disappeared, while the lark flew on for another 400 m or so before reaching cover, singing constantly.

In March 2002, near the Austrian/Czech Republic border, I watched a Great Grey Shrike hunting a Sky Lark in mid air. As the pursuit continued, it was clear that the lark did not sing during the hunt. The shrike followed the lark at close range for about four minutes, but was unable to catch its target. Having observed Great Grey Shrikes hunting avian prey on many occasions (Probst & Karlsson in press), I was sure that the shrike was purposefully trying to catch the Sky Lark.

These two observations are, of course, not conclusive, but may encourage others to publish a description of such infrequently recorded encounters. I predict that Sky Larks in good condition will employ pursuit-deterrent song-flights not only in response to Merlins but to other habitual open-space pursuit predators, such as the Hobby. Sky Larks will not use song in response to predators which normally use a different hunting method (e.g. surprise hunters, such as Eurasian Sparrowhawk *Accipiter nisus*); indeed, Will Cresswell (pers. comm.) has observed Sparrowhawks on two occasions chasing Sky Larks in a Merlin-like way, and no song was given on either occasion. During attack by non-pursuit predators, Sky Larks are likely to attempt escape either by silent flight or by crypsis (Cresswell 1994).

Acknowledgments

I would like to thank Will Cresswell for his valuable comments on this manuscript.

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Northern Wheatears feeding on Common Frogs

On 6th July 2005, at an altitude of 1,578 m on Mt Guglielmo (a subalpine area of Lombardy, Italy), I observed three to four Northern Wheatears *Oenanthe oenanthe* feeding regularly on just-metamorphosed Common Frogs *Rana temporaria*. The young frogs were trying to climb the steep bank of an artificially waterproofed pond and they were frequently caught by the wheatears, which were nesting near the pond. There is no mention of frogs or other amphibians in the diet of this species in *BWP*.

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Common Chiffchaff feeding juvenile Wrens

At about 14.00 hrs on 13th August 2004, MGA's attention was drawn to a Common Chiffchaff *Phylloscopus collybita* in the garden of Bardsey Bird and Field Observatory, Gwynedd. The Chiffchaff was carrying food items to three juvenile Wrens *Troglodytes troglodytes* perched close together in an Elder *Sambucus nigra* bush, at a height of about 1.2 m. The Chiffchaff tended to perch somewhat above the level of the next bird to be fed and would lean over and forward to deliver the food item into its open beak. Food was delivered at an average rate of about one item per minute over a period of about 40 minutes, and those items seen clearly were a green caterpillar (Lepidoptera), a spider (Araneae) and several Diptera spp. The Chiffchaff, which was in heavy moult, was seen gathering food within a range of 15 m in the garden but it disappeared occasionally for short periods, presumably to forage further away.

Several pairs of Chiffchaffs bred on Bardsey in 2004, as did numerous pairs of Wrens. The young Wrens were not fed by an adult Wren during my observations and there was no sign of either an adult or other juvenile Wrens nearby, nor of any juvenile Chiffchaffs.

The described interaction between the Chiffchaff and the young Wrens was noted for a further six days, until 19th August. This is the first record of its type we have seen involving a Chiffchaff, although we are aware of instances (one each) involving Wrens feeding the young of another species (Great Tit *Parus major*; *Brit. Birds* 83: 400–401) and being fed by another species (Spotted Flycatcher *Muscicapa striata*; *Brit. Birds* 87: 91–92). As far as we are aware, the only other instance of interspecific feeding of young involving a warbler is that of Willow Warbler *Ph. trochilus* chicks being fed by a Robin *Erithacus rubecula* (*Brit. Birds* 42: 217).

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EDITORIAL COMMENT Feeding of young by different species is already well documented (including the examples given by the authors), but this observation is of interest for the detail provided and, in particular, for the relatively long period (seven days) over which feeding took place.

News and comment

Compiled by Adrian Pitches

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

Bird flu in Fife

The 5th of April 2006 had long been predicted as the date for a bird flu 'outbreak' in Britain – because this was the date of a scheduled Defra planning exercise, *Operation Hawthorn*. How ironic then, that Defra had to announce, on 5th April, that Britain did indeed have its first case of bird flu.

The long-dead swan that washed up in the harbour at Cellardyke, Fife, became the most famous deceased *Cygnus* since Tchaikovsky hit on the idea for a ballet. Once the initial media frenzy had abated, however, more rational debate could ensue. The headless swan (this fact delayed the specific identification) had probably been dead for at least three weeks before it was reported to Defra as it washed around Cellardyke harbour. The confirmation of H5N1 in the dead bird then took a further week. And eventual identification as a Whooper Swan *Cygnus cygnus* – not a Mute Swan *Cygnus olor* as originally believed – took a further five days.

If the bird had died in early March, then its death coincided with the bird flu outbreak in the Baltic, when scores of wildfowl and gulls died on the German island of Ruegen. So...was the Cellardyke swan a corpse that washed out of the North Sea into the harbour? In other words, has bird flu actually occurred on British soil at all?

At the time of writing – in mid April, two weeks after the Cellardyke swan was collected from the harbour – and following the testing of hundreds of dead birds handed in by the public, no further cases of H5N1 have come to light. Within a 'wild bird risk area' of c. 2,500 km^2, stretching down the east coast of Scotland, from Stonehaven in the north to the Firth of Forth in the south, poultry farmers have been told to house their birds to eliminate contact with wild birds. Of the estimated three million poultry on 175 poultry farms in the area, only 260,000 are, in fact, free range. The vast majority of birds were already confined to barracks.

Meanwhile, the Dutch Agriculture Ministry was sufficiently relaxed about bird flu in northwest Europe that it planned to lift its ban on allowing poultry outside on 1st May. 'The peak period for bird migration is almost over,' a ministry spokeswoman said. 'We will review the situation once again at the end of April and if it hasn't changed, meaning that there is no bird flu outbreak or disease being found in wild birds, we will lift the requirement [to keep poultry inside].'

One final thought. The commendable absence of hysteria among Cellardyke folk as they enjoyed the holiday sunshine surrounded by TV news satellite vans was notable. At risk of appearing regionalist, would public reaction have been different if it was excitable Essex rather than phlegmatic Fife which had hosted Britain's first case of bird flu?

Bird Flu: http://news.bbc.co.uk/1/hi/in_depth/world/2005/bird_flu/default.stm

Cley Marshes revisited

A recent piece about the 80th anniversary of Norfolk Wildlife Trust's Cley Marshes reserve (*Brit. Birds* 99: 107) has prompted several responses.

Andy Millar, the NWT's nature reserves manager, has corrected the out-of-date assertion that a clay bank was being built behind the shingle seawall to protect the marshes from storm surges. In fact, the shingle bank is now being reprofiled instead.

Andy continues: 'It was pleasing to see *British Birds* highlight the 80th birthday of Norfolk Wildlife Trust's Cley Marshes Nature Reserve, and the symbolic significance of the place in the development of the national Wildlife Trust nature reserve network. The article also asked whether Cley may have "lost some of its lustre", and referred to a "widespread perception that the reserve could be better managed". These are legitimate views freely expressed, and NWT is open to feedback about the way its reserves are managed. In response to some of the specific points:

- 'Along with the adjacent Blakeney NNR, Cley is currently subject to major flood alleviation works by the Environment Agency. This includes allowing the great shingle ridge, itself an important site feature, to adopt a more natural profile and migrate landward. The emphasis of the current works is on improved evacuation of floodwaters. Yes, it is true that Cley and Salthouse will be subject to more flooding and a gradual transition from fresh to more brackish marsh, but this is a process which is likely to take decades, and there is a naturally very strong freshwater feed into the site from springs and seepage.
- 'The current EA works have been some seven years in planning, during which time it was almost impossible to plan or justify large capital spending on the reserve. The change continues to create huge management challenges for NWT. Our graziers, for instance,

on whom we depend to help us to maintain the important freshwater grazing marshes, are likely to find working the marsh much more difficult in future. Maintaining the grazing marsh in situ for waders and wildfowl remains a priority for the foreseeable future, but our graziers are under no obligation to stay with us if the conditions and incentives are unattractive.

• 'Habitat management is a priority for NWT, and the Trust is working hard to secure external funding for an urgently needed package of large-scale enhancements to the site. Many of these are a direct consequence of the flood-defence changes. These include drying out and de-silting all the wader scrapes to refresh them, upgrading water-level management infrastructure to cope with future flooding regimes, replacing 3–4 km of fencing, gates and bridges to enable grazing, and rebuilding the North Hide to bring it up to the same standard as the others on site. We are also aiming to renew boardwalks on a rolling replacement basis. This package doesn't come cheap, and could never have been funded alongside, or instead of, the new visitor centre project. Unfortunately, the reserve management works fall outside the scope of the grant schemes we have used to fund the new building.

• 'The visitor centre itself is equally as high priority as the reserve management, and the Trust has had a very limited window of opportunity to secure the funding for it. Together with new on-site interpretation, the new building will be an ambitious, visionary and ecofriendly project that we hope will not only highlight the natural history of the site, but also raise awareness of the links between coastal change, climate and human impacts on the environment. It will be an asset to be proud of and help to take the reserve's visitor facilities into the 21st century.'

Local birders David and Pat Wileman also spoke up for the Trust: 'You have to have some sympathy for the NWT. It does not have the resources of an organisation such as the RSPB but has been faced for five years with a proposal to build a huge clay bank right across the centre of its premier reserve. This did not give the right circumstances for investing lots of money in improving the habitats or facilities.'

Meanwhile, Cley resident Dr Roger Brownsword fears 'dramatic adverse effects' on the freshwater habitat at Cley as a consequence of regular seawater flooding over the shingle bank in the future. With the backing of the Cley Bird Club, he's calling on the Environment Agency to construct a 2-m-high bund to the south of the Main Drain to alleviate the worst effects of saltwater incursion. Clearly, many of us are passionate about preserving Cley Marshes for posterity.

Malta accepts the inevitable

Two years after joining the European Union, Malta has grudgingly accepted that it must be bound by the European Birds Directive – but not for another year. Malta and its hunters have jumped before they were pushed into the European Court for flouting the directive that is binding on every other nation in the 25-state EU.

On 1st May 2004, when Malta joined the EU alongside nine other countries, the Mediterranean island was (uniquely) granted a derogation from the directive that allowed spring hunting of Common Quails *Coturnix coturnix* and Turtle Doves *Streptopelia turtur*, and the trapping of seven finch (Fringillidae) species, until 2008. Each year, an estimated 100,000 Turtle Doves are shot legally by hunters on Malta. Meanwhile, widespread illegal hunting of supposedly protected species like Marsh Harrier *Circus aeruginosus*, Honey-buzzard *Pernis apivorus*, Purple Heron *Ardea purpurea* and Black-winged Stilt *Himantopus himantopus* accounts for many of the migrants that enter Maltese airspace en route from Tunisia to Sicily.

In July 2005, BirdLife International and BirdLife Malta lodged a formal complaint with the European Commission about the failure of the Maltese Government to adequately transpose the EU Birds Directive into Maltese law. As a result, the Commission looked set to start a formal infringement procedure against Malta. However, on 29th March, the Maltese Government introduced a last-minute change of its national laws to strengthen bird conservation on the island, bringing it more into line with the rest of the EU.

Konstantin Kreiser, from BirdLife's Brussels office, commented: 'The law changes came literally overnight. And although it is obvious that this "understanding" only happened after the threat of being taken to the European Court became immediate, we now hope to see considerable progress for bird conservation within Malta.'

Although a detailed assessment of the new provisions still needs to be undertaken, it appears that the Maltese hunting seasons for several bird species will be shortened, so that hunting no longer takes place during spring migration and the breeding season. Trapping of a number of species will now be outlawed by Maltese law, and the use of speedboats to hunt birds (such as ducks (Anatidae)) at sea will also be made illegal.

Despite these developments, Malta is still claiming derogations from the Birds Directive to permit hunting of Common Quails and Turtle Doves between March and May. It argues that these birds have to be hunted then, because it is the only time they occur on the island (although both species clearly move south through Malta on their return migration in autumn). As a result, BirdLife is urging the EC not

to approve this derogation, as the conditions of the EU Birds Directive are not met.

Despite this first step towards adoption of the directive, the Maltese Government does not intend to apply the new laws until the end of May, at the end of the 2006 spring hunting season. And, although the law will tighten up the regulation of *legal* hunting, it remains to be seen what the Maltese Government will do to tackle the massive amount of *illegal* hunting that takes place.

Little Grebes breed in Malta

Staying with Malta, a good-news story is that a pair of Little Grebes *Tachybaptus ruficollis* has bred at is-Simar Nature Reserve, the first breeding record of this species in Malta. Adults had been seen at the reserve, which is run by BirdLife Malta, throughout the winter and a nest with three chicks was discovered on 10th February. This reserve is also the site where the first breeding Little Bitterns *Ixobrychus minutus* for Malta were recorded, in 1997. Resident Maltese birder Ray Galea, who found the Little Grebes' nest and contacted N&c, said: 'For a country like ours, where everything that flies gets shot, this is great news. If birds are given a chance, they can stay and breed here.'

Rampant logging in Białowieża Forest

Meanwhile, another 'new' EU member is under fire, in eastern Europe. Poland (and neighbouring Belarus) has signally failed to safeguard this last remnant of lowland temperate primeval forest in Europe. Commercial logging is licensed in 80% of the forest, despite its designation as a UNESCO World Heritage Site. The Polish Government has reneged on its promise to expand the Białowieża National Park to encompass the entire old-growth forest, thereby providing loggers with plenty of unprotected forest to plunder.

The ancient forest of Białowieża has survived into the twenty-first century because it was untouched for so long. A hunting reserve for the Polish royal family from the sixteenth century, the forest began to be commercially logged only during the First World War. The Polish part of Białowieża is home to 62 mammalian species, including large carnivores such as Wolf *Canis lupus* and Lynx *Felis lynx*. Its most famous inhabitant is the European Bison *Bisou bonasus*, as it holds the last remaining population. Thanks to persistent efforts to save the bison from extinction, the extended herd has more than 300 members. The bird community includes 177 nesting species, 107 of which are specialist forest species (see the recent article *Brit. Birds* 98: 174–193). The insect community is estimated at 10,000 species and there are approximately 3,000 species of fungi and more than 1,400 plant species in Białowieża Forest.

At the recent BOU Woodland Birds Conference, delegates passed a resolution calling on the Polish and Belarus Governments to stop logging activities with immediate effect. You can write your own letters of objection to the prime ministers of the two countries concerned: Mr Kazimierz Marcinkiewicz, Prime Minister, Kancelaria Premiera, Al. Ujazdowskie 1/3, PL 00 583 Warszawa, Poland; Mr Sergei Sidorsky, Prime Minister, Council of Ministers of the Republic of Belarus, 11 Sovetskaya St., Minsk 220010, Belarus.

E-mails can be sent to the following European Union officials: Mr Stavros Dimas, Commissioner for the Environment stavros.dimas@cec.eu.int; Mrs Danuta Hübner, Commissioner for Regional Policy Commissaire-Hubner@cec.eu.int; Mr Janez Potocnik, Commissioner for Science and Research janez.potocnik@cec.eu.int; Białowieża Forest http://republika.pl/bialowieza_forest/forest.htm

A few Euros more

BirdLife has welcomed the European Parliament's success in obtaining an additional 100 million for Natura 2000, over the period 2007–13, but has expressed its concern that the overall budget deal will fail to halt biodiversity declines across the European Union.

Natura 2000 protects Europe's most important sites for nature, covering around 17% of the EU's territory. The network provides essential ecosystem services, supports local economies and benefits communities in terms of health, education, employment and quality of life.

While the European Commission estimates that at least €6.1 billion is required per year to finance Natura 2000, the levels of funding that will be available following the final deal on the EU's budget 2007–13 are likely to fall far short of this figure. 'MEPs have highlighted Natura 2000 as being a top priority for EU funding programmes. We urge Member States and the Commission to respond to this call by allocating sufficient funding to Natura 2000 and by ensuring that its financial needs are fully taken into account at the review of the EU's budget in 2008,' said Clairie Papazoglou, Head of BirdLife's European Division.

Although the move to increase the environment budget (LIFE+) has been welcomed by BirdLife, significant cuts to funding for rural development and environmentally friendly farming mean that the EU is still way off track in meeting its target of halting biodiversity loss by 2010.

Saemangeum – the final chapter?

The axe hanging over one of northeast Asia's finest shorebird sites has been poised for several years, but now it appears to have fallen.

The South Korean Supreme Court has ruled that the interrupted 'reclamation' scheme is not illegal and can therefore resume. Birds Korea (www.birdskorea.org) reports that, although two of the 13 judges declared that the project is based on a seriously flawed environmental impact study, the Supreme Court as a body fell short of demanding that the project be cancelled.

The impacts on migratory shorebirds are expected to be enormous and long term. The site is famous for holding concentrations of 175+ Spoon-billed Sandpipers *Calidris pygmeus* and 60 Nordmann's Greenshanks *Tringa guttifer*, and almost 30% of the world's Great Knots *C. tenuirostris*.

Following the court ruling, the project's backers announced that they would hold a ceremony to celebrate the completion of their 33-km-long seawall on 24th April, right before the highest tides of the spring and during the peak of shorebird northward migration. Sluice gates 500 m wide will then remain open after the seawall closure for a year or two (instead of a 30-km-wide natural estuary mouth), with greatly reduced water exchange and tidal range. Forecast models show the whole Saemangeum basin first being flooded with water (leaving very few tidal-flat areas for foraging birds) before most is left to dry ready for development as rice paddy or even golf courses.

These models (produced more than a year ago by a government-related institute) suggest that this single massive reclamation project will lead to a 30-cm rise in sea level in much of the Yellow Sea, causing the loss of a further 5% of tidal mudflats (and presumably leading to more intense flooding of saltmarshes which support breeding colonies of Saunders's Gull *Larus saundersi*). Moreover, this project will then be followed in May, according to local activists, by the start of reclamation of the neighbouring Geum estuary – another key site for Great Knot and also for Eastern Oystercatcher *Haematopus ostralegus osculans* (supporting 50% of the minimum total population estimate of this taxon).

Nial Moores of Birds Korea said: 'For all us who are genuinely concerned with tidal-flat conservation and for the future of extraordinarily charismatic species like Spoon-billed Sandpiper and Great Knot, there is a clear need to continue challenging these projects, both of which fly so very clearly in the face of domestic obligations to various international conservation conventions.' The Australasian Wader Studies Group and Birds Korea are conducting a shorebird monitoring programme at the site which will continue through the 'reclamation' period.

Brent Geese win the Lottery

Nearly £3 million of Lottery cash has been allocated to Castle Espie in Co. Down, the wintering area of most of the world's 'Pale-bellied Brent Geese' *Branta bernicla hrota*. One of the most highly designated sites in Europe, Castle Espie has been allocated £2,975,000 by the Heritage Lottery Fund. The site, which suffered in the 1970s from having an aircraft runway built right through it, contains heritage of natural, archaeological and even industrial significance, making it an ideal project for Heritage Lottery investment. The HLF money will mean that the historic limestone grasslands can be restored for other wildfowl species. The fields were a hive of industry in the 1800s and the lime kilns used to exploit the limestone are still there. During the restoration work, the site will be returning to its industrial roots by aiming to be a model of good practice in sustainable construction by reducing, reusing and recycling not only building materials but also energy and waste. A former hide is to be converted into an observatory.

Website of the month

Bird clubs have traditionally been judged on the quality – and punctuality! – of their annual reports. But club websites are now becoming the new yardstick by which one can compare clubs. Each month, I hope to highlight a bird club or ornithological society whose website merits a visit. All suggestions are welcome. The first selection is the recently relaunched Teesmouth Bird Club website. The corner of northeast England covered by the site (the old county of Cleveland) has an enviable reputation for scarce migrants and rare vagrants. Teesmouth has recorded Long-toed Stint *Calidris subminuta*, Great Knot *C. tenuirostris* and Short-billed Dowitcher *Limnodromus griseus* – but curiously no Long-billed Dowitcher *L. scolopaceus*. The TBC website (www.teesmouthbc.com) contains information on birding sites in Cleveland, annual reviews going back to 2003 and up-to-date sightings from the area. The homepage has a photo of one of the handsome male Penduline Tits *Remiz pendulinus* that visited Teesmouth in March (plate 130).

John Malloy

130. Penduline Tit *Remiz pendulinus*, Portrack Marsh, Cleveland, March 2006.

Round Britain Quiz

A recent newsletter from a county bird club contained the revised order of British birds and the consequent revised county list. It was an impressive tally. Among the species recorded in the 1990s alone were Redhead *Aythya americana*, Pallid Harrier *Circus macrourus*, Crag Martin *Ptyonoprogne rupestris* and Red-flanked Bluetail *Tarsiger cyanurus*. So where is this county? Orkney? Shetland? The Western Isles? In fact, the county in question is... Leicestershire, probably the most landlocked county in Britain!

New Recorders for Staffordshire and Cheshire & Wirral

Gilly Jones has retired from the post of Staffordshire County Recorder, after 15 years' hard work in the role. The new recorder for Staffordshire is Nick Pomiankowski, 22 The Villas, West End, Stoke, Staffordshire ST4 5AQ; tel. 01782 849682; e-mail staffs-recorder@westmidlandbirdclub.com

Hugh Pulsford has taken over from Tony Broome as the County Recorder for Cheshire & Wirral. Hugh can be contacted via countyrec@cawos.org or at 6 Buttermere Drive, Great Warford, Alderley Edge, Cheshire SK9 7WA; tel. 01771 2140329.

New home for BB

From 4th May, the address of the main office of *BB* will be as follows:
British Birds, Unit 3, The Applestore, Workhouse Lane, Icklesham, East Sussex TN36 4BJ; tel: 01424 815132; fax: 01424 815133

The editorial address, the website address and all e-mail addresses will remain unchanged.

This marks the end of a period of seven and a half years based at The Banks, the home of Christopher and Amanda Helm, who owned *BB* for a short period until BB2000 Ltd was formed, in 2000. Christopher and Amanda have decided to sell their magnificent house, which has prompted *BB*'s move; we thank them sincerely for their kind hospitality during this period, which saw the format and layout of the magazine radically altered and all the advantages of modern technology adopted.

Obituary

Eugeny E. Syroechkovski (1929–2004)

I first met Professor Dr E. E. (Eugeny) Syroechkovski, Sr. ten years ago, when I joined the Russian Arctic expeditions, organised and led by his son E. E. Syroechkovski, Jr. Since then, I have visited the Russian Arctic almost every summer and become a friend of the family. On many occasions, either before or after the expedition, I have stayed in their flat in central Moscow on the Zubovski Bulvar, an impressive 12-lane road, and impossible to cross on foot. The contrast with Russia's vast wilderness areas, the conservation of which was Eugeny's prime field of expertise, could not be more striking. His flat, located on the upper floor, contained four rooms, all filled with literally thousands of books, housed mostly in large glass-fronted wooden bookcases. Every possible space was filled with books and reports, increasingly reaching the interior of each room in large piles, including many documents in different languages. The books were surrounded by a few stuffed birds, including the much-envied Baikal Teal *Anas formosa*, and the Adèlie Penguin *Pygoscelis adeliae* he brought back from Antarctica in the 1950s, when he worked at Haswell Island near the Soviet station Mirny. But he always found a place for me to stay. With my limited understanding of Russian, it was difficult to hold a serious conversation with Eugeny, who could not speak English, but his wife, Helena Rogacheva, and his son are both fluent in English, so we communicated mainly through them.

Eugeny E. Syroechkovski was born on 23rd June 1929 in Moscow. After graduating from the faculty of Biology at Moscow University, he spent much of his working life within the Russian Academy of Sciences. This included extended periods at the Institute of Geography from 1953 until 1969, and at the Institute of Ecology from 1980. His scientific career encompassed a broad range of expertise and he became a leading authority on the Russian Arctic. Besides his work in ornithology and geography, he was an expert in theriology and ethnology and a specialist in the economy of the biological resources of the Russian North.

Eugeny's main ornithological work began with a study, between 1950 and 1954, of colonial waterbirds in the northern Caspian region, and this resulted in a long-term monitoring scheme to measure the effects of sea-level change on the waterbirds of the Caspian Sea. Later, between 1956 and 1959, he focused his research on Antarctica, and in 1956–57 led the second Soviet Antarctic Expedition, the first Russian expedition to visit the Antarctic primarily to study its wildlife. In one of his 16 papers Eugeny introduced the term 'ornithogenic soils' to describe the

primitive soils found below bird colonies, and this is a term still used in modern soil sciences today. It was, however, his groundbreaking work in central Siberia, a region extending from the Arctic Taimyr Peninsula to the Mongolian desert, that brought him to international prominence. Prior to his studies, much of this huge region was, in terms of birds, virtually unknown before the 1950s. Due to the efforts of Eugeny and his wife, this is now one of the best-studied areas in Siberia.

It was his expertise and organisational skills which enabled him, together with Peter Prokosch from WWF, to organise the first International Ornithological Expedition to the Taimyr Peninsula in 1989. As this coincided with Russia's period of 'perestroika', the expedition was able to include several ornithologists from western European nations, including Germany, The Netherlands and Great Britain. This expedition was to become a milestone along the road to openness, leading to close co-operation between Russian and international research teams in Siberia.

In 1994, despite numerous bureaucratic obstacles, he was able to organise one of the most ambitious Arctic expeditions ever attempted within Russia, the Swedish–Russian Tundra Ecology Expedition, hosted jointly with the Swedish Polar Research Board. The route followed the Arctic coastline from the Kola Peninsula to the Chukotka Peninsula, using the icebreaker *Akademik Federov*, marking the first occasion that a large vessel was set aside solely for the purpose of Arctic research. This vessel, together with the ship's helicopters, provided unprecedented access to the entire coast of the Russian Arctic for more than 120 scientists and researchers from ten countries. The expedition resulted in the first comprehensive survey of the regional differences in lemming and vole (Microtidae) densities, and their impact on the waterbirds breeding under the differing conditions. In 1995, he established the Russian Goose, Swan, and Duck Study Group of North Eurasia, and founded the internationally peer-reviewed journal *Casarca* to publish the findings.

I stayed with Eugeny in his dacha on the outskirts of Moscow many times, mostly in the hot summer days after returning from the Russian Arctic. In his final years, he spent much of his time retreating from the busy city life. I enjoyed the seclusion of his home, hidden in the pines on sandy soils, from where, on several August mornings, we would make excursions in the surrounding neighbourhood. These walks always produced some interesting birds, whether it be a family of Greenish Warblers *Phylloscopus trochiloides* feeding along the bushes, or a River Warbler *Locustella fluviatilis* alarming together with Blyth's Reed Warbler *Acrocephalus dumetorum* along the tiny stream. In the heat of the day, we would escape to the shadow of his garden where, over tea and blueberry cakes, we would discuss conservation issues of the Russian North, occasionally interrupted by Common Crossbills *Loxia curvirostra* flying overhead, or the call of the Black Woodpecker *Dryocopus martius*.

His unconventional organisational style was not always popular, and often raised suspicion and rumour among those less successful within the Russian and international conservation scene. However, his organisation of two international, and 40 national expeditions, the creation of six State Nature Reserves in Siberia, and the organisation of the first Russian Institute of Nature Conservation in 1979 is an impressive list of achievements and witness of his firm belief in the need for nature conservation.

The last conversation I had with Eugeny before his illness struck confirmed his still-firm commitment to conservation. We discussed the possibility of creating a regional reserve in the floodplain of Vinogradovo, an important wet grassland area to the southeast of Moscow, and home to breeding Great Snipes *Gallinago media*, Marsh Sandpipers *Tringa stagnatilis* and White-winged Black Terns *Chlidonias leucopterus*, as well as being an important stopover site for migrating geese in spring. This was a place that I regularly visited with Eugeny. Unfortunately, his illness prevented him from making progress with this and so many other projects he was working on. Subsequently, his wife has taken on the responsibility for progressing some of his work. At present she is finalising his collective monograph on colonial waterbirds in the northern Caspian Sea, due for publication in 2006, and is compiling the 'Birds of Evenkia', where their shared data will be combined in a forthcoming book under joint authorship.

After suffering a prolonged illness, Eugeny passed away on 29th November 2004. His wife and two children from two marriages survive him.

Christoph Zöckler

Christoph Zöckler

131. Prof. Dr Eugeny Syroechkovski, Sr (front), with family.

Monthly Marathon

Photo no. 218: Black-headed Gull

Graham Catley

132. Juvenile Black-headed Gull *Larus ridibundus*, Barton, Lincolnshire, July 2005.

Monthly Marathon photo number 218 (*Brit. Birds* 98: plate 391, repeated here as plate 132) is relatively easy to assign to family, and most birders will have immediately recognised it as a gull (Laridae). Furthermore, it should also have been equally obvious that it is one of the small- to medium-sized gulls, based upon the combination of mantle, upperwing and tail pattern, thin pink legs and clean underwing. Identification of gulls relies upon establishing the correct age category of any individual. In this case, the chocolate-brown scapulars, dark trailing edge to the wing, and dark tips to the primary coverts, as well as the thin tail-band and pale legs enable us to confidently age the bird in question as a juvenile or first-winter individual. To narrow the choice down further, the dark brown mantle establishes this as a juvenile as, following the post-juvenile moult, the darker juvenile mantle feathering would be replaced by grey, adult-type feathering. However, the primaries and secondaries are not replaced during this moult, so the wing pattern of juveniles and first-winters remains, to all intents and purposes, unchanged.

Of the smaller gulls, we can safely eliminate Ross's Gull *Rhodostethia rosea*, which would show extensive white on the secondaries, and lack the dark trailing edge to the secondaries and inner primaries. It would also exhibit a less obvious, and rather diffuse tail band and shorter legs. Little Gull *Larus minutus* can be eliminated using similar criteria, although juveniles do show a weak secondary bar, and the tail band is broader centrally. The wings are too pale for a vagrant Laughing *L. atricilla* or Franklin's Gull *L. pipixcan*, and the primary pattern, with an extensive amount of white, rules out Common *L. canus*, Ring-billed *L. delawarensis* and Mediterranean *L. melanocephalus*. We have now whittled down the options to just five species recorded from the Western Palearctic: Black-headed *L. ridibundus*, Bonaparte's *L. philadelphia*, Slender-billed *L. genei*, Brown-headed *L. brunnicephalus* and Grey-headed Gull *L. cirrocephalus*. Neither first-winter Brown-headed Gull, recorded as a vagrant to Israel, nor Grey-headed Gull, which occurs regularly in the Western Palearctic only in Mauritania, exhibits such extensive white in the primaries as the mystery bird. Slender-billed Gulls at this age do show extensive white in the outer primaries but they also have a paler secondary bar, and the outer primary coverts are also paler, making the wings appear more washed out than those of our bird. Bonaparte's Gull shows many of the features of our bird, and the darker secondary bar and neat tail-band may suggest this species. At this age, however, they do not look as contrastingly white in the outermost primaries as our mystery gull does; typically, on Bonaparte's Gull the outermost primaries would be darker, so the white would be restricted to a panel in the centre of

133. 'Monthly Marathon'. Photo no. 220. Eighteenth stage in thirteenth 'Marathon'. Identify the species. Read the rules (see page 112), then send in your answer on a postcard to Monthly Marathon, c/o Unit 3, The Applestore, Workhouse Lane, Icklesham, East Sussex TN36 4BJ, or by e-mail to editor@britishbirds.co.uk, to arrive by 30th June 2006.

the primaries. In addition, the legs look slightly orange-toned, lacking the characteristic pale pink hue of the legs of Bonaparte's Gull at all ages. All this should lead us to the correct identification of a juvenile Black-headed Gull.

James Lidster

Perhaps not surprisingly, the only names put forward as solutions to this round of the Marathon were Black-headed Gull and Bonaparte's Gull, and 83% of votes were for Black-headed, the correct answer. None of the current leaders of the thirteenth 'Marathon' were caught out, and Mark Edgeller, Jon Holt, Andy Rhodes, Jakob Sunesen and Peter Sunesen remain as joint leaders, each with a series of ten correct answers.

Eds

Recent reports

Compiled by Barry Nightingale and Eric Dempsey

This summary of unchecked reports covers mid March to mid April 2006.

Black Duck *Anas rubripes* Long-stayers were seen on Tresco (Scilly), to at least 29th March, and at Kilcolman (Co. Cork), up to 26th March. Lesser Scaup *Aythya affinis* Swithland Reservoir (Leicestershire), 9th April; and long-stayers at College Reservoir (Cornwall) to 9th April, Milton Loch (Dumfries & Galloway) to 30th March and Ballysaggart Lough (Co. Tyrone) throughout. King Eider *Somateria spectabilis* Fair Isle (Shetland), 30th March; Dales Voe (Shetland), 2nd April; Barassie, 2nd–5th April, presumably same Irvine (both Ayrshire), 5th–9th April; Peterhead (Northeast Scotland), long-stayer seen again on 26th March. Barrow's Goldeneye *Bucephala islandica* Quoile Pondage (Co. Down), long-stayer throughout.

Kit Day

134. Adult Night Heron *Nycticorax nycticorax*, Seaton Marshes, Devon, March 2006.

White-billed Diver *Gavia adamsii* Lewis (Western Isles), 24th March, with four there on 26th March, one 31st March, two 1st April; Nesting (Shetland), long-stayer to 3rd April.

Little Bittern *Ixobrychus minutus* West Hove (West Sussex), 30th March to 7th April. Night Heron *Nycticorax nycticorax* Port Logan (Dumfries & Galloway), 13th March; Polperro (Cornwall), 13th March, found dead 14th; Dreenhill (Pembrokeshire), 15th March; Hayle (Cornwall), 15th March; Porthgwarra (Cornwall), 15th–17th March, found dead on 17th; St Mary's (Scilly), two, 15th March, with at least three and possibly five on 16th, four 17th, at least one remaining to 1st April, and one found dead 27th March; Tresco, two, 15th March, with at least one to 16th; St Martin's (Scilly), one found dead, 30th March; Plymstock (Devon), 16th March; Seaton Marshes (Devon), 19th–22nd March; St Erth (Cornwall), 3rd April; Bowling Green Marsh (Devon), 4th April; Boscathnoe Reservoir (Cornwall), 6th April, with two 7th–8th, one to 9th, and the other found dead; Helston Loe Pool (Cornwall), 6th April; Exeter (Devon), 7th–8th April; St Levan (Cornwall), 8th April; Freshwater (Isle of Wight), 9th April. Cattle Egret *Bubulcus ibis* Mill Farm, near Devizes (Wiltshire), 19th March to 1st April; Dunster (Somerset), 5th April; Piddinghoe (East Sussex), eight long-stayers to 1st

April. Great White Egret *Ardea alba* Newport Wetlands (Gwent), 13th March; Skinburness and Silloth airfield (Cumbria), 14th–22nd March; Groby Pool (Leicestershire), 24th March; between Brook and Cadnam (Hampshire), 9th April.

Gyr Falcon *Falco rusticolus* Muckross (Co. Donegal), 11th March.

Black-winged Stilt *Himantopus himantopus* Plym estuary, 1st–3rd April, same Thurlestone Marsh (both Devon), 6th–9th April. Killdeer *Charadrius vociferus* Blakeney (Norfolk), 7th–9th April. Kentish Plover *Charadrius alexandrinus* Cotswold Water Park (Wiltshire), 20th March; Dawlish Warren (Devon), 3rd April. Buff-breasted Sandpiper *Tryngites subruficollis* Walland Marsh (Kent), 2nd April. Long-billed Dowitcher *Limnodromus scolopaceus* Old Hall Marshes, 31st March to 3rd April, presumed same, River Colne (both Essex), to 8th April; Hayle estuary, long-stayer to 9th April.

John Malloy

135. Killdeer *Charadrius vociferus*, Blakeney, Norfolk, April 2006.

Laughing Gull *Larus atricilla* Marton Mere (Lancashire), 9th April. Five long-stayers in Britain during the period: Campbelltown (Argyllshire), 2nd–9th April; Reading/Theale Gravel-pits (Berkshire), to 29th March, possibly same, Little Marlow Gravel-pits (Buckinghamshire), 24th March; Barnstaple (Devon), to 1st April; Brixham (Devon), to 27th March; and Porthmadog (Gwynedd), to 3rd April. Up to four were reported in Ireland: Ring (Co. Cork) up to 14th March; The Lough, Cork City, into early April; Ballydehob (also Co. Cork) 2nd–3rd April; and Nimmo's Pier (Co. Galway) up to 15th March. Franklin's Gull *Larus pipixcan* Three first-winters were found in Ireland: Roscarberry (Co. Cork), 12th–25th March; Wicklow Harbour on 18th March, moving north to Greystones (Co. Wicklow) by 3rd April; and Crusietown Strand (Co. Louth), 19th March. In addition, one at Northam Burrows (Devon), from 31st March to 4th April. Bonaparte's Gull *Larus philadelphia* Frome (Somerset), 18th–25th March. Long-stayers at Ferryden (Angus), 13th–15th March, and Cobh (Co. Cork), to 20th March. Forster's Tern *Sterna forsteri* Two long-stayers remained in Ireland, one at Nimmo's Pier, the other at Pilmore Strand (Co. Cork); the latter (or a new bird) at Dungarvan (Co. Waterford) on 17th–19th March.

Snowy Owl *Bubo scandiacus* A late report concerns one at Athlone (Co. Westmeath) on 6th March.

Alpine Swift *Apus melba* An influx into south/southeast Britain, as follows: Lowestoft, two, 28th–29th March and again 31st March to 2nd April, with possibly one of the same Minsmere/Sizewell, 31st March and 2nd April, then three there 3rd April, with probably one of same at Benacre (all Suffolk), 1st April; St Margaret's-at-Cliffe (Kent), 28th March; between Truro and Falmouth (Cornwall), 30th March;

www.irishbirdimages.com

136. First-winter Franklin's Gull *Larus pipixcan*, Wicklow Harbour, Co. Wicklow, March 2006.

Marc Read

137. Alpine Swift *Apus melba*, Seaton, Devon, April 2006.

Graham Catley

138. Arctic Redpoll *Carduelis hornemanni*, Barton, Lincolnshire, March 2006.

Falmouth, 30th March; Stewartby Lake (Bedfordshire), 1st April; Seaton and Colyford (Devon), two, 1st April, with three 2nd–9th April; Norwich (Norfolk), 1st–2nd April; Rye (East Sussex), 2nd April; Filey (North Yorkshire), 2nd April, with possibly same at Flamborough Head (North Yorkshire), 3rd April; Hampstead Heath (London), 9th April. In addition, four or five were seen in Ireland: Whitehouse Lagoon, Belfast, 2nd April; North Slob (Co. Wexford), 3rd April; Dungarvan, 3rd April; and one or two birds at Lissagriffin and Mizen Head (Co. Cork), 5th April. Pallid Swift *Apus pallidus* Bray Harbour (Co. Wicklow), 27th–28th March. Red-rumped Swallow *Cecropsis daurica* Kenidjack Valley (Cornwall), 2nd–9th April; Ditchling Common (East Sussex), 4th April.

American Robin *Turdus migratorius* Peckham (London), from 24th December 2005 to 28th March and, sporadically, to 6th April. Subalpine Warbler *Sylvia cantillans* Christchurch Harbour (Dorset), 7th–9th April. Penduline Tit *Remiz pendulinus* Portrack Marsh, two, 23rd March to 5th April, presumed same, Dorman's Pool (both Cleveland), to 9th April ; New Hythe (Kent), 4th April; Rainham Marsh (London), three long-stayers to 18th March at least.

Spanish Sparrow *Passer hispaniolensis* Coventry (Warwickshire), 19th March. Arctic Redpoll *Carduelis hornemanni* Waters' Edge Country Park (Lincolnshire), 25th–28th March; Cowbar Nab (Cleveland), 30th March.

Kit Day

139. Male Subalpine Warbler *Sylvia cantillans*, Christchurch Harbour, Dorset, April 2006.

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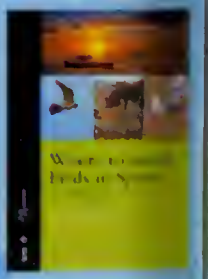

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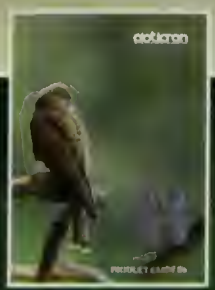

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Editorial: Important Bird Areas

For many years, *British Birds* has been concerned primarily with the birds of the Western Palearctic. This was never meant to imply an absolute adherence to the geographic and political borders that helped the authors of *BWP* to define the 'Western Palearctic'. Many species migrate to or from the region, and distant wintering or breeding areas are important for obvious reasons. Nonetheless, the borders of the Western Palearctic have been an appropriate means of defining the core geographical area of interest for this journal, and it is intended that they will continue to do so.

Nevertheless, the horizons of most birders, and certainly most *BB* readers, have expanded in the past 20–30 years. As international travel opportunities have mushroomed, accompanied by increasingly easy access to information, so the geographical scope of our bird interests has widened. The term 'world birder' is no longer applied to a tiny minority; in fact, many birders now make one or more long-haul foreign trips each year. Seeing new families and genera of birds and other wildlife, as well as new environments and new countries, is both challenging and satisfying. The ease of travel and modern communications have also increased our awareness of the environmental problems and issues facing other parts of the world. Conservation is now very much a global, as well as a local or national, issue and you have only to look through recent 'News & comment' columns to see that *BB* has touched on some of the issues of worldwide conservation concern.

This seems an appropriate time to broaden *BB*'s scope somewhat, and I am delighted to introduce a new series for *BB*, looking at Important Bird Areas of the world. This will be an occasional series, with between two and four articles per year, so it is not intended to dilute the primary focus on the Western Palearctic significantly. Indeed, some of the sites and areas we cover will be *in* the Western Palearctic. And for others, including Southwest Greenland, which is the focus of the first contribution to the series, many of the species will be of key interest to the Western Palearctic birder. The series will also feature some sites which are remote from, and which contain few species that have occurred in, the Western Palearctic. These sites will be selected carefully, and I am confident that they will be of great interest to a majority of readers.

This new series owes its origins to the ideas of Richard Porter, now a *BB* director. Richard's knowledge and enthusiasm have been vital in getting the series off the ground, and he has also enlisted the help and expertise of three BirdLife International colleagues, Mike Crosby, Mike Evans and Lincoln Fishpool, to advise on the series, in addition to *BB*'s regular Editorial Board. The authors for the series will be chosen carefully to provide in-depth and up-to-date expertise about the birds and habitats of the sites and areas involved. As well as describing the characteristic bird species of a region, they will highlight particular threats to vulnerable populations and the key conservation problems, and discuss the management actions which seem best suited to tackle major issues. Nonetheless, the series is not intended to follow a rigid

Hugh Harrop

140. Literally millions of Brünnich's Guillemots *Uria lomvia* winter in the seas off Southwest Greenland.

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format in any way; each article will be a unique, stand-alone piece, appropriate to the area, and I hope that readers enjoy the diversity of the contributions.

Over the past 25 years, BirdLife International has developed a programme to identify and protect a network of sites critical for the conservation of wild birds. These have been given the name Important Bird Areas, more popularly known as IBAs. The programme began in Europe, but has now expanded to cover all the continents of the world, and work is currently underway on criteria to identify marine IBAs.

Four standardised criteria are employed worldwide to identify IBAs. Using these criteria, sites are selected according to the presence of: (a) significant numbers of a globally threatened bird species; (b) a significant component of the bird species whose breeding range defines an Endemic Bird Area (see below); (c) a significant component of the group of species which are characteristic of biomes (defined as major regional ecological communities, e.g. Eurasian steppes, Afrotropical highlands); and (d) globally important congregations of waterbirds, seabirds or landbirds such as migratory raptors or cranes. For more details of the criteria, visit http://www.birdlife.org/datazone/sites/global_criteria.html.

Regional directories of IBAs have been published for Europe (Heath *et al.* 2000), the Middle East (Evans 1994), Africa (Fishpool & Evans 2001), Asia (BirdLife International 2004) and the Tropical Andes (Boyla & Estrada 2005), and projects to identify IBAs are underway in all other regions of the world. National IBA directories have been published in over 50 countries, mostly in local languages.

Another BirdLife project has analysed the distributions of restricted-range bird species – those judged to have an historical breeding range of less than 50,000 km^2 – to identify 218 Endemic Bird Areas (or EBAs) worldwide. Each EBA supports at least two unique bird species, and most of them are also important for endemic species from other wildlife groups. The key sites for restricted-range bird species within the EBAs are an essential component of national and regional IBA networks.

The identification and documentation of the most important sites for birds – many of which are also rich in other wildlife – provides the basis on which to establish priorities for conservation action. These may range from high-level advocacy – for example the IBA analyses in Europe, Africa and Asia have been used to propose to governments lists of sites that could potentially be designated wetlands of international importance under the Ramsar Convention – to projects working at grass-roots level. A successful approach in many countries has been the establishment of national networks of 'Site Support Groups', organisations formed by local people who work to conserve and monitor an IBA.

IBAs and EBAs are the most exciting places for birding in the world, because they support threatened and endemic species, or spectacular congregations of birds. Many *BB* readers will already have visited IBAs and EBAs, perhaps without realising it. Some of these areas are already protected, but others are unprotected and under threat, and publicising their importance in this series may contribute to advocacy for their conservation. Furthermore, birders visiting IBAs and EBAs can contribute to the conservation of these sites, either directly by contributing to the local economy, or indirectly by raising awareness of their international importance among local communities. Moreover, many IBAs are poorly known, and birders can collect valuable baseline information on their birds, habitats and conservation issues. The 'Data Zone' on the BirdLife website (www.birdlife.org) is a useful and convenient source of further information on IBAs and EBAs.

I hope that readers will enjoy the series, and that it may encourage you to visit some of these areas, and perhaps become actively involved in their conservation.

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Roger Riddington

The importance of Southwest Greenland for wintering seabirds

David Boertmann, Anders Mosbech and Flemming Ravn Merkel

141. The coast south of Sisimiut, West Greenland, at 67°N, in mid March 1999, a time of year when the ice cover usually is most extensive. Note that although the land is completely covered with snow, the waters are practically free of ice, except for the innermost bays and inlets, where new ice had formed not long before this photo was taken. *David Boertmann*

ABSTRACT The coastal and offshore waters of Southwest Greenland are internationally important winter quarters for seabirds. Estimates of the total number of wintering seabirds are in the region of 3.5–5.5 million individuals (not including an unknown but probably extremely large number of Little Auks *Alle alle*). These seabirds originate mainly from Arctic Canada, Greenland and Svalbard, but also, to a lesser extent, from Alaska, Iceland, mainland Norway and Russia. The most numerous species are Common Eider *Somateria mollissima*, King Eider *S. spectabilis*, Brünnich's Guillemot *Uria lomvia* and Little Auk. Some key areas have been designated as Important Bird Areas (IBAs) by BirdLife International, and recent data indicate that more areas qualify as IBAs. The most immediate threat to the seabirds in Southwest Greenland is hunting, and current harvest levels of the Greenland breeding populations of Brünnich's Guillemot and Common Eider are considered unsustainable. Bird hunting is prohibited in spring and summer; however, there are no sanctuary areas in Southwest Greenland, and a degree of spatial regulation of winter hunting is urgently required.

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142. Airborne surveys of wintering seabirds proved the most efficient and effective means of covering large areas of Southwest Greenland. This Partenavia P-68 Observer aircraft was extremely well suited to the task, by virtue of its high wings, Plexiglass nose, bubble windows on the sides, long-range capability and general versatility. The plane flew at speeds of 150–200 km/h and an altitude of 85 m (higher when marine mammals were the main focus of attention).

It is well known that the coastal and offshore waters of Southwest Greenland are biologically highly productive, and support a great quantity and diversity of marine life, including seabirds, during the summer (Born & Böcher 2001). It is much less well known that these Arctic waters are also extremely important habitats for wintering seabirds (e.g. Salomonsen 1950), and only within the past ten years has it been possible to assess the abundance and distribution of the different seabird species that occur in winter. The lack of quantitative data explains why the conservation importance of this region has not been recognised more widely, but it is now possible to identify potential new Important Bird Areas. Here, we present the background for these new insights and review the present knowledge.

The background

There are two reasons for the recent focus on seabirds in West Greenland. The first is that the seabed has high potential for petroleum development and, since the late 1980s, the Greenland political system has strongly promoted exploration for oil and gas. This has resulted in extensive surveys of the seabed geology. So far, only a single drilling has been carried out, in the Davis Strait west of Nuuk, in 2000. That well was dry, and so far no petroleum reserves have been discovered, but exploration continues and more drillings are expected in the near future. Good-quality biological and ecological data are essential for assessing the potential environmental impact of the oil industry and, in 1992, the available biological data were assembled and analysed to highlight the most important gaps. This data gab analysis made it clear that seabirds were an extremely important component of the environment but also that the information on seabirds was inadequate (Mosbech *et al.* 1996, 2000). Consequently, a programme of seabird studies was launched, including breeding colony surveys, establishment of a seabird colony database, mapping of seabird abundance and distribution along the coasts and in offshore areas, and also the analysis of old and unpublished seabird surveys (Boertmann *et al.* 1996, 2004; Boertmann & Mosbech 1997, 1998, 2002; Mosbech & Boertmann 1999).

The second reason is that some of the important breeding seabird populations in West Greenland – mainly Brünnich's Guillemots *Uria lomvia* and Common Eiders *Somateria mollissima* – have declined markedly over recent decades, and these decreases are linked mainly to the intensive hunting there (Kampp *et al.* 1994; Meltofte 2001; Merkel 2004). Biological information on these populations has, there-

Fig. 1. Southwest Greenland, with the most important site names shown. Black dots are towns, the dotted line is the 200-m isobath, delimiting the shelf. Important winter bird areas are shown in red, and associated numbers refer to the description in the text (pp. 291–293).

fore, been in demand as the basis for management of the seabird populations and regulation of the hunt.

The key organisations in these seabird studies are two applied science institutions, the Danish National Environmental Research Institute and the Greenland Institute of Natural Resources, often in close co-operation.

The study region

This comprises the shelf and nearshore waters off West Greenland, between Nanortalik at about 60°N and Disko Bay at 69°N, and hereafter termed 'Southwest Greenland' (fig. 1). In the northern part of this region, the shelf (from the coast to the steep gradient, usually outside the 200-m isobath) is about 150 km wide but narrows gradually to the south, being about 50 km wide at 62°N. Southwest Greenland is situated within the Arctic region, i.e. mean July temperatures are below 10°C. In terms of wintering seabirds, the most significant feature is that large areas are ice-free during the winter. In particular, only scattered ice floes usually occur in the waters between 63°N and 65°N. This is due primarily to the northbound Irminger Current, carrying relatively warm Atlantic water, but the prevailing easterly and southerly winds also help to keep coastal waters ice-free. South of 63°N, multi-year drift ice from the East Greenland Current (originating from the Arctic Ocean) often enters from the south in late winter, spring or even early summer (Valeur *et al.* 1997), while north of 65°N, drift ice usually covers the sea from January to May. Drift ice is highly dynamic; it is rarely completely solid, and usually has leads and cracks with open water. A significant phenomenon north of 65°N is a lead system between the drift ice and the outer coast (the 'shear zone') where open water is almost always present. This is created by wind and tidal currents, sometimes as far north as Disko Island and Uummannaq Fjord (Valeur *et al.* 1997). In winter 2005/06, this shear zone has been wide (>50 km) and almost ice-free, something which has become more common in recent years. In some of the fjord mouths, strong tidal currents ensure that the water is always ice-free. Within the fjords themselves, solid and stable ice anchored to the coast ('fast ice') forms during the winter. In the southern part of the study area, this forms only in the innermost parts of the fjords, while in the north of the study area, similar stable ice also forms in the archipelagos and as a rim along the coasts (although nowadays only during exceptionally cold spells). A polynya is an area within the sea ice where recurrent open water occurs. The open water off Southwest Greenland is not a true polynya, because the area is usually open to the south, but it has similar properties as far as seabirds are concerned, serving as a feeding and staging ground in winter and during spring migration.

Another important factor for the seabirds in the area is the bathymetry, particularly for species feeding on the seabed, such as Common Eiders, which rarely dive deeper than 50 m (Bustnes & Lønne 1997). Such relatively shallow waters are found mainly along the coasts, but also offshore at some particular areas of the shelf.

The feeding conditions for wintering seabirds are clearly favourable. The basis for this is the high primary productivity in the waters; in summer, the gross primary production has been measured to be as high as 900 mg C/m²/day, which is comparable with or higher than that of many temperate seas. The spring bloom is intense, and in many areas is sustained through the summer by upwelling events and other hydrodynamical discontinuities. Marine mammals and seabirds feed on schooling fish species such as Capelin *Mallotus villosus* and sandeels *Ammodytes* spp., crustaceans (e.g. euphausiids and gammarids), and benthic-feeding molluscs, crustaceans and echinoderms (e.g. Falk & Durinck 1993, Pedersen & Smidt 2000). The high biological production in the sea is also reflected in the Greenland economy, as the main export revenue (more than 50%) is now from Deep-sea Shrimp *Pandalus borealis* products. Until about 1970, the area supported one of the largest Atlantic Cod *Gadus morhua* fisheries in the world, but this had declined and virtually disappeared by 1980, probably owing to a combination of oceanographic changes and overfishing.

Fig. 2. The areas surveyed from aircraft in March 1999. Reprinted with permission from the journal *Polar Research*. The criss-crossed lines around the coast (labelled as '1999 survey effort' in key) are transect routes; total counts were made within the fjords.

Material and methods

The 1992 assessment revealed that winter was the most sensitive period for the seabirds in Southwest Greenland, and that seabird data from this season was seriously lacking (Mosbech *et al.* 1998). Consequently, some recent but unpublished seabird observations from both airborne and ship-based surveys (aimed chiefly at marine mammals and carried out in February and March 1981–93) were analysed (Durinck & Falk 1996; Mosbech & Johnson 1999). As these surveys had different spatial coverage, it soon became clear that an aerial survey covering as much as possible of the entire Southwest Greenland region, and carried out within a limited time period, was needed. This survey was launched in March 1999 (when light conditions were favourable) and covered the coastal parts of the entire region between Disko Bay in the north and the southern tip of Greenland (Merkel *et al.* 2002; Boertmann *et al.* 2004). Line-transect methodology (Buckland *et al.* 1993) was applied in the coastal region, while total counts were used inside the fjords (fig. 2).

Birds

The most numerous seabirds wintering in Southwest Greenland are Brünnich's Guillemots and Common Eiders (table 1). Both species

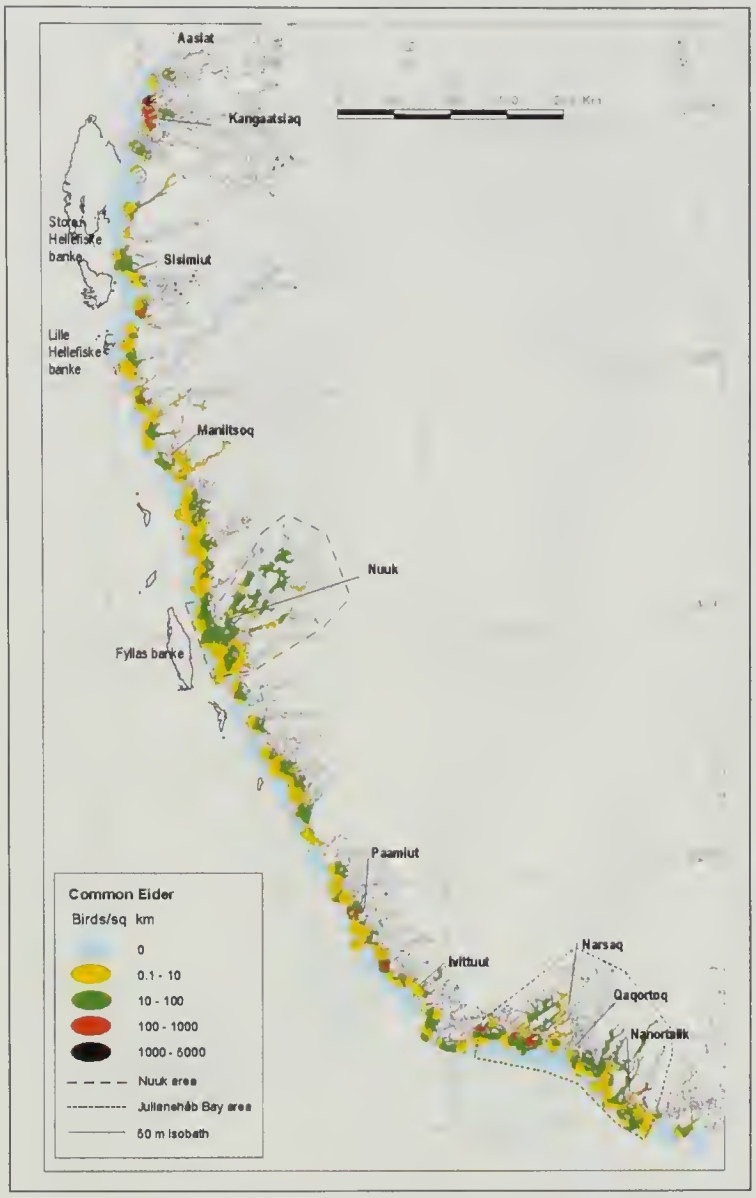


Fig. 3. Densities of Common Eiders *Somateria mollissima* as recorded during the March 1999 survey. Reprinted with permission from the journal *Polar Research*.

breed in the area, but in relatively low numbers, estimated at 25,000 individuals and 2,500 pairs, respectively (Boertmann *et al.* 1996). In winter, however, huge numbers of these two species arrive from breeding areas elsewhere. Ring recoveries reveal a rather complicated migration pattern for Brünnich's Guillemots (Kampp 1988; Lyngs 2003; Bakken & Mehlum 2005). Part of the local breeding population in West Greenland move to the waters off Newfoundland and Labrador, while others remain in the open waters off Southwest Greenland, where they mix with birds from right across the North Atlantic, as far away even as Russia (table 1). The total numbers wintering in the region are estimated at 1.5–3.5 million birds (Boertmann *et al.* 2004, unpubl. data). Brünnich's Guillemots arrive in September and October and typically remain far from the shore during the early autumn. Later in the year, in late October and November, many move closer to the coast, and this is reflected by an increase in the shooting bag (Falk & Durinck 1992). Recurrent guillemot concentration areas in winter are difficult to designate, as they tend to vary in time and space according to the distribution of their pelagic prey, which again is governed by oceanographic features. However, there are a few particular areas where Brünnich's Guillemots concentrate regularly, often at upwelling sites or fjord mouths with strong tidal movements, and a good example is the mouth of Godthåb Fjord (see below).

Fewer than 15,000 pairs of Common Eiders breed in the entire West Greenland region (Merkel 2004), which confirms that the bulk of the c. 500,000 wintering Common Eiders in Southwest Greenland must originate from breeding areas outside West Greenland, mainly in Arctic Canada. This has been confirmed recently by ring recoveries and satellite telemetry (Mosbech *et al.* submitted). Recoveries of Common Eiders ringed in Greenland show that birds from Northwest Greenland winter mainly in the northern part of Southwest Greenland, indicating that almost all Common Eiders wintering in the southern part are from Canada (Boertmann *et al.* 2004). Common Eiders from Southeast Greenland may also occur in winter, but the size and migration routes of this population are unknown (although recent observations suggest that considerable numbers may breed there; Boertmann 2004). Common Eiders are concentrated much more predictably than the Brünnich's Guillemots, owing to the distribution and accessibility of their benthic prey. Again, the mouth of Godthåb Fjord, with its numerous sheltered and shallow bays and inlets, is an example of an area where large numbers of Common Eiders occur each winter (Merkel 2006).

The King Eider *S. spectabilis* winter population is currently estimated at a minimum of 300,000 individuals, although recent unpub-

lished data indicate an even higher figure; ring recoveries confirm that almost all originate from breeding sites in Arctic Canada (table 1). One of the most surprising discoveries during the winter surveys was that of some important King Eider habitats up to about 70 km offshore on the northern part of Store Hellefiskebanke (Mosbech & Johnson 1999). These habitats are characterised by relatively shallow water (about 50-m depth), where King Eiders can dive to the bottom and feed on high-density mussel (Mytilidae) banks – also exploited by wintering

Table 1. Overview of the different flyway populations of seabirds wintering in Southwest Greenland and the conservation status of the species. For more information see Boertmann *et al.* (2004), but note that some of the figures (e.g. for Great Cormorant *Phalacrocorax carbo* and Brünnich's Guillemot *Uria lomvia*) have been adjusted according to new information. SPEC = Species of European Conservation Concern (see BirdLife International 2004).

Species	Supposed numbers in winter	European conservation status (BirdLife International 2004)	Flyway populations and percentage wintering in Southwest Greenland
Northern Fulmar *Fulmarus glacialis*	<100,000	Secure (Non-SPEC)	Probably Baffin Bay area (i)
Great Cormorant* *Phalacrocorax carbo*	20,000[2]	Secure (Non-SPEC)	W Greenland (100%)
Mallard* *Anas platyrhynchos*	<50,000[3]	Secure (Non-SPEC)	W and SE Greenland (≥95%)
Common Eider *Somateria mollissima*	≥500,000[1]	Secure (Non-SPEC)	N and W Greenland (100%), NE Canada (80%), SE Greenland?
King Eider *Somateria spectabilis*	≥300,000[1]	Secure (Non-SPEC)	NE Canada (75%?), N Greenland (x)
Harlequin Duck* *Histrionicus histrionicus*	5,000–10,000[2]	Rare (SPEC 3)	W Greenland (100%), E Canada (≥50%?)
Long-tailed Duck *Clangula hyemalis*	≥100,000[1]	Secure (Non-SPEC)	Greenland (x), Iceland (x), Canada?
Red-breasted Merganser* *Mergus serrator*	<20,000[3]	Secure (Non-SPEC)	W Greenland (100%)
White-tailed Eagle* *Haliaeetus albicilla*	150–200	Rare (SPEC 1)	W Greenland (100%)
Iceland Gull *Larus glaucoides*	≥300,000[3]	Secure (Non-SPEC)	Greenland (≥90%), NE Canada (i)
Glaucous Gull *Larus hyperboreus*	≥300,000[3]	Secure (Non-SPEC)	Greenland (≥75%?), Svalbard (i), NE Canada?
Great Black-backed Gull *Larus marinus*	22,000[3]	Secure (Non-SPEC)	W Greenland (100%), NW Europe (i)
Kittiwake *Rissa tridactyla*	few[3]	Secure (Non-SPEC)	North Atlantic (i)
Ivory Gull *Pagophila eburnea*	few[3]	Rare (SPEC 3)	NE Greenland (i), NE Canada?, Svalbard?
Common Guillemot *Uria aalge*	few[3]	Secure (Non-SPEC)	W Greenland (x), E Canada?
Brünnich's Guillemot *Uria lomvia*	1.5–3.5 mill.[2]	Vulnerable (SPEC 3)	W, N Greenland (50%?), Svalbard (75%?), NE Canada (50%?), Iceland (x), Russia (x)
Razorbill *Alca torda*	few[3]	Secure (Non-SPEC)	Greenland (x), Russia (i), NW Europe (i)
Black Guillemot *Cepphus grylle*	≥250,000[3]	Depleted (SPEC 2)	W, N Greenland (≥75%?), Iceland (i), Canada?
Little Auk *Alle alle*	unknown	Secure (Non-SPEC)	Svalbard (x), N Greenland?
Puffin *Fratercula arctica*	few[3]	Depleted (SPEC 2)	Greenland (x), Iceland (x), NW Europe (i)
Total	3.5–5.5 mill.		

(i) = insignificant part, (x) = unknown part, (%?) part guessed, [1] reasonable estimate, [2] crude estimate, [3] educated guess, * discrete population in Greenland.

Walruses *Odobenus rosmarus* (Born *et al.* 1994). These shallow parts are within the waters covered by drift ice in winter, but usually there are leads and cracks allowing the King Eiders to remain throughout the winter. During extremely cold spells, the open waters may freeze completely, and large numbers of King Eiders are then found in similar waters further south, at Fyllas Banke. Many King Eiders also winter among the Common Eiders throughout the coastal parts of the region. Recent satellite-tracking projects have shown that King Eiders arrive at the winter habitats of Store Hellefiskebanke as early as October, soon after they have finished their moult in fjords further north in West Greenland (Mosbech *et al.* 2004, in press).

Wintering Harlequin Ducks *Histrionicus histrionicus* are found along the exposed rocky coasts in the southern half of the region. Two flyway populations occur, the local Greenland breeders but also – a recent discovery – birds from eastern Canada (Brodeur *et al.* 2002). The numbers of wintering Harlequins are unknown, but a survey of moulting males in July 1999 produced an estimate of 5,000–10,000 birds. If all these stay for the winter, and are accompanied by females and juveniles, substantial numbers may actually winter in Southwest Greenland (Boertmann & Mosbech 2002; Boertmann 2003). Harlequin Duck is a species with an unfavourable conservation status in Europe (BirdLife International 2004), although not concentrated there (SPEC 3).

Long-tailed Ducks *Clangula hyemalis* winter in relatively high numbers in Southwest Greenland, estimated at 95,000 birds in March 1999 (Merkel *et al.* 2002); ring recoveries show that birds breeding in Greenland, Iceland and, probably, Canada winter in Southwest Greenland (table 1).

Black Guillemots *Cepphus grylle* are also numerous in Southwest Greenland, scattered throughout the region, including the ice-covered waters, where they are found in cracks and leads, even far from shore and in deep water. In such habitats, they survive by feeding on crustaceans (mainly amphipods) and Polar Cod *Boreogadus saida* associated with the ice floes and icebergs. An estimated 250,000 birds occur in the region in winter (Boertmann *et al.* 2004, unpubl. data).

Among the species occurring in low numbers, compared with eiders and Brünnich's Guillemots, several are important in a conservation context because they constitute discrete Greenland populations, for example Great Cormorant *Phalacrocorax carbo*, Mallard *Anas platyrhynchos conboschas* – an endemic sub-

Lars Witting/arc-pic.com

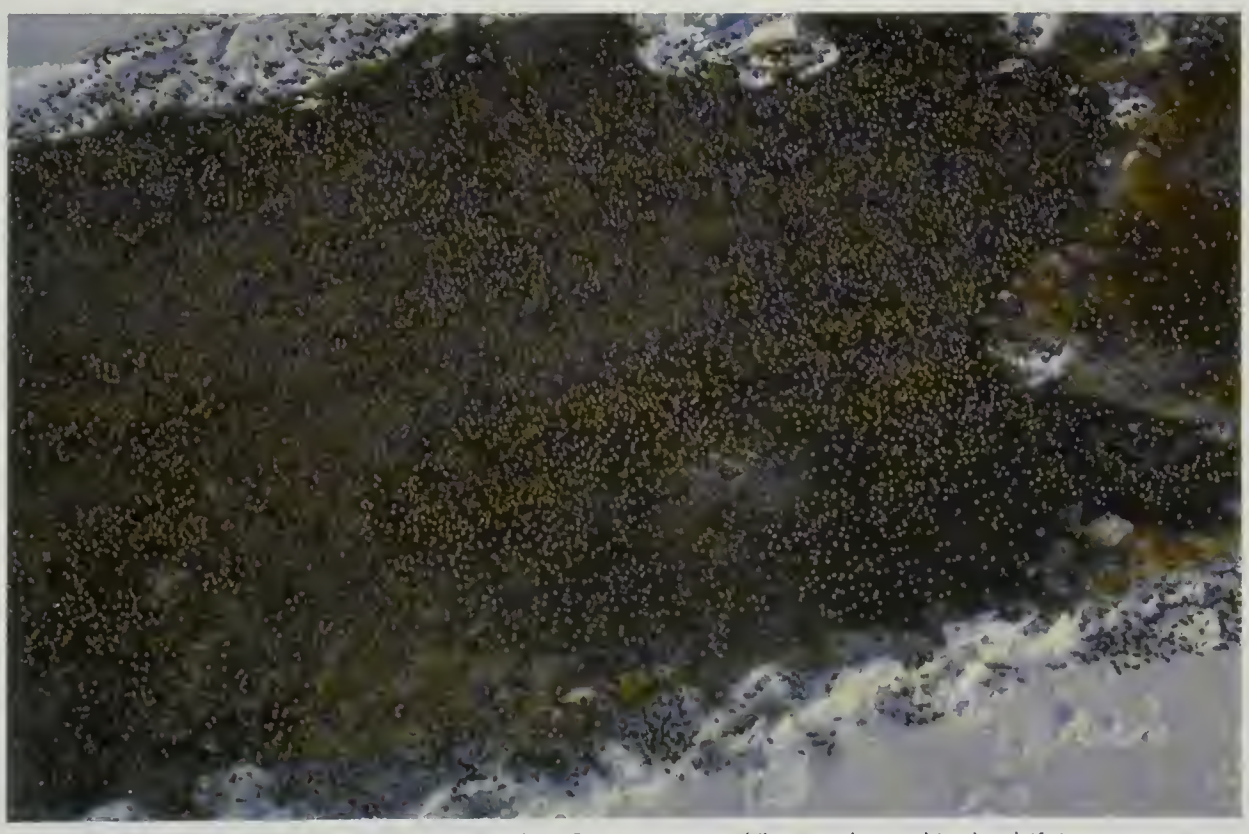
143. Wintering King Eiders *Somateria spectabilis* during a gale.

species – and Red-breasted Merganser *Mergus serrator*. Also, the White-tailed Eagle *Haliaeetus albicilla* population must be included here, even though this is not a seabird in the strict sense, because the population is completely dependent on the open waters of Southwest Greenland in winter. This constitutes an isolated population, occasionally even considered as a separate subspecies, and numbers only 150–200 pairs (Kampp & Wille 1990).

Three species of large gulls – Glaucous *Larus hyperboreus*, Iceland *L. glaucoides* and Great Black-backed Gulls *L. marinus* – are numerous in Southwest Greenland in winter. All are from local populations, except for a few Kumlien's Gulls *L. glaucoides kumlieni* from Baffin Island (Boertmann 2001). Glaucous Gulls from Canada probably also occur, but this has not been confirmed. Even though the sea is ice-covered, very few Ivory Gulls *Pagophila eburnea* winter in the region; they occur mainly as a rather rare visitor in the fishing ports, particularly when drift ice is close to the coast. The main wintering grounds are presumed to be outside Greenland waters, in the marginal ice zone of the southern Davis Strait and Labrador Sea (Orr & Parsons 1982).

Finally, there is a joker in the pack when it comes to calculating the total number of seabirds wintering in the study region – the Little Auk *Alle alle*. Surprisingly few were observed during the aerial surveys but, owing to their small size, they may very well have been overlooked. Anecdotal information suggests that large numbers are present in winter, at least on occasion, and huge numbers must pass through the region if the birds winter elsewhere. The breeding populations potentially wintering in Southwest Greenland number at least 33 million pairs from Northwest Greenland (Egevang *et al.* 2003), 3.5 million pairs from East Greenland (Kampp *et al.* 1987) and at least one million pairs (almost certainly a substantial underestimate) from Svalbard (Anker-Nilssen *et al.* 2000). Ring recoveries show that Svalbard birds occur in Southwest Greenland, but also that some migrate to Newfoundland; the few ring recoveries of Greenland breeding birds are also from the sea off Newfoundland (Anker-Nilssen *et al.* 2000; Lyngs 2003).

Besides the White-tailed Eagle, three other landbirds are more or less dependent on the open waters of Southwest Greenland: Gyr Falcon *Falco rusticolus*, Snowy Owl *Bubo scandiacus* and Common Raven *Corvus corax*. In particular, Gyr Falcons and Snowy Owls may be encountered far offshore in Davis Strait and Baffin Bay, where they feed on seabirds and rest



Mads Peter Heide-Jørgensen

144. Large numbers of wintering King Eiders *Somateria spectabilis* were located in the drift ice on some shallow offshore banks in the late 1980s. This photo, taken in March 1993, shows part of a flock numbering more than 25,000 birds, in a small lead in the ice.

Lars Witting/arc-pic.com

145. The Greenland Mallards *Anas platyrhynchos conboschas* are adapted to the harsh winter conditions in the marine environment. They are, for example, significantly larger than European Mallards.

on icebergs and floes.

None of the species occurring in Southwest Greenland in winter is globally threatened (BirdLife International 2005), although several came close to this designation. White-tailed Eagle was recently downgraded from 'Near threatened' (NT) to 'Least Concern' (LC), while Ivory Gull was upgraded to 'Near threatened' (BirdLife International 2005), the latter mainly as a consequence of a predicted reduction in the polar sea ice. A national 'Red List' for Greenland is being prepared, and at least the discrete population of White-tailed Eagle will be categorised as 'Vulnerable' (VU). Species of European Conservation Concern are listed in table 1 (BirdLife International 2004).

We estimate that the total number of birds wintering in Southwest Greenland is within the range of 3.5–5.5 million birds. This is a crude estimate since, for some species, the figures are nothing more than educated guesswork. The real numbers may be significantly higher, particularly because the estimate does not include Little Auks, as we simply have no idea of their abundance in winter, but there could well be several million Little Auks wintering in Southwest Greenland. It is not possible to calculate population trends from the winter survey results obtained so far. However, there is anecdotal evidence to suggest a serious decline in the eider populations since the early 1900s (e.g. Oldenow 1933). Surveys in the breeding areas of populations that winter in Southwest Greenland have also shown declines: Brünnich's Guillemots in Greenland (Kampp *et al.* 1994) and Iceland (Petersen 2000); King Eiders in Canada (Gratto-Travor *et al.* 1998); and Common Eiders in Greenland (Boertmann *et al.* 1996; Merkel 2002). Numbers of moulting King Eiders in West Greenland have also decreased (Mosbech & Boertmann 1999), at least at some specific localities. Only resident breeding Great Cormorants and Great Black-backed Gulls appear to have increased (Boertmann 1994, 2006; Boertmann *et al.* 1996).

Marine mammals

Marine mammals are another important component of the marine environment of Southwest Greenland, both in winter and in summer, and show a marked difference in species composition between the seasons. In winter, Narwhals *Monodon monoceros* and Belugas (White Whales) *Delphinapterus leucas* occur in the northern part of the Southwest Greenland waters (Heide-Jorgensen & Acquarone 2002). Narwhals occur mainly within the drift ice, but also in the Disko Bay area; Belugas typically frequent open waters between the coast and the drift ice. Bowhead Whales *Balaena mysticetus*

Lars Witting/arc-pic.com

146. White-tailed Eagles *Haliaeetus albicilla* are often attracted to the fishing ports of Southwest Greenland in winter. This immature was photographed at Nuuk.

occur in the marginal zone of the drift ice in December–May and congregate in the mouth of Disko Bay in April–May, before they move to their summer grounds in Arctic Canada (Heide-Jørgensen *et al.* 2006). Among the seals, Ringed Seal *Phoca hispida* is common in ice-covered waters, while a few Harp Seals *P. groenlandica* occur in open waters, the latter being much more abundant in summer. Walruses and Bearded Seals *Erignathus barbatus* also occur within the drift ice. The number of Walruses (which spend the summer on the coasts of Baffin Island) is currently estimated at 1,000 individuals, a declining population owing to unsustainable hunting pressure. The top predator of the Arctic marine ecosystem, the Polar Bear *Ursus maritimus*, is an occasional winter visitor to Southwest Greenland. The bears usually arrive with advancing drift ice, most frequently in the north, where the drift ice is most extensive, but also in the south, with drift ice carried by the East Greenland Current around the southern tip of Greenland.

Important Bird Areas

The coastline of the study region covers more than 1,250 km in a straight line, and within this huge region only two areas were identified as IBAs (Important Bird Areas) for wintering birds at the most recent review by BirdLife International (Boertmann 2000). They were the two most important King Eider habitats, at the shallow parts of the shelf (Areas 2 and 4 in fig. 1, p. 284). However, a further six areas are also designated as IBAs, mainly because of their breeding birds. Since the last review, some other extremely important wintering seabird areas have been identified, of which several qualify as IBAs. These, and the designated IBAs, are described below (cf. fig. 1).

Area No. 1 is a potential IBA and is a coastal area with extensive archipelagos between the entrances of two narrow fjords, Arfersiorfik and Søndre Strømfjord. In both of these fjords there are strong tidal currents and, particularly in Arfersiorfik, these currents keep large areas ice-free during winter. The shores are generally rocky, the waters are shallow and there are numerous sheltered bays and inlets. In March 1999, more than 30,000 Common Eiders were counted here (representing 6% of the total Southwest Greenland winter population; IBA criteria A4i, A4iii, B1) and more than 200 Great Cormorants (at that time 1% of the total Southwest Greenland population). Large numbers of King Eiders occur occasionally, perhaps when the ice completely covers important habitats further offshore (see IBA 027 below), and species like Brünnich's Guillemot, Long-tailed Duck and Red-breasted Merganser

also utilise the area. The human population is relatively dense in this area, with one town and four settlements. These and several now-abandoned settlements indicate predictable and reliable hunting resources (mainly birds) in winter, before fisheries became the most important way of living (prior to 1950).

Area No. 2 (IBA 027) is an offshore area within the 50-m isobath of Store Hellefiskebanke. Up to 345,000 King Eiders were estimated here in March 1982 (Mosbech & Johnson 1999), which represents a very high proportion of the total flyway population (IBA criteria A4i, A4iii, B1). Total numbers were estimated more recently as at least 300,000 (Mosbech & Boertmann 1999). The largest flock ever recorded was of c. 25,000 birds. Unfortunately, this area was not covered by the 1999 survey, but satellite-tracking and an unpublished ship-based survey in November 2003 confirm that it still is extremely important for King Eiders (Mosbech *et al.* 2004, in press).

Area No. 3 (a potential IBA) is also an offshore area situated within the 50-m isobath, on the southern part of Store Hellefiskebanke. An estimate of the number of King Eiders present in March 1981 gave 180,000 birds (Mosbech & Johnson 1999), around half of the estimated total winter population at that time (IBA criteria A4i, A4iii, B1). However, King Eiders have not been recorded in this area as regularly as at IBA 027 (above). Perhaps it is utilised only when dense ice cover forces King Eiders away from the northern part of Store Hellefiskebanke (Mosbech & Johnson 1999).

Area No. 4 (IBA 037) is the last of the relatively shallow offshore areas, and this is situated on Fyllas Banke, west of Nuuk. In March 1982, a total of 24,000 King Eiders was estimated here, representing about 8% of the total population; and in February/March 1989 more than 280,000 were estimated from ship-based observations (Durinck & Falk 1996), fulfilling IBA criteria A4i and B1. As for Area No. 3, high numbers of King Eiders have not been recorded as regularly as at Area No. 2, and the area is probably most important when ice conditions are too harsh for the eiders further north.

Area No. 5 (this includes IBA 038, while the major part is a potential IBA) is located around the mouth of Godthåb Fjord, covering both the outer coastal areas and the exterior parts of the fjord. There are strong tidal currents in the fjord mouth, and winter ice occurs only rarely and only during extremely cold spells. The coasts are rocky, but there are also some areas with low sediment beaches and very shallow waters. In March 1999, 57,000 Common Eiders and

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147. Large numbers of Purple Sandpipers *Calidris maritima* winter on the rocky shores of Southwest Greenland.

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148. The majority of Iceland Gulls *Larus glaucoides* winter in Southwest Greenland, although some, mainly juveniles and immatures, like this first-winter, move southwards to northwest Europe and eastern Canada. The English name of this species is somewhat misleading, because the breeding range is restricted to Greenland and it occurs only in winter in Iceland – 'Greenland Gull' would be more appropriate.

13,000 Long-tailed Ducks were estimated in this potential IBA, representing 11% and 13% of the total winter populations in Southwest Greenland respectively (meeting IBA criteria A4i, A4iii and B1) and these congregations undoubtedly occur each winter (Merkel *et al.* 2002; Merkel 2006). It is not possible to calculate the proportion of the flyway population of these two ducks because the contributions from different breeding populations are not fully understood (table 1, p. 287). The westernmost islands provide an important wintering site for Harlequin Ducks (Boertmann 2003), where possibly more than 10% of the winter population are found (IBA criterion B2). In July/August 1999, this part of the coast held 28% of the total population of moulting males. Brünnich's Guillemots are often abundant among the islands and in the fjord entrance. The area is also important for the discrete Greenland populations of Red-breasted Merganser and Mallards, and large flocks of Purple Sandpipers *Calidris maritima* winter on the rocky shores. Several small settlements were previously situated in this area, testifying to predictable hunting resources in the winter. These are now utilised mainly by the many recreational hunters of the capital, Nuuk, situated in the centre of this area.

Areas Nos. 6 and 7 (both potential IBAs) are coastal areas in Julianehåb Bay with extensive archipelagos and shallow waters. Both outer coastal areas and parts of the fjords are included. These two areas are especially important for Common Eiders and 95,000 birds were estimated in March 1999, representing about 19% of the total winter population (IBA criteria A4i, A4iii, B1). The coasts of the northern area (No. 6) are also an important winter habitat for Harlequin Ducks (numbers unknown), and both Mallards and Red-breasted Mergansers occur in fair numbers.

International significance

The international significance of Southwest Greenland as a winter habitat for seabirds is underlined by the breeding origins of the seabirds (table 1). Birds ringed as far away as northern Alaska and Novaya Zemlya in Russia have been recovered there. However, the majority of the wintering birds are from breeding populations in the Baffin Bay region

and Svalbard. Internationally, Southwest Greenland is of particular importance for Brünnich's Guillemots breeding in Svalbard and Arctic Canada and for Common and King Eiders from Arctic Canada (table 1). The region is also extremely important for many discrete Greenland populations, such as Great Cormorant, Mallard (endemic subspecies), Harlequin Duck, Red-breasted Merganser and White-tailed Eagle.

It is clear why so many birds from the Baffin Bay region winter in Southwest Greenland – it is the nearest area of considerable size and extent which has reliable open water and abundant food resources. It is less obvious why so many birds from Svalbard also winter there. Perhaps there is less competitive interaction with other diving birds in Southwest Greenland than in the much closer Norwegian and Icelandic waters, where large numbers of diving seabirds from local populations (notably Common Guillemots *Uria aalge* and Puffins *Fratercula arctica*) winter (see Nygård *et al.* 1988, Petersen 1998, Barrett *et al.* 2001).

Threats

The present threats to the wintering seabirds of Southwest Greenland and their habitats are disturbance and direct mortality from fishing and hunting activities.

Hunting seabirds and marine mammals is important to Greenlanders, not only as an occupation but also culturally and as a recreational activity (Kapel & Petersen 1982; Pars *et al.* 2001). The importance of seabird hunting is underlined by the fact that only 38,000 people live in Southwest Greenland (Anon. 2000) and the number of professional hunters is around 2,000, yet, according to the official bag-record system, about a quarter of a million seabirds are taken each year. Most of these are killed in the winter months, by hunters sailing in small, fast dinghies. The highest numbers reported to the bag-record system during 1994–2003 were 255,000 Brünnich's Guillemots (1996), 84,000 Common Eiders (1996), 64,000 Little Auks (1996), 58,000 Kittiwakes *Rissa tridactyla* (1995), 35,000 Black Guillemots (1994) and 5,500 King Eiders. These numbers include birds taken outside the Southwest Greenland region, but by far the majority are taken there. In recent years, the numbers reported killed have decreased significantly, perhaps because of a similar trend in the numbers of professional hunters. But under-reporting of bag-records and declining quarry populations may also be relevant.

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149. Brünnich's Guillemot *Uria lomvia* is the most popular gamebird in Greenland. Guillemots are shot on the water and this hunter brought 44 birds back to Nuuk after a day's hunting in early November 2005.

Declines in breeding Canadian King Eider populations and Icelandic Brünnich's Guillemots have been related to the winter hunt in Southwest Greenland (Gratto-Travor 1998; Petersen 2000). For the Greenland breeding populations of Brünnich's Guillemots and Common Eiders, illegal hunting during the summer also plays a significant role, and the total harvest of these populations in Greenland is considered unsustainable (Kampp *et al.* 1994; Meltofte 2001; Merkel *et al.* 2002).

The disturbance

caused by hunting activity is also a serious threat, exacerbated by the fact that hunted bird populations are much more wary of non-threatening human activities such as sailing (Madsen *et al.* 1998). The winter hunt is not spatially regulated, and no coastline is more than a few hours away from towns and smaller settlements in a fast dinghy. Wintering seabird populations which are confined to coastal waters, such as Common Eiders and Long-tailed Ducks, therefore face the constant risk of being hunted or disturbed; others, like King Eiders, wintering well offshore and among the drift ice, are less accessible to hunters.

The most significant impact from fisheries is incidental bycatch in Lumpsucker *Cyclopterus lumpus* gill-nets (Merkel 2004). This fishery takes place in spring and in shallow coastal waters, often coinciding with concentrations of staging Common Eiders, and it has increased markedly since 1966 (Merkel 2004). The total bycatch of eiders and the impact on the population is still unknown, but a study from Nuuk shows that bycatch may have a significant impact. Here, bycatch accounted for a minimum of 52% of the total eider harvest, numbering about 12,000 birds per season (Merkel 2004). Previously (in the early 1970s), offshore and nearshore drift-net fisheries for Atlantic Salmon *Salmo salar* took huge numbers of Brünnich's Guillemots off Southwest Greenland, mainly in late autumn (Tull *et al.* 1972; Christensen and Lear 1977). This bycatch problem has declined to insignificant levels, first because the salmon quota was reduced and the timing and location of the fishery were changed, later because the commercial salmon fishery was closed (Falk & Durinck 1991; Falk 1998).

Many eiders are inadvertently killed each winter by ships because on foggy and snowy nights eiders are attracted to the lights, particularly the powerful searchlights on board ships. The birds collide with superstructure and wires on the vessels and many incidents where hundreds of eiders have been killed by a single ship have been reported to us. Many ships pass through eider habitats even during the winter, but the population impact of this mortality remains unknown.

An important potential threat is the development of an offshore oil industry. The most promising areas (for oil) are found in deep waters beyond the shelf, but accidental oil spills from these sites or from tanker wrecks may drift to the coast and affect wintering seabirds and their habitats. The most vulnerable populations in this regard will be species with a slow population turnover and which occur in high recurrent concentrations, such as King Eiders and Harlequin Ducks. However, the most numerous and more dispersed populations – Common Eiders and Brünnich's Guillemots – are also vulnerable, mainly because both species are declining and their ability to recover from an oil-spill incident will therefore be hampered.

Climate change models predict an increase in mean annual temperatures for Greenland, particularly in mid and high latitudes of West Greenland, while the frequency of extremely low temperatures is expected to decrease (Ras-

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150. Harlequin Ducks *Histrionicus histrionicus* winter around the outermost skerries, and many flocks are present among some archipelagos close to Nuuk. An unknown, but probably large, proportion of the wintering birds are from breeding sites in eastern Canada.

mussen & Aaro-Hansen 2003). At first sight, this might be expected to benefit many wintering seabirds (e.g. eiders) as the reduced extent and duration of winter ice would increase the availability of feeding areas. Species dependent on the sea ice, such as Ivory Gull and many marine mammals, will probably be negatively affected if the distribution and quality of the ice is reduced. However, indirect and more subtle effects are extremely difficult to predict and unexpected population changes resulting from climate change are likely. In fact, significant reductions in ice cover have been apparent during the past five winters in the northern part of the study region; for example, Disko Bay has not had stable ice cover in any of these winters.

Conservation measures

In recent years, the Greenland Government has taken several initiatives to reduce the bird harvest. The hunting season has been reduced, mainly in the vulnerable spring season (Merkel 2004). However, the pressure from local politicians and the hunting organisation for more liberal hunting regulations has been intense, and this explains why the regulations have been changed at least five times over the past 20 years. The most recent regulations were issued in 2004, and they ensure a closed season in spring and summer – in Southwest Greenland typically from 1st March to 30th August or 15th October. Some municipalities have employed wildlife rangers with the difficult task of enforcing hunting and fishing regulations.

While a closed season for hunting has existed since 1977, spatial regulation is absent in Southwest Greenland. Except in urban areas, bird hunting may take place anywhere, and there are no safe havens for wintering seabirds. Experience from Denmark, where a network of shooting-free reserves has been established recently, shows that both local and migratory waterbird numbers *and* the hunting in nearby areas benefit from these sanctuaries (Fox & Madsen 1997; Madsen 1998a,b; Madsen *et al.* 1998). A similar network of effective, hunting-free reserves in the coastal areas of Southwest Greenland would be extremely beneficial to the wintering seabirds, particularly the Common Eider population.

Box 1. Visiting Southwest Greenland in winter

Southwest Greenland is easily accessible from Copenhagen, with scheduled flights several times a week in winter, and there are hotels in the major towns. However, once in one of the towns, it is difficult to get access to the wintering seabirds. If you succeed in chartering a boat (as sailing is the only way of getting around), then another problem arises, as seabirds generally are extremely shy, owing to the high hunting pressure, and therefore difficult to observe at close range. One of the best sites to get an impression of the winter birds in Southwest Greenland is actually in the capital city, Nuuk. A walk along the rocky shores and in the large harbour area can, under the right conditions, be very rewarding. White-tailed Eagles are frequent, Gyr Falcons often rest on antennae and chase Little Auks and other seabirds over the sea, while Common Eiders, King Eiders and Long-tailed Ducks rest along the coasts and small flocks of Mallards often gather in shallow, ice-free pools where the intertidal areas become exposed at low tide. Brünnich's Guillemots and Little Auks are also common. Purple Sandpipers assemble on some coasts, while large flocks of Glaucous, Iceland and Great Black-backed Gulls, usually with a few Kumlien's Gulls, frequent sewage outlets. Ivory Gulls are rare and occur usually when the drift ice of Davis Strait is close to the Greenland coast. And, if you manage to charter a boat and the sea is calm, spectacular flocks of Harlequin Ducks can be found around the outermost and exposed islands to the west of the town.

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151. Eiders often commute daily between fjordlands and outer coastal areas; this flock contains both Common *Somateria mollissima* and King Eiders *S. spectabilis*.

Nectarivory of Palearctic migrants at a stopover site in the Sahara

Volker Salewski, Bettina Almasi and Adrian Schlageter

ABSTRACT Nectarivory of long-distance Palearctic migrants is known from Europe but there are few reports of nectar as a resource for migrants in Africa. Migrants feeding on nectar were regularly observed in the oasis of Ouadâne, a stopover site in the western Sahara, Mauritania, in spring 2003 and 2004. Migrant species observed consuming nectar were Eastern/Western Olivaceous Warbler *Hippolais pallida/opaca*, Orphean Warbler *Sylvia hortensis*, Common Whitethroat *S. communis*, Subalpine Warbler *S. cantillans*, Common Chiffchaff *Phylloscopus collybita* and Willow Warbler *Ph. trochilus*, which took nectar from five tree species (*Balanites aegyptiaca, Maerua crassifolia, Capparis decidua, Acacia raddiana, Ziziphus mauritiana*). Flowering trees were available throughout the entire presumed migration period and, as well as providing nectar, they attracted many insects. We suggest that the phenology of flowering trees might be crucial for bird migration in spring, and might offer a solution to the phenomenon known as 'Moreau's paradox', i.e. that migrants successfully lay down fuel reserves prior to spring migration during the dry season, when potential resources are thought to be at their lowest.

Many long-distance Palearctic passerine migrants change their normally insectivorous diet prior to migration and become partly or entirely frugivorous (Parrish 1997; Bairlein 2002; Jenni-Eiermann & Jenni 2003; Pierce & McWilliams 2005). This has been observed prior to autumn migration in Europe but also in spring in Africa, where birds deposit fuel stores for the migration to the breeding sites (Fry *et al.* 1970; Morel 1973; Fry 1992; Stoate & Moreby 1995; Urban *et al.* 1997). Additionally, Schwilch *et al.* (2001) observed nectar consumption of migrants after they had crossed the Mediterranean in spring. Sites further north in Europe have recorded indirect evidence of nectar-feeding in the Mediterranean region through observations of 'pollen horns' on the bills and foreheads of migrant warblers which must have taken either insects or nectar out of flowers (Ash 1959; Ash *et al.* 1961; Calvario *et al.* 1989; Laursen *et al.* 1997). Further observations of Palearctic warblers foraging on nectar have been made in Britain (Campbell 1963), France (Yeatman 1978), Malta (Thake 1980), Gibraltar (Cortes 1982), Scandinavia (Holm & Laursen 1982), Israel (Prinzinger 1988) and Austria (Straka 1989). Recently, nectar-feeding of several resident warblers was described in more detail from the Atlantic islands of Madeira (Blackcap *Sylvia atricapilla*), Tenerife (Spectacled Warbler *S. conspicillata*, Common Chiffchaff *Phylloscopus collybita*) and the Azores (Blackcap) (Olesen & Valido 2003; Berthold 2005); this behaviour was reported from the Cape Verde islands more than 100 years earlier (Alexander 1898). The only observation of migrants foraging on nectar in Africa that we are aware of concerns Willow Warblers *Ph. trochilus* which occasionally took nectar from flowers of *Parkia clappertoniana* in Nigeria but were also attracted by insects visiting flowers (Pettet 1977). Additionally, pollen

on mist-netted migrants indicated nectar consumption in Nigeria (P. Jones pers. comm.). Lack (1987) reported that nectar is an important resource in Kenya only for sunbirds (Nectariniidae).

In spring 2003, during fieldwork for the Swiss Ornithological Institute's project on bird migration across the Sahara, we regularly observed several Palearctic migrant species feeding on the nectar of flowering trees in the oasis of Ouadâne, Mauritania. We began a project to investigate nectarivory in migrant passerines, which included systematic observations and some field experiments in spring 2004. Unfortunately, during a Desert Locust *Schistocerca gregaria* outbreak, all flowers of trees were eaten by the insects shortly after the project began. However, since our study was the first attempt to investigate nectarivory by Palearctic migrants in Africa, we present our observations here; even though they are admittedly somewhat anecdotal, we hope that they will encourage more research on this topic.

Study site and methods

Ouadâne (20°56'N 11°35'W) is surrounded by sand desert to the south and east, and rocky plateaux to the north and west. Dry wadis and gorges support larger trees many kilometres away from the oasis. The most abundant tree species here are *Leptadenia pyrotechnica*, *Maerua crassifolia*, *Acacia ehrenbergiana*, *A. raddiana*, *Balanites aegyptiaca* and a few *Capparis decidua*. Our observations were carried out mainly 2–5 km northeast of Ouadâne, between early March and early May, in both 2003 and 2004. A mist-netting station was operated in both years, c. 5 km northeast of Ouadâne among *Maerua crassifolia* and *Balanites aegyptiaca* trees next to a dry riverbed.

In 2003, tree phenology was monitored from mid March to mid May on a 1,500-m transect in a wadi c. 2 km northeast of Ouadâne. Four trees were selected every 75 m, using the point-quarter method (Krebs 1999). On selected trees and bushes (5 *Leptadenia pyrotechnica*, 6 *Balanites aegyptiaca*, 10 *Maerua crassifolia*, 26 *Acacia ehrenbergiana*, 30 *Acacia raddiana*, 3 *Ziziphus lotus*), the percentage of flowers was estimated weekly on a semi-quantitative scale (no flowers, <10% of branches with flowers, >10% of branches with flowers). In spring 2003, foraging migrants were observed regularly throughout the period for a separate study. We did not particularly concentrate on the food taken by the bird under observation, but when nectar was consumed it was often noted by the observer. In spring 2004, selected flowering *Maerua crassifolia* trees were observed systematically for about two weeks in late March and early April. After that, all flowers were eaten by locusts. During the whole period, casual observations on nectar-feeding were recorded. Western *Hippolais opaca* and Eastern Olivaceous Warblers *H. pallida reiseri* were not distinguished in the field, but were separated in the hand.

Pollen was detected on the bills and foreheads of many mist-netted migrants in spring 2003 but the observations were not recorded systematically. In spring 2004, the presence of pollen on trapped birds was recorded systematically until the locust outbreak.

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152. The study site at Ouadâne, Mauritania, March 2004.

Results

In our study site, trees were in flower throughout the presumed migration period (fig. 1). *Acacia ehrenbergiana* (fig. 1a) flowered throughout, though with decreasing intensity in mid May. Birds were not observed drinking nectar from these flowers, but were attracted by the great number of insects visiting the flowering acacias. *Balanites aegyptiaca* (fig. 1b) and *Leptadenia pyrotechnica* (fig. 1c) started flowering in April, whereas the flowering

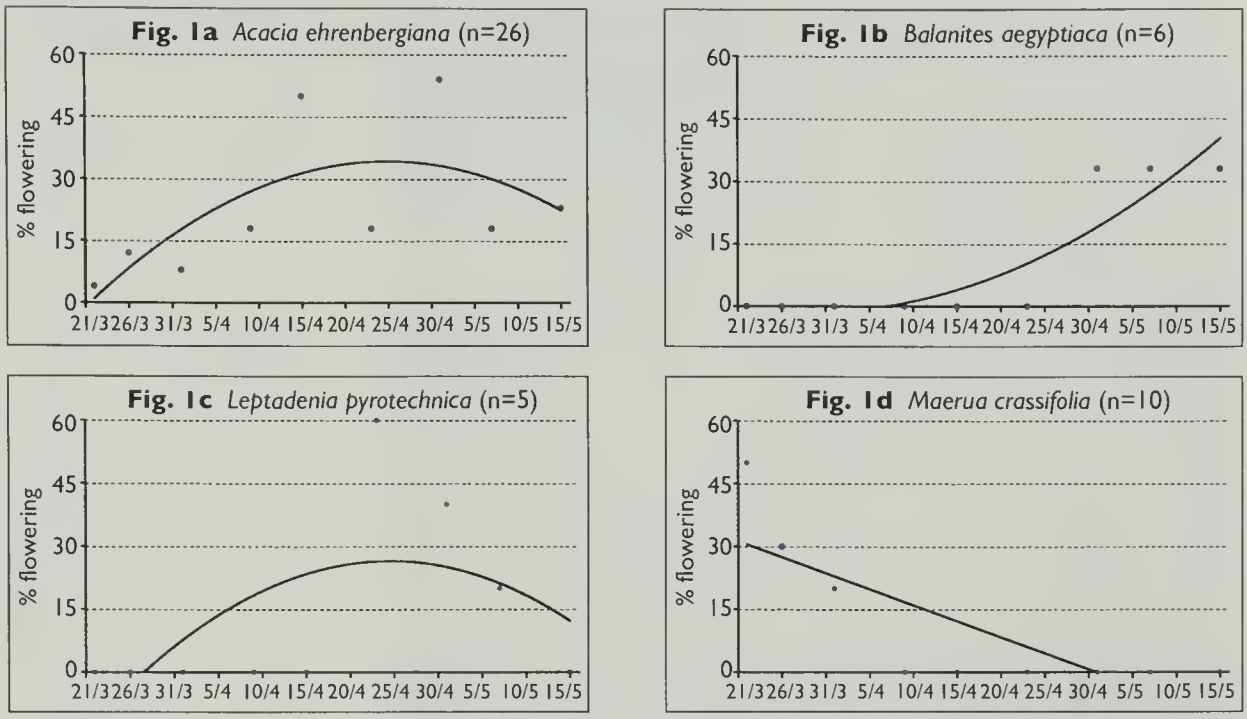

Fig. 1. Proportion of trees with more than 10% of branches with flowers in spring 2003; Ouadâne, Mauritania; trend line shows moving average.

of *Maerua crassifolia* (fig. 1d) started in early March and finished in April (peak flowering probably occurred before our systematic observations began). None of the 30 *Acacia raddiana* on our transect flowered, but a few other trees of this species were seen in blossom nearby in late April and early May; this species generally flowers in the rainy season (Arbonnier 2000).

In total, eight bird species (counting unidentified olivaceous warblers as one species) were seen feeding on the nectar of five tree species (table 1). The behaviour of nectar-feeding birds was observed repeatedly on several tree species in spring, especially *Maerua crassifolia* (see plate 152). The birds approached a flower, inserted their bill deep into the calyx and remained more or less motionless for a few seconds. Sometimes we observed movements of the throat or a slight probing movement of the head which was interpreted as the bill being pushed deeper into the flower. These observations do not suggest that birds were pecking insects out of the flowers but rather that the birds were consuming nectar. A destructive method to obtain nectar or pollen was rarely observed, e.g. when an unidentified olivaceous warbler pecked on flowers of *Acacia raddiana* or Golden Sparrows *Passer luteus* tore flowers of *Balanites aegyptiaca* apart.

Nectar-feeding was further indicated by birds with pollen on their bills and foreheads (see plate 153). In spring 2003, pollen on the birds' bills and foreheads was recorded only when it occurred in large quantities. Such notes were made for ten individuals of three species – Orphean Warbler *Sylvia hortensis* (5), Common Whitethroat *S. communis* (1) and Subalpine Warbler *S. cantillans* (4) – between 20th and 28th March. In spring 2004, the bills and foreheads of mist-netted birds were checked more systematically for pollen. Pollen was observed on five species (table 2) and the proportion of birds with pollen ranged from 3.7% to 11.5% (excluding the only Sardinian Warbler *S. melanocephala* trapped, which carried pollen). For ten other species, no pollen was detected. However, these proportions are likely to be underestimates, as several ringers were involved in fieldwork during this time and a small amount of pollen on the birds was likely to have been missed by some ringers. In 2004, no flowers were available at the site after 7th April. Nevertheless, two Orphean Warblers and one Subalpine Warbler were trapped carrying pollen on 11th, 16th and 19th April respectively.

During behavioural observations in spring 2003, five warbler species were also seen to consume nectar regularly, especially when observed in flowering *Maerua crassifolia*, but also in *Balanites aegyptiaca* (table 3). With a more systematic approach in spring 2004, two unidentified olivaceous warblers, one Western Bonelli's Warbler *Phylloscopus bonelli*, five Orphean Warblers and five Subalpine Warblers

Table 1. Bird species consuming nectar of flowers from five different tree species in Ouadâne, Mauritania. [1] Observed destructively pecking at flowers.

Species	*Balanites aegyptiaca*	*Maerua crassifolia*	*Capparis decidua*	*Acacia raddiana*	*Ziziphus mauritiana*
Eastern/Western Olivaceous Warbler *Hippolais pallida/opaca*		•		•[1]	•
Orphean Warbler *Sylvia hortensis*		•			
Common Whitethroat *S. communis*		•			
Subalpine Warbler *S. cantillans*	•	•	•		
Desert Sparrow *Passer simplex*			•		
Golden Sparrow *P. luteus*	•[1]				
Common Chiffchaff *Phylloscopus collybita*		•			
Willow Warbler *Ph. trochilus*		•			

Table 2. Proportion of trapped birds with pollen on bill and forehead, Ouadâne, Mauritania, spring 2004.

Species	mist-netted	no. with pollen (%)
Rufous Bush Robin *Cercotrichas galactotes*	2	0
Common Nightingale *Luscinia megarhynchos*	8	0
Reed Warbler *Acrocephalus scirpaceus*	2	0
Eastern Olivaceous Warbler *Hippolais pallida*	47	0
Western Olivaceous Warbler *H. opaca*	26	1 (3.8)
Melodious Warbler *Hippolais polyglotta*	3	0
Orphean Warbler *Sylvia hortensis*	131	15 (11.5)
Common Whitethroat *S. communis*	68	4 (5.9)
Spectacled Warbler *S. conspicillata*	3	0
Subalpine Warbler *S. cantillans*	299	11 (3.7)
Sardinian Warbler *S. melanocephala*	1	1 (100)
Western Bonelli's Warbler *Phylloscopus bonelli*	42	0
Common Chiffchaff *Ph. collybita*	10	0
Willow Warbler *Ph. trochilus*	28	0
Pied Flycatcher *Ficedula hypoleuca*	7	0

Table 3. The number of birds that consumed nectar in flowering trees, recorded during behavioural observations at Ouadâne, Mauritania, spring 2004 (total number of individuals observed shown in parentheses).

Species	*Balanites aegyptiaca*	*Maerua crassifolia*	*Acacia ehrenbergiana*	*Acacia raddiana*	species unknown
Orphean Warbler *Sylvia hortensis*		1 (5)		0 (1)	0 (1)
Common Whitethroat *S. communis*	0 (6)				
Subalpine Warbler *S. cantillans*	3 (9)	14 (23)	0 (1)		3 (3)
Spectacled Warbler *S. conspicillata*		0 (1)	0 (1)		1 (1)
Willow Warbler *Phylloscopus trochilus*	0 (8)	2 (6)	0 (1)	0 (3)	

were observed foraging in flowering *Maerua crassifolia* between 21st March and 2nd April. Of these, three Subalpine Warblers and two Orphean Warblers were taking nectar.

In our study area, there are hardly any observations of nectar-feeding migrants in autumn, owing to the scarcity of flowering trees. The only observation is from Tichît (18°26'N 09°30'W), where an unidentified olivaceous warbler fed on nectar of *Ziziphus mauritiana*.

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153. Flowers of *Maerua crassifalia*, Ouadâne, Mauritania, March 2004.

Discussion

We recorded regular nectarivory for six migrant passerines in Africa by direct observations and by checking for pollen on birds' heads and bills. Nectar consumption is doubtless more widespread than our results suggest, however, because casual (and unrecorded) observations of birds feeding on nectar were frequent during the study period in 2003. Our observations resemble those described by Prinzinger (1988), Straka (1989), Schwilch *et al.* (2001) and Berthold (2005). In addition, film sequences taken by B. Bruderer during our project clearly show that the birds were actually drinking nectar and were not taking insects or pollen from the flowers. The observations of birds which hop from flower to flower, drinking nectar immediately when the next flower is reached, indicate that nectar is actively searched and taken deliberately. Analyses of birds' droppings on a Mediterranean island by Schwilch *et al.* (2001) also confirmed that birds were consuming nectar. Pollen remains found on birds can originate from other areas, as pollen is reported to stick to feathers until the bird's next moult (Laursen *et al.* 1997). However, in our study, the fact that hardly any pollen was reported on mist-netted birds once flowers were not available indicates that pollen was collected from local sources. Individual migrants stay up to three weeks in the oasis (Salewski & Schaub submitted), which is likely to be sufficiently long for them to pick up pollen when feeding on nectar regularly.

Schwilch *et al.* (2001) discussed the possibility that nectar might be an important resource for migrants during their recovery after a long-distance flight, when a reduced digestive tract would have to be restored in order to digest large amounts of food. One advantage of nectar as a

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154. Orphean Warbler *Sylvia hortensis* with pollen on its forehead, Ouadâne, Mauritania, March 2003.

resource is that its monosaccharides are easily digested; furthermore, nectar is widespread, easily available, and provides water (Prinzinger 1988; Schwilch *et al.* 2001). Our observations indicate that nectar might be an important resource for some migratory species during spring migration across the Sahara. This is supported by the fact that single birds defend flowering trees aggressively against conspecifics or migrants of other species (Salewski *et al.* submitted).

Moreau (1961, 1972) pointed out that many Palearctic species winter in the Sahel zone, despite the proximity of the Sudan and Guinea savannah zones with their higher primary production and, therefore, the prospect of better feeding conditions (Morel 1973). Moreover, migrants prepare for northward migration at the end of the dry season, when the nutritional situation should be at its worst (Moreau 1961, 1972; Morel 1973; Fry 1992; Jones 1998) – a phenomenon which has become known as 'Moreau's paradox' (Mead 1972; Jones 1998). Mead (1972) and Jones (1985) emphasised that this paradox is more apparent than real, but it is still remarkable that migrants manage to sustain themselves throughout the winter period and even deposit fuel stores for spring migration in an apparently hostile environment. Morel (1973) pointed out that during the dry season in the Sahel many trees have leaves, flowers or carry fruits. This is confirmed for a Saharan oasis by our observations. The tree species present in Ouadâne are widespread in the Sahel region and in Saharan oases, and flowering trees are present throughout the entire migration period (Morel 1973; Arbonnier 2000; this study). Further south, in the northern Guinea savannah zone of Nigeria, many tree species also flower during spring migration of Palearctic passerines (Pettet 1977). Consequently, nectar is a potentially regular resource for migrants prior to spring migration or on stopover sites in the desert. Since flowering trees also attract many insects, which are taken by migrants that do not feed on nectar, the phenology of flowering trees might be crucial for migrating birds. Moreau's paradox is based on the assumption that during the dry season, foraging opportunities are scarce. However, this does not take flowering trees, which offer insects as well as nectar for migrants, into account. Considering the potential importance of flowering trees, the anthropogenic reduction of tree densities in the Sahel zone (Wilson 2004) might be affecting the population dynamics of many migrant species whose breeding populations are now declining in Europe (BirdLife International 2004; Berthold & Fiedler 2005).

If flowering trees are the solution to Moreau's paradox for migrating birds, the real paradox is perhaps the trees themselves, because they produce flowers at a time when water is least available in a generally dry environment. Pollination of plants by Palearctic warblers is rare in Europe (Ford 1985). Bird pollination is suggested for *Citrus* trees in the Mediterranean (Ash *et al.* 1961), for *Isoplexis sceptrum* and *Musschia wollastonii* on Madeira (Olesen & Valido 2003), for *Rhamnus alaternus* in Italy (Calvario *et al.* 1989), for *Anagyris foetida* by warblers in Spain (Ortega-Olivencia *et al.* 2005) and for *Salix* sp. by the non-migratory Blue Tit *Cyanistes caeruleus* (Kay 1985). Pollination of African trees by Palearctic migrants has not been mentioned in the published literature up to now, but if many birds visit flowering trees during spring migration, they might be important pollinators for species like *Maerua crassifolia*. Insects may also be important; after sunset, Striped Hawk-moths *Hyles lineata* (Lepidoptera, Sphingidae) were seen in great numbers visiting flowering *Maerua crassifolia* at Ouadâne. However, assuming that migrant birds *are* important pollinators, the trees may have adjusted their phenology to coincide with bird migration. Birds are provided with extra food during spring migration, while flowering trees take advantage of birds as pollinators; so for the trees the trade-off is between flowering in the unfavourable dry season and the better chance of pollination by birds at this time. Apart from Desert Sparrows *Passer simplex* and Golden Sparrows, the latter using a destructive method to obtain nectar, no resident species (e.g. Cricket Warbler *Spiloptila clamans*, Fulvous Babbler *Turdoides fulvus*) were observed visiting flowers, which might further indicate the importance of migrants for tree reproduction. Although highly speculative, these ideas certainly demonstrate the need for further research on this topic.

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Splitting headaches?

Recent taxonomic changes affecting the British and Western Palearctic lists

Martin Collinson

ABSTRACT This paper summarises the taxonomic changes that have affected the BOU British List and the *British Birds* Western Palearctic list since 2000. The purpose of this review is to present these changes simply and clearly, in a single document to provide an easy reference, and to give brief, non-technical explanations of the reasons underlying the decisions. Similar updates will be provided in future in *BB* on a more regular basis.

Introduction

The editorial policy of *British Birds* is to follow taxonomic changes adopted by the British Ornithologists' Union Records Committee on the recommendation of its Taxonomic Sub-committee (TSC). For Western Palearctic taxa that are outside the remit of the BOURC, recommendations of the Taxonomic Advisory Committee (TAC) of the Association of European Records and Rarities Committees (AERC) are normally followed. Both the BOURC TSC and the AERC TAC have published several relevant papers since 2000 that alter the taxonomy of the British and Western Palearctic lists: Knox *et al.* (2002), Sangster *et al.* (2002a), AERC (2003), Sangster *et al.* (2004a) and Sangster *et al.* (2005). The following summary is in no way intended to replace the properly referenced statements contained in those publications. These papers, with the exception of Sangster *et al.* (2002a), are available online at http://www.bou.org.uk/recbrlst.html and http://www.aerc.eu. Species-level decisions are made by the TSC on the basis of the committee's Guidelines (Helbig *et al.* 2002), which is also available online at http://www.bou.org.uk/recbrlst.html. This paper summarises the decisions contained in these papers, for easy reference and to act as a source of quick reminders to the reasoning underlying the changes. Although the emphasis here is on the *British Birds* Western Palearctic list (available online at http://www.britishbirds.co.uk/bblist.htm), it should be stressed that these decisions relate to the BOU British and AERC Western Palearctic lists.

Some of the changes implemented by the BOU and *BB* prior to 2000 but subsequent to the publication of Voous's *List of Holarctic Birds* in the 1970s are are listed in Appendix 1. Four taxonomic changes that are peripheral to the British List, but upon which the BOURC TSC has not yet commented, have been incorporated into the present *BB* Western Palearctic list following the recommendations of the AERC TAC. These are that the following pairs of taxa are treated as separate species: Bermuda Petrel *Pterodroma cahow* and Black-capped Petrel *P. hasitata*; Oriental Honey-buzzard *Pernis ptilorhyncus* and Honey-buzzard *P. apivorus*; Amur Falcon *Falco amurensis* and Red-footed Falcon *F. vespertinus*; and Saunders's Tern *Sterna saundersi* and Little Tern *S. albifrons*. These changes are not discussed further here. One taxonomic change that falls outside the remit of the BOURC TSC has been adopted by AERC but not included in the *BB* list. This is the placement of Demoiselle Crane *Anthropoides virgo* in the genus *Grus*. Phylogenetic studies have not yet fully resolved the relationships between different groups of cranes, and there seems little point making changes until these are better studied.

For each decision listed below, the *previous* English or scientific species name or higher

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taxon involved is given first, in bold, with the relevant change(s) summarised in italics, including the original BOURC or AERC reference for further information. Identification papers and other references are listed in the normal way, but the TSC and AERC TAC reports are abbreviated as follows: TSC1 = Knox *et al.* (2002); TSC2 = Sangster *et al.* (2004a); TSC3 = Sangster *et al.* (2005); AERC1 = Sangster *et al.* (2002a); and AERC2 = AERC (2003). Finally, the main paragraphs of text summarise the reasoning and flesh out the details of the recommendation, including, where appropriate, an explanation or literal translation of newly adopted generic scientific names.

Taxonomic changes to the British and Western Palearctic lists

1. Species-level taxonomy

Bewick's Swan *Cygnus columbianus*

The two subspecies of Bewick's Swan continue to be treated as conspecific (TSC1, AERC2)

The two subspecies of Bewick's Swan, *C. c. columbianus* and *C. c. bewickii*, have been proposed as potential splits because they differ in the amount of yellow on the bill (summarised in Sangster *et al.* 1997). However, it is not clear whether there is any overlap, and although hybridisation occurs there is virtually no information on the relationships between the two taxa in that part of eastern Siberia where they come in contact.

Canada Goose *Branta canadensis*

Greater and Lesser Canada Goose should be treated as separate species (TSC3)

Both morphology and genetics suggest that the 'large-bodied' and 'small-bodied' Canada geese form separate lineages. Genetically, the small-bodied birds appear to be closer to Barnacle Goose *B. leucopsis* than they are to the large-bodied taxa, and the large taxa are closer to the Hawaiian goose complex (of which only the Nene *B. sandvicensis* survives). This is a surprising result and, if true, 'Canada Goose' as we previously understood it comprises at least two species: Greater Canada Goose *B. canadensis* (with subspecies *canadensis, fulva, interior, maxima, moffitti, occidentalis* and *parvipes*), and Lesser Canada Goose *B. hutchinsii* (with subspecies *hutchinsii, leucopareia, minima* and *taverneri*).

It is assumed that Canada geese, Hawaiian geese and Barnacle Goose all evolved from a common 'white-cheeked' ancestral species that looked like modern-day Canada geese. Barnacle Goose and Hawaiian geese diverged greatly in plumage from this ancestor, but Greater and Lesser Canada Goose much less so. The older literature reports several parts of the range where large- and small-bodied Canada geese breed close to each other, but in separate habitats and without hybridisation. Identification in the field remains a problem; the best structural pointer to Lesser Canada Goose is generally the shorter, stubbier bill. Although the race *parvipes* is colloquially known as 'Lesser Canada Goose' in the USA and Canada, it is in fact a Greater Canada Goose *B. canadensis parvipes*. The American Ornithologists' Union (AOU) has also adopted this split, but chose 'Cackling Goose' as the vernacular name for *B. hutchinsii*, retaining 'Canada Goose' for *B. canadensis*. In fact, over 30 different vernacular names have previously been used for Canada geese subspecies, and it is not possible to retrieve an old name that defines either species unambiguously. Naming them 'Big Canada Goose' and 'Little Canada Goose' would seem to be the next-best alternative! For identification, see http://www.sibleyguides.com/canada_cackling.htm, http://www.oceanwanderers.com/CAGO.Subspecies.html and http://www.dfw.state.or.us/ODFWhtml/InfoCntrWild/PDFs/Goose_ID_Book.pdf

Common Teal *Anas crecca*

Green-winged and Eurasian Teal have been split (AERC1)

There are diagnostic plumage differences between male Green-winged *A. carolinensis* and Eurasian Teals *A. crecca*, and limited genetic evidence suggests that *carolinensis* is more closely related to the morphologically divergent Speckled Teal *A. flavirostris* than it is to *crecca*. As described in Sangster *et al.* (2001), they should therefore be treated as separate species: Green-winged Teal *A. carolinensis* (monotypic) and Eurasian Teal *A. crecca* (polytypic, with subspecies *crecca* and *nimia*). The basis for recognition of *nimia*, the larger, Aleutian subspecies of Eurasian Teal, is very weak (Sangster *et al.* 2001).

Greater Scaup *Aythya marila*

The subspecies nearctica *has been recognised* (TSC3)

Greater Scaup has been treated as monotypic since the 1971 BOU *Checklist* (BOU 1971)

without any explanation. However, Pacific and Nearctic birds have a stronger pattern of vermiculation on the mantle and scapulars, and should be recognised as a separate subspecies *A. m. nearctica*. There are no Western Palearctic records of *nearctica*.

Scoters *Melanitta*

Black and Common Scoter should be treated as separate species; White-winged and Velvet Scoter should be treated as separate species (TSC3)

All six scoter taxa (two 'black' scoters, three 'white-winged' scoters and Surf Scoter *M. perspicillata*) are 100% identifiable on the basis of several clear differences in shape, structure and colour of their bills, which males use as signals during courtship display. Common *M. nigra* and Black Scoters *M. americana* also differ clearly in vocalisations, as do Velvet *M. fusca* and White-winged Scoters *M. deglandi*. There are small plumage differences between Velvet and White-winged Scoters too. Together, these differences, which are likely to affect mate choice, are clear enough to warrant specific recognition for:

Common Scoter *M. nigra* (monotypic)
Black Scoter *M. americana* (monotypic)
Velvet Scoter *M. fusca* (monotypic)
White-winged Scoter *M. deglandi* (polytypic with subspecies *deglandi* and *stejnegeri*)
Surf Scoter *M. perspicillata* (monotypic)

The 'Asian' White-winged Scoter *M. d. stejnegeri* may also merit specific status, but further research into its vocalisations, breeding behaviour and, perhaps, genetics are required (Collinson *et al.* 2006).

Red-throated Diver *Gavia stellata*

Red-throated Diver should now be treated as monotypic (TSC3)

The grey edging to the mantle feathers that was used to distinguish the subspecies *squamata* is also found variably in nominate-race birds, and is not sufficiently reliable to warrant subspecific recognition. The species is now treated as monotypic.

Black-browed Albatross *Diomedea melanophris*

Black-browed, Shy and Yellow-nosed Albatrosses have been placed in a different genus, Thalassarche (TSC1, AERC2)

Phylogenetic analysis of mitochondrial-DNA (mtDNA) showed that albatrosses comprise four groupings, which are now classified as four genera: the North Pacific albatrosses *Phoebastria*, great albatrosses *Diomedea*, sooty albatrosses *Phoebetria* and 'mollymawks' *Thalassarche*. Three species of mollymawk have been recorded in the Western Palearctic: Black-browed Albatross *Thalassarche melanophris* (formerly *Diomedea melanophris*), Shy Albatross *T. cauta* and Yellow-nosed Albatross *T. chlororhynchos*. The only *Diomedea* now on the Western Palearctic list is Wandering Albatross *D. exulans*. See Sangster *et al.* (2002b) for further details.

Mediterranean Shearwater *Puffinus mauretanicus*

Balearic and Yelkouan Shearwaters have been split (AERC1)

Formerly regarded as the western and eastern subspecies (*mauretanicus* and *yelkouan* respectively) of 'Mediterranean Shearwater', Balearic and Yelkouan Shearwaters are genetically divergent (about 3% difference in mtDNA sequences), have skeletal and obvious plumage differences (Balearic being a heavier bird with darker underparts), and differ in their migration strategies. They do not share colonies but their breeding ranges are separated only by a short stretch of sea, which their dispersal abilities would allow them easily to traverse, and if they were ever going to hybridise they would probably do so commonly. However, there is no evidence of hybridisation and the taxa should be treated as separate species: Balearic *Puffinus mauretanicus* and Yelkouan Shearwater *P. yelkouan*. Fossil records suggest that three other species of *Puffinus* shearwater formerly inhabited at least the Mediterranean Sea and Canary Islands. See Sangster *et al.* (2002c) for further details.

Little Shearwater *Puffinus assimilis*

North Atlantic taxa of Little Shearwater have been split from southern taxa (TSC3)

Genetic data suggested that the three North Atlantic taxa, Audubon's Shearwater *Puffinus lherminieri*, 'Cape Verde' Little Shearwater (previously *P. a. boydi*) and 'Madeira' Little Shearwater (previously *P. a. baroli*) are more closely related to each other than to the 'southern' Little Shearwater *P. assimilis* complex. Little Shearwater as defined previously was not a natural grouping, since it excluded at least one taxon (Audubon's Shearwater) that was descended from the last common ancestor of 'Little Shear-

waters'. The two North Atlantic Little Shearwater taxa are therefore split from southern Little Shearwaters as North Atlantic Little Shearwater ('Macaronesian Shearwater') *P. baroli* (polytypic, with subspecies *baroli* and *boydi*). The specific status of Audubon's Shearwater remains unchanged. Only *P. baroli baroli* has been shown to occur in Britain.

Dwarf Bittern *Ardeirallus sturmii*

Dwarf Bittern has been taken out of genus Ardeirallus *and placed in* Ixobrychus (AERC2)

On the basis of morphology, especially skeletal characters, Dwarf Bittern falls neatly within *Ixobrychus*. The species is not sexually dimorphic, but neither is the Streaked Bittern *I. involucris*. The suspected differences in ecology and behaviour that resulted in Dwarf Bittern being placed on its own in the genus *Ardeirallus* are pretty meaningless because neither the Dwarf Bittern nor many other species of *Ixobrychus* have been particularly well studied.

The genus *Hydranassa*

'Plumed' herons previously included in the genus Hydranassa *have been placed in* Egretta (AERC2)

Generic placement of herons is notoriously unstable but there seems no morphological reason to maintain the genus *Hydranassa*, and the available genetic evidence confirms that herons within this genus belong in *Egretta*. Hence, in a Western Palearctic context, the following names are adopted: Little Blue Heron *Egretta caerulea*, Black Heron *E. ardesiaca* and Tricolored Heron *E. tricolor*.

Greater Flamingo *Phoenicopterus ruber*

Greater, Caribbean and Chilean Flamingos should be treated as separate species (TSC1)

Greater, Caribbean and Chilean Flamingo were previously regarded as subspecies within a single species *Phoenicopterus ruber*. Although no molecular work has been done, the taxa differ diagnostically on the basis of plumage coloration and pattern, bill colour and leg colour. They also display and vocalise differently, and are host to different species of head lice (Mallophaga), which is claimed to be a good indication of a long period of isolation from close relatives. Their breeding ranges are well separated, and there is no reason to suspect that they will ever merge. Consequently, they have been split as three separate species:

Greater Flamingo *Phoenicopterus roseus* (monotypic)
Caribbean Flamingo *Ph. ruber* (monotypic)
Chilean Flamingo *Ph. chilensis* (monotypic)

Eagle genera

Booted Eagle and Bonelli's Eagle have been placed

Richard Brooks

155. Displaying male Houbara Bustard *Chlamydotis undulata fuertaventurae*, Fuertaventura, Canary Islands, February 2006. Plumage features (notably the pattern of the crown and the neck-side tufts) and courtship display, along with vocalisations, are the key differences between Houbara and Macqueen's Bustard *C. macqueenii*. The Canary Islands race *fuertaventurae* is restricted to Fuertaventura, Lanzarote and Graciosa.

in Aquila (TSC3)

Eagle taxonomy is complicated, and although the genetic data are not entirely clear it seems likely that the old taxonomy did not reflect their evolution. In particular, some of the larger species of *Hieraaetus* were suggested to belong in *Aquila*, while Spotted and Lesser Spotted Eagles were suggested to belong not in *Aquila* but in *Lophaetus*. Given the uncertainty, the only safe option (for the time being) is to place the following Western Palearctic species all within a rather diverse *Aquila*:

Spotted Eagle *A. clanga*
Lesser Spotted Eagle *A. pomarina*
Booted Eagle *A. pennata*
Golden Eagle *A. chrysaetos*
Verreaux's Eagle *A. verreauxii*
Bonelli's Eagle *A. fasciata*
Steppe Eagle *A. nipalensis*
Tawny Eagle *A. rapax*
Eastern Imperial Eagle *A. heliaca*
Spanish Imperial Eagle *A. adalbertii*

Houbara Bustard *Chlamydotis undulata*

Houbara and Macqueen's Bustard have been split (TSC1)

Previously regarded as a subspecies of Houbara, Macqueen's Bustard *C. macqueenii* differs from Houbara on the basis of important plumage features, courtship behaviour and vocalisations (Sangster *et al.* 2004b). The taxa are genetically distinct, and although this distinction is not substantial, it indicates a lack of recent gene flow. They have therefore been split as Houbara Bustard *C. undulata* (polytypic, subspecies *undulata* and *fuertaventurae*) and Macqueen's Bustard *C. macqueenii* (monotypic). All the British records relate to Macqueen's Bustard. An interesting point is that no-one seems to know who Macqueen was.

Stilt Sandpiper *Micropalama himantopus*

Stilt Sandpiper has been placed in the genus Calidris (TSC2)

Previously in a genus of its own, *Micropalama*, Stilt Sandpiper is in fact clearly a *Calidris* on the basis of morphology, behaviour and genetics. For now, it is placed next to the superficially similar Curlew Sandpiper *C. ferruginea* but this may change when *Calidris* is reviewed fully.

Long-tailed Skua *Stercorarius longicaudus*

The race pallescens *is now recognised once more* (TSC2)

Although there is overlap, birds from Greenland are distinctly paler on the belly and vent than nominate *longicaudus*, and this merits subspecific recognition. The only claimed British specimen of *pallescens* is in the Meinertzhagen collection at the Natural History Museum, and the possibility of fraud means that this subspecies is currently not on the British List (Knox 1993). However, the possible occurrence of *pallescens* in Britain needs to be re-examined.

Great Skua *Catharacta skua*

All skuas are now included in the genus Stercorarius (TSC2)

Genetic evidence suggests that Great *S. skua* and Pomarine Skuas *S. pomarinus* are more closely related to each other than either is to Long-tailed or Arctic Skuas *S. parasiticus*. This makes it impossible to include Pomarine, Arctic and Long-tailed Skuas in a different genus from Great Skua and the large southern skuas. It remains unclear exactly how skuas have evolved, and whether there has been any hybridisation between 'large' and 'small' skuas in the past that is obscuring their relationships. The safest solution is to put all skuas in one genus, *Stercorarius*. Note that this reverses a previous decision to place Great Skua in *Catharacta* (BOU 1997).

Herring Gull *Larus argentatus*

Yellow-legged Gull and Armenian Gull have been split from Herring Gull (TSC3)

The Mediterranean Yellow-legged Gull was formerly regarded as a southern subspecies (*michahellis*) of Herring Gull *L. argentatus*. However, *michahellis* is distinguishable from North European Herring Gulls (*L. a. argenteus* and *L. a. argentatus*) on the basis of the mid-toned, neutral-grey mantle and wing colour of adults, bare-part coloration (bright yellow legs and a red eye-ring), and its voice, together with structural and behavioural differences. In addition, *michahellis* is also genetically well separated from both Herring Gull and Lesser Black-backed Gull *L. fuscus*. Furthermore, when Yellow-legged Gull and Herring Gull breed in mixed colonies in western Europe, they effectively ignore each other and rarely hybridise, indicating that they are separate species. In contrast, *michahellis* is neither genetically nor morphologically well separated from the Atlantic Yellow-legged Gull taxon *atlantis*. Consequently, *michahellis* and *atlantis* stay in the same species, but together they have been split from Herring

Gull as Yellow-legged Gull *L. michahellis* (polytypic, subspecies *michahellis* and *atlantis*).

The Armenian Gull *L. armenicus* was previously regarded as another southern subspecies (*armenicus*) of Herring Gull, but it shares the characteristic darker mantle, yellow legs and red eye-ring that distinguish Yellow-legged Gull from Herring Gull. Furthermore, Yellow-legged Gull and Armenian Gull are distinguishable on the basis of biometric differences, and the extent of black pigmentation in the primaries and bill. They are genetically distinct. There is nothing to stop any *michahellis* or *armenicus* flying deep into the range of the other taxon and hybridising freely, but in fact this does not seem to happen. Intermediate birds and examples of hybridisation are restricted to Turkish *armenicus* colonies, and although there is evidence of *michahellis* genes getting into *armenicus* populations, gene flow in the opposite direction has not been observed. So the taxa are not merging, in spite of having the opportunity to do so, and from that it has been concluded that there must be a degree of effective reproductive isolation and that Yellow-legged and Armenian Gulls behave as different species.

The result of this is that three species of the old 'herring gull' complex are now recognised:
Herring Gull *L. argentatus* (polytypic, many subspecies still under consideration)
Yellow-legged Gull *L. michahellis* (polytypic, subspecies *michahellis* and *atlantis*)
Armenian Gull *L. armenicus* (monotypic)

The best identification papers for Yellow-legged Gull remain Garner & Quinn (1997), Klein & Gruber (1997) and Jonsson (1998). The taxonomic status of *L. a. smithsonianus* and *L. a. cachinnans* is still under review.

Kittiwake *Rissa tridactyla*

The race pollicaris *has been resurrected* (TSC2)

Kittiwake was historically treated as a polytypic species until the 1971 BOU *Checklist* (BOU 1971). The North Pacific race *pollicaris* is distinctly darker than the Atlantic race, and the primary tips are more extensively black, and there may even be significant genetic differences. This merits subspecific recognition at least, so Kittiwake is once again recognised as polytypic, with nominate *R. t. tridactyla* in the Atlantic and adjacent seas and *R. t. pollicaris* in the Pacific.

Genera of terns (Sternini)

The genus Sterna *has been broken up into smaller genera* (TSC3)

Genetic evidence has shown that *Sterna* as we traditionally understood it was an assemblage of different groups of terns, some of which were not closely related. For example, 'little' terns are genetically well separated from the 'crested' and typical 'black-capped' terns. To recognise our new understanding of tern relationships, the old '*Sterna*' has been broken up:

- The 'brown-winged' terns are now in *Onychoprion*, i.e. Aleutian Tern *O. aleutica*, Sooty Tern *O. fuscata* and Bridled Tern *O. anaethetus*;
- The 'little' terns are now given their own genus, *Sternula* ('diminutive of *Sterna*'), i.e. Little Tern *Sternula albifrons*, Saunders's Tern *S. saundersi*;
- The genera *Gelochelidon* ('laughing swallow') and *Hydroprogne* ('water swallow') have been revived for Gull-billed Tern *G. nilotica* and Caspian Tern *H. caspia*, respectively (cf. BOU 1997);
- The 'black' terns remain unchanged within *Chlidonias*;
- In future, 'crested' terns such as Sandwich Tern *S. sandvicensis*, Royal Tern *S. maxima* and Lesser Crested Tern *S. bengalensis* may be placed in *Thalasseus*, but for now at least they have been retained in *Sterna*. Forster's Tern *S. forsteri*, Common *S. hirundo*, Arctic *S. paradisaea*, Roseate *S. dougallii* and White-cheeked Tern *S. repressa* all remain in *Sterna*.

Western Palearctic terns are now as follows:
Brown Noddy *Anous stolidus*
Aleutian Tern *Onychoprion aleutica*
Sooty Tern *Onychoprion fuscata*
Bridled Tern *Onychoprion anaethetus*
Little Tern *Sternula albifrons*
Saunders's Tern *Sternula saundersi*
Gull-billed Tern *Gelochelidon nilotica*
Caspian Tern *Hydroprogne caspia*
Whiskered Tern *Chlidonias hybrida*
Black Tern *Chlidonias niger*
White-winged Black Tern *Chlidonias leucopterus*
Sandwich Tern *Sterna sandvicensis*
Elegant Tern *Sterna elegans*
Royal Tern *Sterna maxima*
Crested Tern *Sterna bergii*
Lesser Crested Tern *Sterna bengalensis*
Forster's Tern *Sterna forsteri*
Common Tern *Sterna hirundo*
Arctic Tern *Sterna paradisaea*
White-cheeked Tern *Sterna repressa*
Roseate Tern *Sterna dougallii*

Marbled Murrelet *Brachyramphus marmoratus*

Long-billed Murrelet and Marbled Murrelet have been split (AERC2)

A number of lines of genetic evidence show that Long-billed *B. perdix* and Marbled Murrelets *B. marmoratus* have been reproductively isolated for a long time. There are also clear plumage and biometric differences between the two, and they have been regarded as separate species by the AOU since 1998.

Parakeet Auklet *Cyclorrhynchus psittacula*

Parakeet Auklet is placed in genus Aethia (AERC2)

Morphological and genetic evidence show that Parakeet Auklet, previously included in genus *Cyclorrhynchus*, should be included in *Aethia* with Crested Auklet *A. cristatella*.

Puffin *Fratercula arctica*

Puffin should be regarded as monotypic (TSC3)

To a first approximation, Puffins get bigger the further north you go, in line with Bergman's rule (which suggests that, within a species, populations at high latitudes have larger bodies than populations of the same taxa at low latitudes). The dividing lines between the previously recognised subspecies *arctica*, *grabae* and *naumanni* were essentially arbitrary, however, and the three subspecies have been abolished, so that Puffin is now regarded as monotypic.

Snowy Owl *Nyctea scandiaca* and Brown Fish Owl *Ketupa zeylonensis*

Snowy Owl and Brown Fish Owl have been incorporated into Bubo (TSC2, AERC2)

Although Snowy Owl, now *B. scandiacus*, was previously in *Nyctea*, molecular and morphological analyses have shown that it is most closely related to Great Horned Owl *B. virginianus*. The distinctive features of Snowy Owl can all be related to its adaptation to extreme Arctic environments. Similarly, Brown Fish Owl, previously in *Ketupa*, becomes *B. zeylonensis*.

Blue-cheeked Bee-eater *Merops superciliosus*

Blue-cheeked Bee-eater has been split into three species (TSC2)

Although previously included in Blue-cheeked Bee-eater, the East Asian taxon *philippinus* differs in several plumage features and overlaps in range with *persicus* without interbreeding, and should therefore be treated as a separate species. The southern and eastern African taxon *superciliosus* is similarly distinct from these two on the basis of plumage differences. Consequently, three species are now recognised: Blue-cheeked Bee-eater *M. persicus* (North Africa to Kazakhstan), Olive Bee-eater *M. superciliosus* (southern and eastern Africa) and Blue-tailed Bee-eater *M. philippinus* (Pakistan to Southeast Asia). All three species are polytypic.

Swallows (Hirundinidae)

Swallow genera have been rearranged with Hirundo *being split up* (TSC3)

A new genetic study showed that some taxa previously included in *Hirundo*, namely the 'red-rumped swallows' and 'cliff swallows', were not closely related to other species in that genus. They have been placed in *Cecropis** and *Petrochelidon* ('rock swallow') respectively, and are sister taxa to *Delichon*. The remaining *Hirundo* taxa were shown to be sisters to *Ptyonoprogne*. The rearrangement of swallow genera is relevant for the World List, but in a Western Palearctic context, with the recent admission of Purple Martin to the British List, swallows are now listed as follows:

Banded Martin *Riparia cincta*
Plain Martin *Riparia paludicola*
Sand Martin *Riparia riparia*
Tree Swallow *Tachycineta bicolor*
Purple Martin *Progne subis*
Crag Martin *Ptyonoprogne rupestris*
Rock Martin *Ptyonoprogne fuligula*
Barn Swallow *Hirundo rustica*
Ethiopian Swallow *Hirundo aethiopica*
House Martin *Delichon urbicum*
Red-rumped Swallow *Cecropis daurica*
Cliff Swallow *Petrochelidon pyrrhonota*

**Cecropis*: Horace, Ode 4.12. translated by Michael Gilleland: 'Mournfully lamenting Itys, the swallow builds her nest, unhappy bird, and is the undying disgrace of the house of Cecrops, because she cruelly avenged the barbaric lusts of kings.' 'House of Cecrops' refers to Athens, of which Cecrops was the first mythical king. The third king, Pandion, and his daughters, Philomela and Procne, have also given their names to birds. In the above translation, Procne, to avenge her husband's lust and rape of her sister, had killed her son, Itys, boiled his flesh and sent it to her husband (Tereus) for his dinner; on learning what he had eaten, Tereus seized an axe, but before he could kill Procne, the gods turned her into a swallow. See http://www.merriampark.com/horcarm412.htm

Richard's Pipit *Anthus novaeseelandiae*

Richard's Pipit and Paddyfield Pipit should be treated as separate species (TSC3)

Richard's Pipit was formerly *A. novaeseelandiae* with several subspecies in four geographically separate groupings: the '*richardi*' group of Siberia, Mongolia and China; the '*rufulus*' group ('Paddyfield Pipit') of the Indian subcontinent and Southeast Asia; the *australis/novaeseelandiae* group of Australasia; and the *cinnamomeus* group in Africa. Genetically, Richard's Pipit *richardi* and Paddyfield Pipit *rufulus* are each other's closest relatives, but they diverged about 1.8 million years ago and are vocally consistently distinct, with *rufulus* having a faster, higher-pitched song and a distinctive 'chep' call that is very different from the typical loud 'schreep' of *richardi*. In addition, *rufulus* has a shorter tail than *richardi*, and the wing and tarsus measurements do not overlap, so they have been separated. Richard's Pipit is now *Anthus richardi* and Paddyfield Pipit becomes *A. rufulus*. The genetic evidence suggested that 'Grassland Pipit' *A. cinnamomeus* and 'Australian Pipit' *A. novaeseelandiae* are only distantly related to *richardi* and *rufulus*, and these first two are tentatively regarded, almost by default, as separate species. The identification and systematics of this group are discussed fully in Alström *et al.* (2003). Richard's Pipit is best regarded as monotypic.

Pied Wheatear *Oenanthe pleschanka*

Cyprus Pied Wheatear and Pied Wheatear have been split (TSC2)

Cyprus Pied Wheatear differs from nominate Pied Wheatear on the basis of plumage, biometrics, song, habitat, etc., and has widely been regarded as a separate species by most ornithologists for over 20 years. The two have now been split into two monotypic species, Pied Wheatear *Oe. pleschanka* and Cyprus Pied Wheatear *Oe. cypriaca*.

Acrocephalus and *Hippolais* Warblers

Eastern and Western Olivaceous Warblers should be treated as separate species; Booted and Sykes's Warblers should be treated as separate species; Reed Warbler has not been split (TSC1)

- Reed Warbler *A. scirpaceus* Eurasian Reed Warbler *A. s. scirpaceus*, 'Caspian Reed Warbler' *A. s. fuscus*, 'African Reed Warbler' *A. s. baeticatus* and the Red Sea taxon *A. s. avicenniae* are genetically closely related and it has not yet been possible to resolve their exact interrelationships. There are no diagnostic plumage differences, their songs are strikingly similar, and biometric differences (such as the shorter wing of *baeticatus*) may be related to ecological or migratory adaptations. Therefore, they remain lumped in one species, although this group is in serious need of reanalysis.

Ray Tipper

156. Red-rumped Swallow *Cecropis daurica*, Algarve, Portugal, March 1998. Red-rumped Swallow is now thought to be less closely related to Barn Swallow *Hirundo rustica* than previously assumed.

- Paddyfield Warbler *A. agricola* Genetically, the western subspecies *agricola* and *septimus* are nearly identical, and are morphologically almost indistinguishable, so *septimus* has been synonymised with *agricola*. The Eastern Palearctic taxon *tangorum* (Manchurian Reed Warbler), which has been regarded as a subspecies of Paddyfield Warbler, is both vocally and genetically distinct (7.5% at the *cytochrome-b* gene) and should be treated as a separate species *A. tangorum*. Black-browed Reed Warbler *A. bistrigiceps* has previously been regarded as conspecific with both *agricola* and *tangorum*, but is over 9.5% different from both.
- Great Reed Warbler *A. arundinaceus* and Clamorous Reed Warbler *A. stentoreus* Some taxa that were previously regarded as subspecies of one of these two species – Basra Reed Warbler *griseldis*, Oriental Reed Warbler *orientalis* and Australian Reed Warbler *australis* – are in fact genetically distinct, and are also diagnosable biometrically. These three are, therefore, better treated as separate species.
- Cape Verde Warbler *A. brevipennis* This is treated as a monotypic species, most closely related to Greater Swamp Warbler *A. rufescens* of Africa.
- 'Olivaceous warblers' Western Olivaceous Warbler (previously *Hippolais pallida opaca*) differs from the five subspecies of Eastern Olivaceous Warbler *H. pallida* on the basis of plumage, song, biometrics (including bill shape) and behaviour (*opaca* does not habitually dip its tail). In northwest Africa, *opaca* comes into contact with Eastern Olivaceous Warblers of the race *reiseri* without apparent intergradation. The genetic differences between Eastern and Western Olivaceous Warblers are similar to those between Icterine *H. icterina* and Melodious Warblers *H. polyglotta*. Consequently, Western Olivaceous Warbler has been split as a monotypic species *H. opaca*, separate from Eastern Olivaceous Warbler *H. pallida* (polytypic, including subspecies *pallida*, *elaeica*, *alulensis*, *reiseri* and *laeneni* at least). Only *H. p. elaeica* has occurred in Britain.
- Booted Warbler *Hippolais caligata* Although previously regarded as a subspecies of Booted Warbler, Sykes's Warbler *rama* is partly sympatric with Booted and yet they appear not to hybridise, the two taxa preferring different habitats. They are also genetically distinct, and diagnosable with care on the basis of biometrics (with bill length and shape, and tail length being particularly critical), call and song. They are best treated as two monotypic species, *H. caligata* and *H. rama*. Identification is covered in Svensson (2001, 2003).

See Parkin *et al.* (2004) for a full explanation of these decisions.

Desert Warbler *Sylvia nana*

Asian Desert Warbler and African Desert Warbler have been split (TSC2)

The two geographically separate taxa of Desert Warblers, *nana* and *deserti*, are easily distinguishable on plumage. Most obviously, the greyish-brown upperparts of *nana* differ from the brighter, sandy upperparts of *deserti*. Their songs are also markedly different. These are two quite different warblers, and are probably reproductively isolated. Consequently, they have been split as two monotypic species, Asian Desert Warbler *Sylvia nana* and African Desert Warbler *S. deserti*.

Sylvia warblers

A new sequence of species listings within the genus Sylvia (TSC2)

A combination of genetic and morphological analyses has led to a new arrangement of *Sylvia* warblers on the basis of our understanding of their evolution. The new Western Palearctic sequence is as follows:

Blackcap *S. atricapilla*
Garden Warbler *S. borin*
Barred Warbler *S. nisoria*
Lesser Whitethroat *S. curruca*
Orphean Warbler *S. hortensis*
Arabian Warbler *S. leucomelaena*
Asian Desert Warbler *S. nana*
African Desert Warbler *S. deserti*
Common Whitethroat *S. communis*
Spectacled Warbler *S. conspicillata*
Tristram's Warbler *S. deserticola*
Dartford Warbler *S. undata*
Marmora's Warbler *S. sarda*
Rüppell's Warbler *S. rueppelli*
Cyprus Warbler *S. melanothorax*
Subalpine Warbler *S. cantillans*
Ménétries's Warbler *S. mystacea*
Sardinian Warbler *S. melanocephala*

Greenish Warbler *Phylloscopus trochiloides*

'Two-barred Greenish Warbler' has not been split (TSC1)

As described previously in Collinson *et al.* (2003), Greenish Warbler has been shown to be a ring species. The subspecies *viridanus* and *plumbeitarsus* ('Two-barred Greenish Warbler'), both of which have occurred in Britain, do not interbreed in their zone of overlap and therefore behave as separate species. However, they are linked by a smooth chain of interbreeding subspecies, *ludlowi*, *trochiloides* and *obscuratus*, around the southern edge of the Tibetan Plateau, which would suggest that they should be treated as a single polytypic species. Neither splitting them into two species, nor lumping them as one, describes the biological reality here, but the decision most consistent with the BOU's Guidelines (Helbig *et al.* 2002) is to maintain the status quo and retain *plumbeitarsus* as a subspecies of Greenish Warbler *Ph. trochiloides*. Green Warbler *Ph. t. nitidus* has also been retained as a subspecies of Greenish Warbler, although a strong argument can be made that this taxon is fully diagnosable and it may merit specific status. Identification criteria for these taxa are outlined in van der Vliet *et al.* (2001).

Arctic Warbler *Phylloscopus borealis*

The subspecies talovka *should be regarded as a synonym of* borealis (TSC1)

British records were previously assumed to belong to the northwestern subspecies, *talovka*. This subspecies was not recognised by Williamson (1967) or several subsequent authors, and has now been synonymised with nominate *borealis*. British records are now all assigned to *Ph. b. borealis*.

Pallas's Leaf Warbler *Phylloscopus proregulus*

Pallas's Leaf Warbler has been split from the Chinese and Himalayan taxa with which it was previously lumped (TSC3).

Careful analysis of morphological, vocal and molecular differences among eastern *Phylloscopus* taxa has revealed that several species deserve recognition. For Pallas's Leaf Warbler, the widespread Siberian subspecies, nominate *proregulus*, has now been shown to be significantly and diagnosably distinct from all similar Chinese and Himalayan taxa with which it has previously been regarded as conspecific: Chinese Leaf Warbler *yunnanensis*, Gansu Leaf Warbler *kansuensis*, Sichuan Leaf Warbler *forresti*, Lemon-rumped Warbler *chloronotus* and Simla Leaf Warbler *simlaensis*. These warblers look fairly similar to each other, and some may not be identifiable on plumage alone. In contrast, their songs tend to differ greatly, they often fail to respond to playback of the songs of different taxa, and in some cases substantial genetic differences have been shown. Pallas's Leaf Warbler is therefore now regarded as a monotypic species, separate from these other taxa, which may themselves be four or five species. Only *proregulus* has occurred in Britain, and the other species are unlikely vagrants to the Western Palearctic, but it is possible that they could be overlooked. It is probably unreasonable to expect that future descriptions of vagrant Pallas's Leaf Warblers should attempt to eliminate the confusion species.

Iberian Chiffchaff *Phylloscopus brehmii*

The scientific name of Iberian Chiffchaff has been changed to Phylloscopus ibericus (TSC1)

Previously, the scientific name for Iberian Chiffchaff was *Phylloscopus brehmii*. However, the published description of *brehmii* was wrong for Iberian Chiffchaff, and the type specimen, when re-examined, turned out to be a Common Chiffchaff. A type specimen of Iberian Chiffchaff was first correctly described by Claude Ticehurst in 1937 as *Ph. ibericus*. A northern subspecies *Ph. i. biscayensis* has been described on the basis of very slight differences in wing length, which perhaps do not merit such recognition. The validity of this race has not formally been assessed by the BOURC TSC and, for now, *Ph. ibericus* should be treated as monotypic. Useful identification papers include Clement *et al.* (1998) and Richards (1999).

Tenerife Goldcrest *Regulus teneriffae*

Tenerife Goldcrest (Tenerife Kinglet), previously split by BB, *is re-lumped with Goldcrest*

British Birds previously split the Tenerife Goldcrest as *Regulus teneriffae*, separate from Goldcrest *R. regulus*. In fact, the genetic differentiation between *regulus* and *teneriffae* is quite small, and phylogenetic studies are more consistent with Teneriffe Goldcrest being a subspecies of Goldcrest, albeit a well-marked one. The BOURC TSC has not published any decision on Goldcrests, and hence retains *teneriffae* within Goldcrest. The AERC TAC has not reached a consensus (AERC2). Goldcrest may in

future be split into more than one species but, until that happens, Tenerife Goldcrest is again treated as a subspecies of Goldcrest for the purposes of the *BB* Western Palearctic list.

Firecrest *Regulus ignicapilla madeirensis*

Madeira Firecrest should be treated as a separate species from Firecrest (TSC3)

Madeira Firecrest was previously regarded as a subspecies (*madeirensis*) of Firecrest *R. ignicapilla*. It has a longer bill, shorter supercilium and a duller orange crown, and has now been shown to be genetically distinct from Firecrest. Furthermore, it is vocally distinct, and mainland Firecrests do not react to playback of Madeira Firecrest songs, suggesting that they do not see them as being of the same species. In contrast, Firecrests of the subspecies *balearicus* are genetically close to nominate *ignicapilla*, and have very similar song structures. For these reasons, Madeira Firecrest is now treated as a separate species *R. madeirensis*, whereas *balearicus* remains as a subspecies of Firecrest.

Red-breasted Flycatcher *Ficedula parva*

Red-breasted and Taiga Flycatchers have been split (TSC2)

Red-breasted Flycatcher *F. parva* and Taiga Flycatcher *F. albicilla* were previously regarded as conspecific. There are well-defined plumage differences between the two, their calls and songs are different, and they show different moult progressions, with male Taiga Flycatcher attaining adult-like plumage in its first summer. They are also genetically distinct, in spite of the fact that their geographical ranges probably overlap. On the basis of this evidence, they should be treated as separate species, unlikely ever to merge. See also the identification pointers outlined in Cederroth *et al.* (1999) and Svensson *et al.* (2005).

Pied Flycatcher *Ficedula hypoleuca*

Atlas Flycatcher should be treated as a separate species from other 'black-and-white' Ficedula *flycatchers* (TSC2)

Genetic analysis has shown that three taxa of 'black-and-white' *Ficedula* flycatchers in Eurasia form three more or less equally distinct lineages which are now treated as separate species: Pied Flycatcher *F. hypoleuca*, Collared Flycatcher *F. albicollis*, and Atlas Flycatcher *F. speculigera*. Semi-collared Flycatcher *F. semitorquata* is slightly more distinct, but they all show divergences of 3–4% from each other. They show plumage distinctions from one other. Retention of Atlas Flycatcher as a subspecies of Pied Flycatcher, from which it differs as much as Collared Flycatcher does, was not justifiable on this basis. Iberian Pied Flycatcher *F. hypoleuca iberiae*, which resembles *speculigera* in some

Hugh Harrop

157. Crested Tit *Lophophanes cristatus*, Highland, winter. The genus *Parus* has been split up into several smaller genera, and Great Tit *P. major* remains the only 'true' *Parus* in Britain. The new generic name for Crested Tit, *Lophophanes*, means 'showing a crest'.

respects, is genetically close (0.5% divergence) to Pied, and is retained as a subspecies of Pied Flycatcher. Identification of Atlas Flycatcher and Iberian Pied Flycatcher is discussed in van den Berg & the Sound Approach (2006).

Tits (Paridae)

The genus Parus *has been split into several smaller genera* (TSC3)

Another genetic analysis has shown that *Parus*, one of the largest bird genera in the world, was paraphyletic, i.e. other accepted genera lay within it. Putting any of these other genera, e.g. *Sylviparus*, *Melanochlora* or *Pseudopodoces*, within *Parus* would make *Parus* even bigger and unacceptably diverse. Six genetic groups of tits have therefore been placed in their own genera: *Cyanistes* ('dark blue') for 'blue' tits, *Baeolophus* ('short-crested') for North American crested tits, *Lophophanes* ('showing a crest') for Palearctic crested tits, *Periparus* ('very much a *Parus*', perhaps better translated as 'nearest to a *Parus*'!) for coal tits, *Poecile* ('spotted' or 'variegated') for chickadees and *Parus* for great tits. The order of species on the Western Palearctic list has also been changed to reflect this rearrangement:

Blue Tit *Cyanistes caeruleus*
Azure Tit *Cyanistes cyanus*
Great Tit *Parus major*
Crested Tit *Lophophanes cristatus*
Coal Tit *Periparus ater*
Sombre Tit *Poecile lugubris*
Willow Tit *Poecile montanus*
Marsh Tit *Poecile palustris*
Siberian Tit *Poecile cinctus*

Carrion Crow *Corvus corone*

Carrion and Hooded Crows have been re-split (TSC1)

Carrion *C. corone* and Hooded Crows *C. cornix* are easily distinguishable on the basis of plumage, and there are slight differences in their calls too. Hooded Crow was previously regarded as a subspecies of Carrion Crow, and the two taxa commonly produce fertile hybrids. However, the hybrid zone is very narrow compared with the respective ranges (and potential dispersal distances) of the taxa involved. Data from Europe show that Hooded Crows tend to mate with Hooded, and Carrion with Carrion, within and close to the hybrid zone; and the two taxa may be further separated by slightly different habitat preferences. There is also evidence that hybrids are less fit. Together, the data show that there is a long-term barrier to free gene flow between these distinct taxa and they are therefore best treated as two species, Carrion Crow *C. corone* and Hooded Crow *C. cornix*. See Parkin *et al.* (2003) for further explanation.

Isabelline Shrike *Lanius isabellinus*

Correction to scientific names of subspecies (TSC2)

Re-examination of the type specimen of Isabelline Shrike showed that it belonged to the Mongolian/Transbaikalian subspecies, previously called *speculigerus*. Hence *L. i. speculigerus* has been renamed *L. i. isabellinus* ('Daurian Shrike') and *speculigerus* falls out of use. A new name was therefore required for the Tarim Basin subspecies, previously called *isabellinus*, and the old name *arenarius* was available, which had been used previously for Tarim Basin shrikes wintering in India. 'Old' subspecies *isabellinus* has therefore been renamed *L. i. arenarius*. 'Turkestan Shrike' *L. i. phoenicuroides* remains unchanged. The status of the form *karelini*, currently included in *phoenicuroides*, needs further study. Identification of the subspecies of Isabelline Shrike was discussed in Worfolk (2000).

Lesser Grey Shrike *Lanius minor*

The subspecies turanicus *is no longer recognised* (TSC2)

The subspecies *L. m. turanicus* was previously described from Central Asia on the basis of its larger size and sandier, less grey upperparts. However, the size difference is negligible and differences in colour depend on the amount of wear and are too slight, even if they exist, to be a good taxonomic character. For these reasons, *turanicus* is no longer recognised and Lesser Grey Shrike is regarded as monotypic.

Citril Finch *Serinus citrinella*

Citril Finch and Corsican Finch should be treated as separate species (BOURC 2001; AERC1)

Corsican Finch *Serinus corsicanus* differs from Citril Finch *S. citrinella* in male plumage (it has a brighter yellow face and a brown, rather than yellow-green, mantle). It also has differences in song structure and a 'slow' song type that is not heard from Citril Finch, and there is significant genetic distinction between the two. Previously regarded as subspecies of a single species, they have now been split.

Common Redpoll *Carduelis flammea*

Common (or Mealy) Redpoll and Lesser Redpoll have been split (AERC1)

Redpoll taxonomy is complicated by variation within taxa that makes field identification such a problem. Nevertheless, the small, brown, British and west European taxon *cabaret* is distinguishable from all other redpolls on the basis of plumage and biometrics and, probably, vocalisations. Although no meaningful genetic differences have been detected, *cabaret* has been recorded breeding side by side with Common Redpolls *flammea* in Norway without hybridisation. Although the status of Icelandic and Greenland taxa, *islandica* and *rostrata* respectively, is uncertain, and even the relationship with Arctic Redpoll *C. hornemanni* is open to debate, there is enough here to justify the split of Lesser Redpoll *C. cabaret* from Common ('Mealy', Iceland and Greenland) Redpolls *C. flammea* (Knox *et al.* 2001).

This decision has generated much discussion and has been subject to widespread criticism, although it continues to be supported in most European countries. In particular, there have been recent reports of significant numbers of unidentifiable birds trapped by some ringers working in the Baltic area. Whether these are truly unidentifiable or just unidentified remains to be resolved. Likewise, if these birds are intermediates or hybrids, as sometimes claimed, it is surprising that the area of interbreeding is as yet unreported; although Lesser and Common Redpoll are almost completely allopatric, the range boundaries of *cabaret* have been spreading east now for several decades and sympatry at some stage would not be unexpected. However, the proportion of unidentified birds implied in some of the reports suggests a substantial area of sympatry. This controversy is as yet based on information that is largely anecdotal and, on the basis of published information, Lesser and Common Redpoll are still best treated as separate species. All taxonomic decisions are hypotheses to be tested in light of new data and, in common with all other difficult systematic decisions, this one will be reassessed if significant new information becomes available.

Cirl Bunting *Emberiza cirlus*

Subspecies nigrostriata *is no longer recognised* (TSC1)

The more heavily streaked form *nigrostriata*, from Corsica and Sardinia, is poorly distinguished, if at all, and streaky birds occur elsewhere in the range. Thus, *nigrostriata* has been synonymised with nominate *cirlus*, leaving Cirl Bunting monotypic.

David Tipling/Windrush

158. Arctic Redpoll *Carduelis hornemanni*, northern Finland, March. Arctic Redpoll is one of three species of redpoll breeding in western Europe, according to current conventions, although the redpolls as a group are arguably responsible for more splitting headaches among field birders than any other group covered here.

Corn Bunting *Miliaria calandra*

Genus Miliaria *has been merged into* Emberiza, *at least until* Emberiza *can be properly reassessed* (TSC2)

The genus *Emberiza* is relatively large, and is probably in a bit of a mess. Corn Bunting was previously placed in its own genus, *Miliaria*, but genetic evidence showed that it properly lies within the currently defined *Emberiza*. One possible solution to this is to divide *Emberiza* into more than one genus, but until more data are available, any attempt to do this would probably result in inaccuracies. For the time being, Corn Bunting has thus been placed in *Emberiza*, as *E. calandra*.

House Bunting *Emberiza sahari*

House Bunting and Striolated Bunting should be treated as separate species (AERC2)

The Middle Eastern taxon *striolata* exhibits slight but consistent differences in plumage and vocalisations, compared with House Buntings in North Africa, and has therefore been split as Striolated Bunting (Mountain Bunting) *E. striolata*.

Blue Grosbeak *Guiraca caerulea*

Blue Grosbeak has been placed in Passerina (TSC2)

Blue Grosbeak was previously placed in *Guiraca*, but mitochondrial genetic evidence showed that it was most closely related to Lazuli Bunting *Passerina amoena*. Blue Grosbeak therefore lies within *Passerina*, and its scientific name has been changed to *P. caerulea*. Blue Grosbeak resides in Category D of the British List, and all Western Palearctic records are of doubtful origin.

2. Higher-order sequence changes

The Galloanserae (wildfowl and gamebirds) have been moved towards the beginning of the Western Palearctic list, after Ostrich (TSC1)

The order in which birds are listed is meant to reflect their evolutionary history. Conventionally, the most 'primitive' birds are listed first, and those families which are most closely related should be placed together. Previously, the order of the Western Palearctic list was based on the 'Voous List' (Voous 1977). Upwards of 100 phylogenetic studies of bird families, many using DNA analysis, have been published in recent years and together these comprise a large body of evidence showing that the Voous Order does not properly reflect our modern understanding of avian evolution. Over 30 of these studies, both morphological and DNA-based, agree on one particular point, the position of the Galloanserae, and suggest that they should be brought together near the start of the list, as one of the earliest groups of birds to evolve. The most likely hypotheses for bird evolution have the following key characters:

1 the deepest branch point in the evolutionary tree of birds splits them into the Palaeognathae (tinamous and 'ratites') and the Neognathae (all other birds);
2 within the Neognathae, the deepest branch point splits them into Galloanserae (see below) and Neoaves (all remaining birds);
3 the Galloanserae are split into two 'sister' groups – Anseriformes (waterfowl) and Galliformes (turkeys, guineafowl, megapodes, grouse, pheasants, etc.).

Because there are fewer species within the Palaeognathae than in the Neognathae, it is conventional to place Palaeognathae first; hence, in a Western Palearctic context, Ostrich *Struthio camelus* is the first on the list. Next, within the Neognathae, there are fewer Galloanserae than Neoaves, and within the Galloanserae there are fewer Anseriformes than Galliformes. Hence, after Ostrich, the Anatidae (swans, ducks and geese) are listed next, followed by Tetraonidae, Phasianidae and Numididae (grouse, pheasants, quail, snowcocks, francolins, partridges and guineafowl), followed by all remaining families as in the existing sequence.

It is likely that many other sequence changes could be proposed in the next 5–10 years, and there may be a conflict between the taxonomist's desire for scientific accuracy and the public's desire for some stability and predictability in the order of bird lists in field guides and journals. Walter Bock, in the foreword to Volume 2 of the *Handbook of the Birds of the World* (del Hoyo *et al.* 1994), drew a distinction between *systematic classifications*, which are the result of professional taxonomy, and *standard sequences*, which are a tool of convenience for the easy accessibility of information in books and databases. Standard sequences are based on scientific classifications, but Bock argues that while classifications must be updated constantly on the basis of new research, standard sequences should be stable. This point of view has a superficial appeal and

may turn out to be very popular, but there are credible alternative viewpoints. In particular, there is no existing mechanism for the development and maintenance of a British or Western Palearctic systematic classification separate from a British or Western Palearctic standard sequence. The two are effectively one at the moment. However, changes to systematic classifications or standard sequences should be made only when changes have been widely accepted. The overwhelming body of evidence supporting the repositioning of the Galloanserae *has* been widely accepted, and this particular change fulfils the criterion to justify a general change to the sequence of the Western Palearctic list.

3. Grammatical changes in scientific names

The following minor changes to the scientific names of birds on the Western Palearctic list have been adopted in line with the requirements for the construction of names as laid down in the International Code of Zoological Nomenclature (TSC2, AERC2)

Egyptian Goose *Alopochen aegyptiaca*
Red (Willow) Grouse *Lagopus lagopus scotica*
Ptarmigan *Lagopus muta*
Small Button-quail *Turnix sylvaticus*
Striated Heron *Butorides striata*
Spotted Sandpiper *Actitis macularius*
Grey Phalarope *Phalaropus fulicarius* (no change required to the British List)
Whiskered Tern *Chlidonias hybrida*
Pin-tailed Sandgrouse *Pterocles alchata*
Chestnut-headed Sparrow-lark *Eremopterix signatus*
Bar-tailed Desert Lark *Ammomanes cinctura*
House Martin *Delichon urbicum*
Güldenstädt's Redstart *Phoenicurus erythrogastrus*
Eversmann's Redstart *Phoenicurus erythronotus*
Common Stonechat *Saxicola torquatus* (also subspecies *S. t. maurus*, *S. t. armenicus* and *S. t. variegatus*)
Firecrest *Regulus ignicapilla*
Common Babbler *Turdoides caudata*
Fulvous Babbler *Turdoides fulva*
Black-crowned Tchagra *Tchagra senegalus*
Crimson-winged Finch *Rhodopechys sanguineus*
Ovenbird *Seiurus aurocapilla*
Pine Bunting *Emberiza leucocephalos*

Discussion

Under the Species Guidelines employed by the TSC (Helbig *et al.* 2002), two taxa are usually recognised as different species if a) we can reliably tell them apart (the diagnosability criterion) and b) we can judge that they cannot or will not merge through hybridisation on an evolutionary timescale. In the 1970s and 1980s, it seemed as though Western Palearctic taxonomy was deeply asleep, with a perception that all the important work had been done. A large amount of taxonomic change is now ongoing – has the process gone too far the other way? It is often said that taxonomy goes in cycles; the post-Linnean/Victorian discovery and description of large numbers of species; the grouping of these into fewer polytypic species in the late 1800s and early 1900s; the consolidation and description of many new subspecies in the early to mid twentieth century; and now a clear move to re-establish many of the subspecies as full species again.

In order to address this perception of cyclical change, it is necessary to consider the factors driving systematic science, and while enormous advances have been made in the study of morphology, acoustics and ethology, the recurring theme is genetics. As described previously (Maclean *et al.* 2005), we are currently a long way from being able to use DNA to determine unequivocally where species boundaries among bird taxa lie, but DNA provides much information on the evolutionary history and reproductive behaviour of bird taxa that was not available prior to about 1980. So the current wave of splitting is not just based on fashion – there is a substantial body of new information, from molecular genetic and other sources, that allows us to determine which taxa are breeding, or not, with which other taxa, and in some cases how long they have been isolated. These data have contributed to the elucidation of previously unsuspected barriers to gene flow consistent with *biological* speciation, examples being the separation of Western Olivaceous Warbler and Eastern Olivaceous Warblers, and Booted Warbler and Sykes's Warbler. Of course, if future research determines that we are misinterpreting, or overinterpreting, the data from mtDNA studies, then the 'cycle' may begin again, but there is little point worrying about that until it happens.

In general, birders and ornithologists cope quite well with multiple species splits; what really cause trouble are changes to generic names and changes in the order of species in

lists. Again, the changes described above are based substantially on genetic data, but often with the aim of sticking to the modern systematic convention of maintaining monophyly for taxonomic groups. Monophyly is discussed in Maclean *et al.* (2005) but essentially means that we want taxonomic groupings to be traceable to a single ancestral taxon, and to contain all the descendants of that ancestor. This seems to work quite well in imposing order on systematics, but may not be concordant with the irregular pathways of evolutionary change, driven by the environment. This is not the place to discuss whether the convention of maintaining monophyly is anti-scientific, but it should perhaps be kept under discussion. For example, while changes to the genera of swallows and tits are undoubtedly the right thing to do on the basis of the evidence available, how defensible is it to tinker with the eagles, expanding *Aquila* on the basis of maintaining monophyly, to produce a taxonomy that may not be permanent? The debate on the merits of stability has a long way to go, but clearly these are very exciting and positive times in the field of systematics.

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Dr Martin Collinson, on behalf of the BB *Editorial Board*
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Appendix 1. Genus- and species-level taxonomic changes not mentioned elsewhere adopted by the BOU or British Birds *between 1977 [publication of Voous (1977)] and 2000.*

Some of these changes were adopted on a European basis only on the publication of Sangster *et al.* (2002a) or even AERC (2003) (AERC1 and AERC2), and for these a line of explanation is given. English and scientific names given in the headings of this appendix are the ones in *current* usage, unless indicated otherwise by the use of quotation marks.

Bean Goose *Anser fabalis* The BOU recommended in 1980 that the Pink-footed Goose *A. brachyrhynchus* should be treated as a separate species from the Bean Goose, in line with the Voous List (BOU 1980).

Hooded Merganser *Lophodytes cucullatus* Moved from *Mergus* to *Lophodytes* (BOU 1997).

Smew *Mergellus albellus* Moved from *Mergus* into its own genus, *Mergellus* (BOU 1997).

Soft-plumaged Petrel *Pterodroma mollis* Fea's Petrel *Pterodroma feae* (including *P. f. deserta*) and Zino's Petrel *P. madeira* are now treated as separate species from the extralimital Soft-plumaged Petrel *P. mollis* (BOU 1992; AERC1). Genetic data show that *P. mollis* is not closely related to the other two, and that even Fea's and Zino's Petrels diverged up to 1 million years ago. The species differ biometrically and have different vocalisations and reproductive cycles.

Gannets *Morus* The three species of gannet, previously all placed in *Sula*, are now in the genus *Morus* (BOU 1991; AERC2). Extralimital Abbott's Booby becomes *Papasula abbotti*, and *Sula* is reserved for all other boobies. The species on the British List is *Morus bassanus*.

'Green Heron' *Butorides striata* North American taxa of Green-backed Heron *Butorides virescens* have been split from the cosmopolitan Striated Heron *B. striata* (BOU 1993; AERC2). Only the former is on the British list.

Great White Egret *Ardea alba* Moved from *Egretta* to *Ardea* (BOU 1997).

Steppe Eagle *Aquila nipalensis* Steppe *A. nipalensis* and Tawny Eagle *A. rapax* are allopatric taxa that differ greatly in many aspects of their plumage, anatomy, moult, ecology and behaviour that are inconsistent with maintaining them in a single species. Steppe Eagle *Aquila nipalensis* and Tawny Eagle *A. rapax* are now therefore regarded as specifically distinct (AERC1).

'Imperial Eagle' *Aquila heliaca* Both adults and immatures of the two forms, *heliaca* and *adalberti*, show plumage differences, and these two taxa are as distinct from each other as are Greater *A. clanga* and Lesser Spotted Eagles *A. pomarina*, with important chromosomal differences as well. There is no evidence of any recent gene flow, and they have been split as two monotypic species, Eastern Imperial Eagle *A. heliaca* and Spanish Imperial Eagle *A. adalberti* (AERC1).

'Lesser Golden Plover' *Pluvialis fulva* This has been split into two species, American Golden Plover *Pluvialis dominica* and Pacific Golden Plover *P. fulva*, which are identifiable on the basis of plumage, vocalisations, moult cycles and biometrics, and which do not interbreed in

the areas where their ranges overlap (BOU 1986; Knox 1987; AERC1).

Lapwings *Vanellus* The genus *Chettusia* has been merged with *Vanellus*, hence Sociable Lapwing is now *Vanellus gregarius* and White-tailed Lapwing is now *Vanellus leucurus* (BOU 1997).

Thayer's Gull *Larus glaucoides thayeri* Thayer's Gull should be treated as a subspecies of Iceland Gull *L. glaucoides* (BOU 1991).

Water Pipit *Anthus spinoletta* Rock Pipit *Anthus petrosus*, Water Pipit *A. spinoletta* and Buff-bellied Pipit *A. rubescens* have been split (BOU 1986; Knox 1988; AERC1). They all differ in plumage, vocalisations, behaviour and habitat. The breeding ranges of Water and Buff-bellied Pipits meet in Central Asia, but hybridisation does not occur.

Grey-cheeked Thrush *Catharus minimus* Grey-cheeked Thrush *Catharus minimus* and Bicknell's Thrush *C. bicknelli* are now treated as separate species (Knox 1996; BOU 1997).

Yellow-browed Warbler *Phylloscopus inornatus* Yellow-browed Warbler *Phylloscopus inornatus* and Hume's Warbler *Ph. humei*, from Central Asia and the northwest Himalayas, are now treated as separate species (BOU 1997; AERC1). They coexist in the West Sayan mountains, where they do not respond to each other's songs and calls, which ensures that little, if any, hybridisation occurs. They differ subtly in plumage and bare-part coloration, and are genetically distinct. The allopatric taxon *mandellii* is retained as a subspecies of Hume's Warbler.

'Bonelli's Warbler' *Phylloscopus bonelli* Western Bonelli's Warbler *Phylloscopus bonelli* and Eastern Bonelli's Warbler *Ph. orientalis* are now treated as separate species (BOU 1997; AERC 1). Genetically, they differ from each other almost as much as either does from Wood Warbler *Ph. sibilatrix* (a phenomenal 8.5% at the mtDNA level), and their calls are completely different. Plumage differences are subtle, but some birds may be identifiable on the basis of plumage and moult.

'Chiffchaff' *Phylloscopus collybita* Common Chiffchaff *Phylloscopus collybita* (including Siberian Chiffchaff *Ph. c. tristis*), Iberian Chiffchaff *Ph. ibericus*, Canary Island Chiffchaff *Ph. canariensis* and Mountain Chiffchaff *Ph. sindianus* are now treated as separate species (BOURC 1999; AERC1). All four are diagnosable on the basis of distinct differences in song, plumage and mtDNA. There is a narrow hybrid zone where the ranges of Common and Iberian Chiffchaffs meet, which has been shown to mark a barrier to gene flow. Similarly, Mountain and Common Chiffchaffs overlap with little, if any, hybridisation.

Great Grey Shrike *Lanius excubitor* Great Grey Shrike *Lanius excubitor* and Southern Grey Shrike *L. meridionalis* have been split on the basis of plumage and habitat differences, and a lack of hybridisation when their ranges meet. 'Steppe Grey Shrike' *L. m. pallidirostris* is retained as a subspecies of Southern Grey Shrike (BOU 1997; AERC1).

Common Crossbill *Loxia curvirostra* The BOU recommended in 1980 that the Scottish Crossbill *L. scotica* should be treated as a separate species from the Common Crossbill, in line with the Voous List (BOU 1980).

'Rufous-sided Towhee' *Pipilo erythrophthalmus* Eastern Towhee *Pipilo erythrophthalmus* and Spotted Towhee *P. maculatus* are now treated as separate species (BOU 1997).

Savannah Sparrow *Passercula sandwichensis* Moved from *Ammodramus* to become *Passercula sandwichensis* (BOU 1997).

Fox Sparrow *Passerella iliaca* Moved from *Zonotrichia* to become *Passerella iliaca* (BOU 1997).

Song Sparrow *Melospiza melodia* Moved from *Zonotrichia* to become *Melospiza melodia* (BOU 1997).

'Northern Oriole' *Icterus galbula* Baltimore Oriole *Icterus galbula*, Bullock's Oriole *I. bullockii* and Black-backed Oriole *I. abeillei* are now treated as separate species (BOU 1997).

Conservation research news

Compiled by Andy Evans and Simon Wotton

The implications of avian influenza

The rapid spread of the highly pathogenic H5N1 avian influenza virus across much of Asia, the Middle East and Europe has forced governments across the world to formulate policies for surveillance and control of the disease based on limited scientific evidence. Over the last year, a debate has been raging between virologists and ornithologists on the relative roles that poultry movements and migratory wild birds have played in spreading the disease. The focus has, unfairly, been on wild birds. Science is now playing catch-up. Chen *et al.* (2006) reported a massive sampling programme of wild birds for the virus in China and their results lend support to both camps. It is now beyond doubt that some species of wild duck (Anatidae) are able to survive and excrete the virus, as had been shown previously for laboratory-reared ducks. The simultaneous appearance of the disease in wild birds in many EU countries in February 2006, and most recently its appearance in Scotland in early April, supports the authors' conclusions that wild birds could carry the virus across international boundaries.

However, not all international outbreaks can be easily attributed to bird migration. The arrival of the disease in Siberia does not correlate closely with wild-bird movements, but is consistent with rail transportation of poultry. Chen *et al.* also analysed the genetic sequencing of the virus and concluded that poultry movements were responsible for multiple reintroductions in the Far East and the subsequent endemicity of the virus in this region. This is important. In wild birds, the virus presents an extremely low risk to human health; indeed, none of the recorded human infections can be traced reliably to contact with wild birds. Instead, almost all are associated with extremely close contact with domestic poultry. The World Health Organisation points to the Far East as the most likely area for the virus to mutate and become transmissible between humans, which could trigger a human pandemic. The arrival of H5N1 in Nigeria in January 2006 has been widely attributed by its own government to imports of infected poultry. The potential for a pandemic to emerge in Africa is also of concern, should the disease become endemic there. The findings of Chen *et al.* reinforce the need for surveillance and testing of wild birds, and of good biosecurity to prevent the potential for the contamination of poultry flocks. But they also highlight the need for urgent attention to be given to global movements of poultry and poultry products, and the necessity of controlling the disease in poultry. Swift action to identify and cull infected poultry flocks, coupled with much improved public information remain our only hope of eradicating this disease, which evolved in domestic birds.

In the meantime, let us hope that the impact on wild birds, either through the disease itself or through the collateral damage caused by misguided attempts to cull or disturb wild birds or destroy their nests, can be minimised. It is rare to report on genetic or virological studies in an ornithological journal, but this whole episode has highlighted the importance of scientific evidence in underpinning policy development, and the crucial need for a multidisciplinary approach in tackling such an important issue. Chen *et al.*'s study is a welcome and important contribution, but it highlights the urgent need for ornithologists, veterinary scientists and virologists to pool their expertise to better understand the spread of this virus and ways of controlling it.

Chen, H., Smith, G. J. D., Li, K. S., Wang, J., Fan, X. H., Rayner, J. M., Vijaykrishna, D., Zhang, J. X., Zhang, L. J., Guo, C. T.,

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Cheung, C. L., Xu, K. M., Duan, L., Huang, K., Qin, K., Leung, Y. H. C., Wu, W. L., Lu, H. R., Chen, Y., Xia, N. S., Naipospos, T. S. P., Yuen, K. Y., Hassan, S. S., Bahri, S., Nguyen, T. D., Webster, R. G., Peiris, J. S. M., & Guan, Y. 2006. Establishment of multiple sublineages of H5N1 influenza virus in Asia: implications for pandemic control. *Proceedings of the National Academy of Sciences* 103: 2,845–2,850.

More evidence for the earlier arrival of migrant passerines

In Denmark, passerines have been intensively studied during a ringing project on Christiansø, an island in the Baltic Sea where, between 1976 and 1997, more than 568,000 individual birds were trapped and ringed. Changes in the pattern and timing of arrival were analysed for 25 migratory passerine species for which ten or more individuals were trapped each spring. This included a total of nearly 200,000 ringed individuals. Three of the species involved were short-distance migrants (travelling less than 1,500 km), five were medium-distance migrants (2,000–2,500 km) and 17 were long-distance migrants (5,000–9,000 km).

All 25 species showed earlier dates for the arrival of the first individual, and six showed a significant change – Wren *Troglodytes troglodytes*, Robin *Erithacus rubecula*, Blackbird *Turdus merula*, Redwing *T. iliacus*, Goldcrest *Regulus regulus* and Reed Bunting *Emberiza schoeniclus*. The smallest change was found for Garden Warbler *Sylvia borin* – 0. 01 days earlier per year – and the largest was for Blackbird – 0. 89 days earlier per year. The date at which the first 5% of the population had arrived showed a trend towards earlier arrival for 24 of the 25 species (the exception being Goldcrest).

The study found that there were clear overall indications of earlier spring arrival for the 25 migratory species combined and that, taking the dataset as a whole, arrival dates advanced by 0.26 days per year. The change was evident both for early arrivals (the first 5% of the total population) and for the date by which the majority (95%) of the population had arrived. However, the first-arriving individuals changed their arrival time more rapidly than the first 5%, 50% and 95% of the spring total; and the date by which the first 50% of the total population had arrived advanced at a slower rate than was the case for the other groups (i.e. first arriving, first 5% and first 95%).

Species travelling longer distances advanced their arrival dates the least. This difference was most marked for the date of first arrival (0.5 days per year less for long-distance migrants than for short- and medium-distance migrants) and for the 95% of arrivals date (0.25 days per year less). All long-distance migrants showed a trend towards earlier spring migration, but when the subgroups wintering in sub-Saharan Africa were compared, no differences were found among those wintering in different areas.

Although most previous phenological studies have concentrated mainly on analyses based on arrivals of the first individual, this study suggests that arrival trends of first individuals should not be considered necessarily to apply to the entire population. While analysis of data for first-arriving individuals may provide a rough indication of the general trend for the population as a whole, there may be important differences when considering other phases of the arrival process (e.g. the dates by which 5% and 50% have arrived). Such differences are likely to be important for our understanding of changes in population dynamics in relation to climatic change. The study also shows that short- and medium-distance migrants as well as sub-Saharan migrants are able to change the timing of their migration within a few generations.

Tøttrup, A. P., Thorup, K., & Rahbek, C. 2006. Patterns of change in timing of spring migration in North European songbird populations. *J. Avian Biol.* 37: 84–92.

Reviews

LIFE WITH BIRDS

By Rob Hume. David & Charles, Newton Abbot, 2005. 320 pages; 40 line-drawings. ISBN 0-7153-2181-1. Hardback, £19.99.

Rob Hume needs no introduction. Author, illustrator, gull man, former chairman of BBRC, RSPB staffer for more than 20 years (latterly as editor of the Society's *Birds* magazine), he's been an acute observer of British birds and birding since the 1960s.

Life with Birds joins the increasing – and increasingly valuable – genre of birding memoirs that chart the history of British birdwatching during the twentieth century. Other examples are Ian Wallace's *Beguiled by Birds* (Helm, 2004) and H. G. Alexander's *Seventy Years of Birdwatching* (Poyser, 1974), which between them span the century from beginning to end.

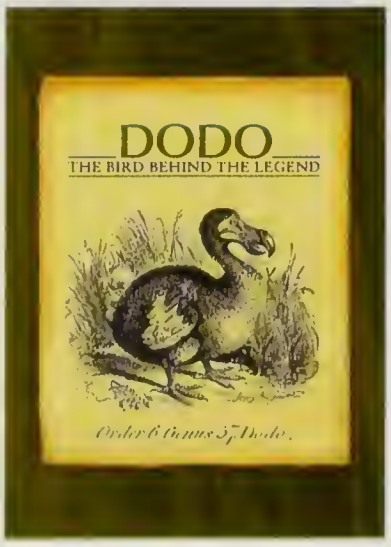
Rob Hume arrived on the scene exactly mid century (he was born in 1950) and his birdwatching recollections start in earnest in the mid 1960s. He grew up in south Staffordshire on the edge of Cannock Chase. It was the scruffy, scrubby countryside of overgrown spoil heaps, canals and railway embankments. And then there was Norton Pool, later renamed Chasewater. Roaming this patchwork of habitats – and his cousins' haunts in coastal Essex – Rob learnt his birds by trial and error. From the outset he was an assiduous patchworker and note-taker. He knew where to find the local Whinchats *Saxicola rubetra* and Grasshopper Warblers *Locustella naevia* in summer and the 70-strong flock of Twite *Carduelis cannabina* in winter. But just as that flock of Twite is a distant memory, so too is the diverse countryside that was commonplace 40 years ago. This loss of biodiversity, as we call it in 2006, is a recurrent theme in Rob's book. There is a wistfulness that permeates its pages, not only for the changes in our birds but also for the changes in our birdwatching.

Rob Hume's birdwatching 'education' will be familiar to most *BB* readers, but the fast track to twitching that many new birders prefer saddens him: 'The initial magic of discovery has been lost for many people and it is an experience that can never be recaptured.' The magic of discovery has accompanied Rob throughout his life with birds. The book charts his travels from Chasewater to student birding in Swansea Bay (where he found Britain's first Ring-billed Gull *Larus delawarensis*, in 1973) to Scilly in the 1970s and then further afield in Europe, Africa and North America.

He writes evocatively of summer seasons on RSPB contract in mid Wales and of the East African savannah. And there's an insight into the workings of BBRC, of which he was a member from 1988 to 1996. But Chasewater was his first love and it is the accounts of days spent beside this seemingly unprepossessing pool in the industrial Midlands that make the most compelling reading. Rob's library of field notebooks provides the raw material for his autobiography, which is enlivened by his accomplished line-drawings. If I have a (minor) criticism, it is that those notebooks are drawn upon a little too heavily so that entire chunks are repeated verbatim with species lists and numbers.

As a chronicle of the birding scene from 1965 to 2005, it is a valuable document, engagingly written by an observer who has been close to the movers and shakers in birding and the RSPB. I would have liked there to be more detail of the fascinating period in recent RSPB history, when it made the transition from cosy club to sleek corporate body. But perhaps that will have to wait for *Life with Birds* 2, when Rob Hume has retired from the Society's employ...

Adrian Pitches



DODO: THE BIRD BEHIND THE LEGEND

By Alan Grihault. Imprimerie & Papeterie Commerciale, Mauritius, 2005. 172 pages; numerous colour illustrations. ISBN 99903-38-15-9. Paperback, £16.99.

Rather curiously, given that there is little in the way of contemporary data and few earthly remains (just some skeletal material, a foot and a head), the Dodo *Raphus cucullatus* of Mauritius is probably the most famous example of an island bird species driven to extinction by the arrival of humans and their mammalian fellow travellers.

Alan Grihault is the latest in a long line of authors to examine the subject, and his engaging and generously illustrated account charts the Dodo's passage from the earliest eye-witness reports through to its posthumous transformation into a symbol of modern conservation (its image was chosen for the logo of the Durrell Wildlife Conservation Trust). Matters touched upon include its place in art (a

painting based on two held captive in a Mogul emperor's menagerie is probably the most accurate) and literature (it famously featured in Lewis Carroll's *Alice's Adventures in Wonderland*), and even the use of its likeness on stamps and for tourist souvenirs.

The Dodo's affinities are also discussed (DNA analysis has recently revealed its closest living relative to be the Nicobar Pigeon *Caloenas nicobarica*), and educated guesses made concerning its lifestyle and feeding habits. The existence of a species of white Dodo on Réunion is rightly dismissed as myth, the author aptly noting that it 'has received as much attention for being non-existent, as the Mauritian Dodo has for becoming extinct'.

Although Dodo specialists will doubtless have a few quibbles (for example, this book allows that it survived until 1688, even though reports after 1662 are rendered uncertain due to the fact that the name transferred in popular usage to a flightless rail, the Mauritius Red Hen *Aphanapteryx bonasia*), this book can be recommended as a useful introduction to this long-vanished bird.

Pete Combridge

NATURALISED BIRDS OF THE WORLD

By Christopher Lever. T & AD Poyser, A&C Black, 2005. 352 pages; eight pages of colour photographs; black-and-white illustrations.
ISBN 0-7136-7006-1.
Hardback, £40.00.

The introduction and establishment of bird species in the wild, outside their natural range, is a hot topic in the conservation field. This book, which updates one of the same title published in 1987 by Longman Scientific and Technical, Harlow, comprehensively examines the history of such naturalisations worldwide. For each species in this book, the natural range is given, followed by a list of countries where the species has been artificially established. For each of these countries, the dates of the introductions and the story behind them (as far as is known) are told in narrative style, with some assessment of the current status of the species and the consequences of the introduction for native species and agriculture. Some species get only a few lines, whereas others may get ten pages or more (step forward Common Mynah *Acridotheres tristis* and House Sparrow *Passer domesticus*). Apart from impressing on the reader the hammering that the Hawaiian Islands have taken, this thought-provoking book challenges current conservation policy in some respects. While not being shy about the damage that introductions can do, the conservation significance of naturalised populations of species that are threatened or declining in their natural range is emphasised. Ironically, in light of its apparent looming disappearance in Britain, Lady Amherst's Pheasant *Chrysolophus amherstiae* is one species for which such a claim is made. The introduction of Dunnocks *Prunella modularis* to New Zealand is described as 'entirely beneficial'. Although poorly formatted, the appendices are very useful summaries, and Appendix B, listing the introduced species whose status is uncertain, shows how much more research could usefully be done. This is not a book that many people will tackle cover to cover, but it is a valuable reference and an eye-opening read.

Martin Collinson

BIRDS OF TAMAN NEGARA: AN ILLUSTRATED GUIDE AND CHECKLIST

By Morten Strange and Dennis Yong, Draco Publishing and Distribution Pte Ltd., 2006. 120 pages; 107 colour photographs; maps.
ISBN 981-05-4441-3.
Paperback, £6.50.

Following the format of *Birds of Fraser's Hill* (see *Brit. Birds* 97: 307), this pocket photo guide illustrates 98 of the 380 species recorded from Malaysia's premier National Park, Taman Negara. Almost all species included are lowland forest specialities, so there is little overlap with the earlier guide, despite the fact that Taman Negara includes West Malaysia's highest peak.

Like its companion volume, this is not a detailed identification guide. Species descriptions are restricted to a single sentence, followed by a brief section on habits, which includes notes on behaviour, habitat and vocalisations. Most photographs are of a high standard, so this guide provides readers with a feel of the appearance, jizz, behaviour and habitat of each species, and complements traditional field guides to the region, such as Robson's *Guide to the Birds of Southeast Asia*.

The guide concludes with a checklist to all 380 species recorded from the Park, with brief comments outlining status, range, habitat, threats and abundance. Although useful, this list occupies no less than 48 pages; I felt that this could have been pruned down considerably, since it comes at the expense of additional species coverage and photographs. Nonetheless, this guide is a quality product and provides useful and up-to-date details when planning a visit to Malaysia.

Peter Kennerley

News and comment

Compiled by Adrian Pitches

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

Bird flu déjà vu

The 2005 bird flu outbreak that originated in China and ultimately washed up on British shores in April 2006 (*Brit. Birds* 99: 269) may about to be repeated. The alarm was raised in May 2005, when *wild* Bar-headed Geese *Anser indicus* started dying at Qinghai Lake on the Tibetan Plateau. Although the H5N1 virus had been endemic in the Southeast Asian poultry industry since 2003, it was the first time that the strain had been found in a flock of wild birds. Upwards of 6,000 wildfowl and gulls died in Qinghai, including Ruddy Shelducks *Tadorna ferruginea*, Great Cormorants *Phalacrocorax carbo*, Great Black-headed *Larus ichthyaetus* and Brown-headed Gulls *L. brunnicephalus*.

Bird flu subsequently spread west, whether transmitted by migrating wildfowl or domesticated poultry transported by road, until it entered southeast Europe in February. It reached countries bordering the North Sea in March and the single British case was identified in early April.

Exactly a year after the 2005 outbreak, Bar-headed Geese have started dying from bird flu in Qinghai again. The Chinese agriculture ministry confirmed another bird flu outbreak in early May when more than 120 Bar-headed Geese were found dead at a wetland in Yushu County. The national bird flu laboratory said that the dead birds had tested positive for the H5N1 strain that has killed 12 people in China. Worryingly, bird flu's jump from domestic poultry to wild geese may have been facilitated by domestication of Bar-headed Geese in Qinghai.

Hong Kong-based birder Dr Martin Williams (www.drmartinwilliams.com) reports that Bar-headed Geese are being reared in Qinghai for meat and eggs alongside chicken farming. This would easily enable transmission of H5N1 from chickens to domestic geese to wild geese. Up to 10% of the world population of Bar-headed Geese may have been wiped out in last year's bird flu outbreak so another bout could endanger the species. And pave the way for another Eurasian bird flu panic this coming autumn as return migration gathers pace.

Sea Eagle reintroduction to Wales

As English Nature embarks on a feasibility study into the reintroduction of the White-tailed Eagle *Haliaeetus albicilla* to Suffolk (see *Brit. Birds* 99: 165–166), its Welsh counterpart is considering a similar scheme in North Wales. A group called Eryr Môr Cymru (Welsh Sea Eagles) has been set up and the project has the blessing of the Countryside Council for Wales.

Conservationists, falconers and academics met in Llanfairfechan in early May to launch the scheme, aware that they must first convince sceptics. Farmers may be concerned about the safety of lambs, while commercial fishermen could complain about the loss of fish stocks.

Prof. Gareth Edwards-Jones, of Bangor University, said that an established White-tailed Eagle colony would add a 'wow factor' to Welsh wildlife tourism: 'Farm unions and fishing groups from the Lleyn Peninsula were invited to the meeting so we could discuss any concerns they might have. We are also talking to other conservation groups such as the RSPB, which may have concerns about the impact on other conservation species, such as the Black Grouse *Tetrao tetrix*.'

The reintroduction of the Golden Eagle *Aquila chrysaetos* was considered, but studies concluded that White-tailed Eagle was a better bet as it would have good access to food supplies – fish, seabirds, small mammals and carrion.

If consensus is reached, Eryr Môr Cymru hopes to apply for £160,000 of EU funding in the autumn and could start importing eagle chicks from Norway as early as next year, though 2008 remains more likely. Around 20 birds a year would be released over four years at two release sites in northwest Wales. Several landowners have offered sites and these will be assessed this summer.

The Scottish reintroduction project started on the Hebridean island of Rum in 1975 with young birds brought under licence from Norway by the RAF. The first breeding success was recorded in 1985.

Thirty years after the reintroduction started, there are now more than 30 breeding pairs of White-tailed Eagle in western Scotland and they've become a substantial generator of ecotourism revenue. In its *Watched Like Never Before* report (see 'Bird tourism generates millions' on p. 329) the RSPB estimated that Mull's famous Sea Eagles are worth £1.5 million a year to the island's economy. The 350,000 visitors that go to Mull every year spend £38 million on the island. Of this, between £1.45m and £1.69m is spent by 'eagle tourists'.

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Bird tourism generates millions

Spectacular species like the Osprey *Pandion haliaetus* and White-tailed Eagle are contributing millions to local economies, a report from the RSPB has revealed. An estimated 290,000 people visit Osprey viewing sites each year, bringing additional income of £3.5 million per year to the areas around the sites. This makes the Osprey the UK's top bird-tourism species.

Osprey tourism started at Loch Garten on Speyside in the 1950s but as breeding Ospreys have spread, so too have the Osprey tourists. England's famous pair at Bassenthwaite near Keswick has been invigorating the Cumbrian economy since 2001 and now the pair at Porthmadog has started boosting the tourism industry in North Wales too.

The report, *Watched Like Never Before... the local economic benefits of spectacular bird species*, summarises 12 recent economic surveys. It includes information from 45 sites across the UK, stretching from Cornwall to northern Scotland, and ranging from city-centre Peregrine Falcon *Falco peregrinus* watching to seabird tourism on remote islands.

Ian Dickie, head of economics at the RSPB, said: 'Our figures are carefully worked out; we count only a proportion of the spending by people who visited sites because of the birds and use conservative assumptions. We have known about the economic benefits of wildlife tourism for many years, but we believe this is the first assessment of the UK-wide benefits of individual species. The results reflect the huge effect spectacular birds can have in engaging support and interest in wildlife conservation. This interest is reflected in the positive effects they can have in their local area, helping to provide income and employment for local people.'

Half a million people attended 45 RSPB *Aren't birds brilliant!* events in 2005, seeing breeding raptors, Red-billed Choughs *Pyrrhocorax pyrrhocorax* and even European Bee-eaters *Merops apiaster*. Even more events are planned for 2006.

Blackwit moves nearer to Red List

BirdLife's annual evaluation of how the world's bird species are faring shows that the total number considered threatened with extinction is now 1,210. When combined with the number of Near Threatened species this gives a record total of 2,005 species in trouble – more than a fifth of the planet's 9,799 total species.

Not all species faring badly are found in the tropics. The Black-tailed Godwit *Limosa limosa*, its breeding population concentrated in Europe, has declined in number by around 25% over the last 15 years. As a result, the species is now classified as globally Near Threatened. Loss of nesting habitat owing to wetland drainage and agricultural intensification are its biggest threats.

Of the species most at risk, 181 are now categorised as Critically Endangered, the highest level of threat. New additions include the Purple-backed Sunbeam *Aglaeactis aliciae*, a hummingbird found only in a tiny 1 km^2 area of woodland in western Peru. Another species now regarded as Critically Endangered is the Uluguru Bush-shrike *Malaconotus alius*, from the Uluguru Mountains of Tanzania. Another species found only in the Ulugurus, Loveridge's Sunbird *Cinnyris loveridgei*, has also been uplisted (to Endangered) to reflect its continuing decline.

Several new species are also recognised as Endangered in the 2006 update, including the Serendib Scops-owl *Otus thilohoffmanni*, formally described in 2004, from Sri Lanka. The Long-legged Thicketbird *Trichocichla rufa* is also evaluated for the first time as Endangered, following its rediscovery in 2002 on Fiji. 'We face a huge challenge in improving the status of the 1,210 threatened and 795 Near Threatened species. But concerted conservation action can save these birds from extinction: we just need the political will and resources,' said Dr Stuart Butchart, BirdLife's Global Species Programme Co-ordinator.

Fewer turbines planned for Lewis

Both applicants planning windfarms on Lewis have announced that they will reduce the number of turbines.

Eisgein estate owner Nick Oppenheim, the man behind Beinn Mhor Power, has reduced his windfarm plans on Lewis by 80 turbines. Last summer, the Western Isles Council approved a plan for 133 wind turbines; the revised application is for 'only' 53 turbines. However, the RSPB remains opposed to the Beinn Mhor windfarm, as it threatens breeding Golden and White-tailed Eagles. The environmental statement submitted with the windfarm application admits the projected loss of 12 Golden Eagles through collisions with turbines over the 25-year life of the windfarm and disruption to six pairs on the estate. It also projects the loss of one adult and one subadult White-tailed Eagle over a 50–100-year period.

But the RSPB fears that eagle losses will be far higher and is urging people to lobby the Scottish Executive to turn down the windfarm application. The protest group Moorland Without Turbines www.mwtlewis.org.uk has a

sample objection letter on its website. Objections on grounds of damage to a National Scenic Area, damage to the Hebridean tourism industry and the huge impact on protected species including Golden and White-tailed Eagles can be made to: Paul Smith, The Scottish Executive, Consents and Emergency Planning Unit, 2nd Floor, Meridian Court, 5 Cadogan Street, Glasgow G2 6AT; e-mail paul.smith@scotland.gsi.gov.uk

The other windfarm proposed on Lewis is the massive 700 MW Lewis Wind Power scheme backed by Amec and British Energy. This was also approved by the local council last summer; the initial proposal for 234 giant turbines was amended to 209. Now it seems that Amec will reduce the number further – but not much further – and the final application submitted to the Scottish Executive later this summer will probably be for 180.

The RSPB has serious concerns about the impact of the Lewis Wind Power proposal on breeding raptors and waders, and the scheme has also attracted more than 6,000 objections, more than 4,500 of them coming from local people. See Save the Lewis Peatlands: www.rspb.org.uk/scotland/action/lewis/index.asp

Barrage of protest on the Severn

Another renewable energy project that has generated controversy ever since it was first proposed, some 30 years ago, is a tidal barrage across the Severn estuary. Now the idea for a ten-mile barrage stretching from South Wales to Somerset has been revived – and has been endorsed by the Welsh Secretary, Peter Hain, and the Welsh Assembly.

There are two competing bidders to build a barrage. One is a consortium of construction giants, including Sir Robert McAlpine and Balfour Beatty, who have come together as the Severn Tidal Power Group. The other is a Welsh entrepreneur, Gareth Woodham. The £15-billion scheme put forward by the Severn Tidal Power Group involves a barrage between Lavernock Point, near Cardiff, and Brean Down, near Weston-super-Mare, in Somerset. The intertidal area enclosed by the barrage corresponds exactly with the Severn Estuary Special Protection Area, which was designated for the internationally important populations of shorebirds and wildfowl that winter here.

Tim Stowe, director of RSPB Cymru, said that a barrage would cause 'probably irreversible' damage to the estuary and would have a knock-on effect on rivers such as the Wye and Usk which feed into the Severn; as well as ruining the Severn bore, the extraordinary wave which periodically rushes upriver and attracts surfers from across the world. Mr Stowe said: 'The RSPB is fundamentally supportive of renewable energy but we argue that the possible environmental impact of this project outweighs the benefits. Risking irreplaceable wildlife sites for the sake of energy generation is not a sustainable option.'

The proposed barrage would allow water to rush through 176 sluices as the tide rose. The water would be held behind the structure until the tide dropped and then allowed to flow out, driving more than 200 turbines and creating electricity. Because the timing of the tides is predictable, the barrage is seen as providing a reliable source of energy. Roger Hull, spokesman for the Severn Tidal Group, said that if the privately financed scheme was backed by Government, it was expected that it could be operational by 2017. Mr Woodham, a property developer from Neath in South Wales, is also seeking planning permission for his rival scheme, which will include creating islands close to the barrage on which executive homes would be built.

The Government is conducting an energy review widely expected to endorse new nuclear power stations as a means of tackling a looming energy shortfall in the UK. In its submission to the review, the Welsh Assembly argued that the barrage provided an 'exceptional opportunity' to tap the estuary's tidal surges. The Welsh energy minister, Andrew Davies, said: 'The barrage would be equivalent to around two nuclear power stations operating continuously, lasting not 40–50 years with a problematic legacy but operating for 150 years plus.'

Julian Rosser, Friends of the Earth Cymru director, said: 'I can see why such a mega-project is appealing to politicians but this is not the right solution.' He claimed that the barrage would cause 'massive ecological disruption' and distract from alternatives. FoE in Wales is backing a more modest idea of building lagoons in the estuary to harness the power of the tides; water would flow into the lagoons at high tide and power turbines when it is allowed back out.

Nightjar nightmare for housebuilders

Housebuilding across 300 square miles of southeast England has apparently been frozen to protect three heathland birds: European Nightjar *Caprimulgus europaeus*, Wood Lark *Lullula arborea* and Dartford Warbler *Sylvia undata*.

Acting under advice from the Government's wildlife agency, English Nature, 11 local authorities in Surrey, Hampshire and Berkshire have frozen all new housing planning applications since October last year in areas of lowland heath. *The Independent* reports that the housebuilding moratorium has blocked plans for 20,000 new homes. The Home

Builders' Federation now wants the Government to step in as a matter of urgency.

Yet the situation can be resolved, says English Nature, if the local councils adopt a radical plan and provide new public open space to accompany all new development; this would then absorb the extra pressure from visitors that might otherwise put the birds' nesting success at risk. Recent research has convinced EN that public access to heaths – especially people walking dogs – is a much greater threat to the breeding success of all three species than had been realised previously. In the case of the group of heathlands nearest to London, the agency is now formally objecting to any further residential development within 5 km. In doing so, it insists that it is simply carrying out its obligations to implement EU law.

There are 13 major stretches of lowland heath west of London, such as Chobham Common in Surrey. Individually, they are already Sites of Special Scientific Interest (SSSIs), and they have been further designated, collectively, as the Thames Basin Heaths Special Protection Area (SPA) under the EU Birds Directive, expressly to safeguard the Nightjars, Wood Larks and Dartford Warblers that nest there. The directive, transposed into English law as the Habitats Regulations 1994, is extremely tough, and forbids anything likely to have a 'significant effect' on the species for which an area was selected. In the past, EN concentrated its protection efforts on the management of the heaths themselves, but several studies over the past four years have convinced staff that bird breeding success is correlated with visitor pressure – the more visitors, the fewer successful nests. Although the agency has long insisted on a 400-m building exclusion zone around protected heathlands, it now believes that people who use the heaths come from farther away than was generally appreciated, and a much wider residential building exclusion zone is now necessary.

Since October last year, the agency has formally objected to any housing application within 5 km of the SPA. These 5-km zones link together to form an oval area, 50 km across at its widest point and 25 km deep, taking in such towns as Guildford, Woking, Camberley, Bracknell and Ascot, where demand for new housing development is intense.

The 11 local councils concerned, following legal advice, are now refusing every housing application for the area. The scheme that English Nature is putting forward to solve the problem, labelled the Thames Basin Heaths Delivery Plan, is an entirely new approach to spatial planning, because it would mean that individual housing applications would not necessarily have to be assessed separately for their impact on the SPA. Instead, land in mitigation – alternative open space to soak up added public pressure expected from the new homes – could be provided strategically for the whole area. The main objection from housebuilders to English Nature's position is that the 5-km exclusion zone around the SPA is too wide.

However, EN's chief executive, Dr Andy Brown, said: 'All the evidence we can put together suggests that anything within that sort of radius, in terms of new development, is going to have some effect on the bird populations of the sites. But we know how to offset that effect – by creating additional green space. So it is possible to have housing in the area if developers and local authorities can work together with the delivery plan.'

Skate on thin ice in North Sea

Europe's environment and transport ministers have dashed hopes of saving some species of North Sea fish from extinction. The ministers were meeting at the sixth and final North Sea Ministers Meeting, in Gothenburg, Sweden, to sign a declaration on the environmental impacts of shipping and fisheries. But the assembled politicians lost the political will to advance the vision for a healthy and sustainable North Sea.

RSPB's Dr Euan Dunn, who led the BirdLife delegation, said: 'This declaration was the guttering candle of the North Sea Conference's distinguished 20-year history of driving efforts to improve and restore the North Sea environment. Far from making progress to halt the decline of biodiversity loss by 2010, as promised by EU Heads of State at the Summit five years ago in this very city, this declaration is rudderless and as devoid of concrete action as the *Marie Celeste* was of crew.'

Ministers did at least agree to develop a clear plan for integrating environmental issues into the management of North Sea fisheries, but resisted pleas by environmentalists to do this before 2010. They also failed to go further than merely agreeing to consult on whether experimental areas should be closed to fishing by 2008. Dr Dunn said: 'This dashes the chance to create refuges in time to save species like Common Skate *Raja batis*, which has been decimated by trawling and is virtually extinct in the North Sea.'

Environment Minister Ben Bradshaw failed to attend the Ministerial meeting in Gothenburg on 5th May as reshuffle fever gripped the British Government in London. Dr Dunn believed that this had weakened the UK's clout in the fisheries negotiations: 'No amount of domestic politics in the UK can disguise the negative signal the UK Minister's absence sent to this important meeting.'

Biodiversity Action Plan www.ukbap.org.uk/UKPlans.aspx?ID=543

One good tern deserves a camera

A solar-powered closed-circuit TV camera on the RSPB Coquet Island reserve, off the Northumberland coast, will beam live pictures of nesting seabirds back to the mainland this summer. Coquet is home to the UK's only regularly nesting Roseate Terns *Sterna dougallii*, as well as 20,000 Puffins *Fratercula arctica*.

The solar-powered CCTV will transmit pictures to the *CoquetWatch* control centre in Amble tourist information centre where visitors will be able to enjoy close-up views of the island's breeding seabirds. More than 30,000 seabirds nest on the RSPB reserve every year.

Paul Morrison, RSPB Coquet Island warden, said: 'Coquet Island is one of the RSPB's smallest nature reserves and during the spring and summer every square metre is packed with nesting seabirds. It's just not possible for visitors to land on the island because of the number of nesting birds, so we have decided to use the latest remote monitoring technology to take the birds to the people.'

The Puffins are likely to be the stars of *CoquetWatch*, but visitors will also have unique views of Roseate Terns, 91 pairs of which nested on Coquet Island in 2005. This is the first time that cameras have followed the private life of these rare seabirds and the RSPB hopes that the camera will reveal previously unrecorded behaviour.

The project is costing £46,000 and has been grant-aided by the Northumberland Coast AONB Sustainable Development Fund, the Heritage Lottery Fund, and SITA Trust.

New Secretary for the Rare Breeding Birds Panel

As announced recently (Brit. Birds 99: 52) Malcolm Ogilvie has decided to stand down after 13 years as Secretary of the Rare Breeding Birds Panel. We are pleased to announce that the Panel has recently appointed Mark Holling as Malcolm's successor. Mark will be well known to many birdwatchers in Scotland, having been the President of the Scottish Ornithologists' Club for two years and one of the authors of the Southeast Scotland Breeding Bird Atlas. He is actively involved in bird survey work in his own area, particularly on raptors, as well as serving on various ornithological committees in Scotland. Over the next few weeks, Mark will be picking up the reins from Malcolm Ogilvie and will be making contact with recorders. He can be contacted now at: The Old Orchard, Grange Road, North Berwick, East Lothian EH39 4QT; e-mail secretary@rbbp.org.uk

We hope that the problems of delays with the RBBP report will be solved quickly, and we aim to produce a combined 2003/2004 report as soon as possible to accelerate the catching-up process.

(*Contributed by Ken Smith*)

Website of the month

The West Midland Bird Club is a county bird club that covers not one but four counties: Staffordshire, Warwickshire, Worcestershire and the metropolitan county of the West Midlands. The club is one of the oldest in the country. It was formed in 1929 by a handful of pioneers as the Birmingham Bird Club; in 2006 the WMBC has nearly 2,000 members. For a bird club of this size, the website www.westmidlandbirdclub.com is of a corresponding scale. It has comprehensive sections on where to watch birds in all four counties, all four county lists (up to the end of 2003) and a fascinating archive of articles from county reports dating back to 1934. There is no 'recent sightings' section on the website but the club offers a bespoke hotline service run by club member Eric Clare from his home. Users are asked to observe a 'curfew' mid evening so that he can make his own phone calls!

WMBC alumni include schoolboy-birders-turned-ornithological-elder-statesmen Bill Oddie and Rob Hume. Rob recounts his birding youth in Staffordshire in his autobiography *Life with Birds* (see review on p. 326) and there are exclusive, unpublished extracts from the book on the WMBC website.

First for Britain at The Lodge

The RSPB has proudly announced a First for Britain on land bordering its HQ in Bedfordshire... but it's a wasp! It is a spider-eating wasp, *Episyron gallicum*, which is normally restricted to the Mediterranean and has not been previously recorded farther north than central France; its appearance in Britain may be linked to climate change.

It was found breeding in a quarry at Sandy that is run by Lafarge Aggregates. RSPB staff have been working with Lafarge on habitat creation for rare insects and the wasp was discovered when an entomological survey of the quarry was conducted.

The wasp seeks out spiders that hunt for their prey on the ground, rather than building webs. It dances around its prey to outwit it before paralysing it with a quick sting. The helpless spider is then sealed in a tunnel with a wasp egg laid on it. When the larva hatches, it uses the unfortunate arachnid as a source of fresh food.

In all, 135 species of insect were found at the quarry, including an endangered robberfly (Asilidae) which was previously confined to the Brecks area of Norfolk and Suffolk.

Recent reports

Compiled by Barry Nightingale and Eric Dempsey

This summary of unchecked reports covers mid April to mid May 2006.

Black Duck *Anas rubripes* Tresco (Scilly), long-stayer to 21st April. Blue-winged Teal *Anas discors* Filey (North Yorkshire), 11th–14th April, then St Mary's Island (Northumberland), 17th–24th April; Firville Lake (Co. Tipperary), 1st May; Loch of Stenness, Mainland (Orkney), 3rd May; Castle Espie (Co. Antrim), 5th May. Lesser Scaup *Aythya affinis* Swithland Reservoir (Leicestershire), long-stayer to 1st May. King Eider *Somateria spectabilis* Bow Fiddle Rock (Moray), 13th April; Dales Voe (Shetland), long-staying male joined by a female 13th–17th April; Ness of Bixter (Shetland), 22nd April; Blackdog (Northeast Scotland), 4th May; Ythan estuary (Northeast Scotland), 6th–7th May; Irvine (Ayrshire), long-stayer to 26th April, presumed same past Saltcoats (Ayrshire), 5th May. Hooded Merganser *Lophodytes cucullatus* Unst (Shetland), 16th April to 2nd May.

Night Heron *Nycticorax nycticorax* Following the influx described last month: Stockbridge (Hampshire), 17th April; Ardfert (Co. Kerry), 18th April; Lincoln (Lincolnshire), 20th–30th April; Baldwinstown (Co. Wexford), c. 21st April; Bovington (Dorset), 25th April; Dungeness (Kent), 28th April. Cattle Egret *Bubulcus ibis* Pett Level (East Sussex), 22nd April; Samphire Hoe (Kent), 24th April; St Leonards Grange (Hampshire), 26th April. Great White Egret *Ardea alba* Exminster Marshes (Devon), 12th April; Lodmoor, 24th April, presumed same near Langton Herring, 25th April and possibly the same at The Fleet (all Dorset), 5th May; Earith (Cambridgeshire), 30th April; Walthamstow Reservoir (London), 30th April; North Duffield Carrs (North Yorkshire), 5th May; Slimbridge (Gloucestershire), 5th May. Black Stork *Ciconia nigra* Minsmere (Suffolk), 27th April.

Black Kite *Milvus migrans* Woodnesborough (Kent), 22nd April; near Knaresborough (North Yorkshire), 28th April; Nosterfield (North Yorkshire), 29th April; Minsmere, 5th–6th May, presumed same Easton Broad (both Suffolk), 5th May; Blakeney Point (Norfolk), 5th May; Walland Marsh (Kent), 6th May; Beachy Head (East Sussex), 7th May. Montagu's Harrier *Circus pygargus* Belfast Harbour Estate (Co. Down), 29th April to 4th May (first for Northern Ireland, if accepted).

Black-winged Stilt *Himantopus himantopus* Elmley Marshes (Kent), 3rd–4th May; Barton-on-Humber (Lincolnshire), three, 4th May; Martin Mere (Lancashire), three, 5th–8th May;

John Carter

159. Male Blue-winged Teal *Anas discors*, St Mary's Island, Northumberland, April 2006.

Kit Day

160. Male King Eider *Somateria spectabilis*, with male Common Eider *S. mollissima*, Irvine, Ayrshire, April 2006.

Thurlestone (Devon), long-stayer to 14th April, possibly same Lizard (Cornwall), 16th–17th April. American Golden Plover *Pluvialis dominica* Cemlyn Lagoon (Anglesey), 17th April to 3rd May. Broad-billed Sandpiper *Limicola falcinellus* Exminster Marshes, then Dawlish Warren (Devon), 1st May; Pennington Marshes (Hampshire), 2nd May. Buff-breasted Sandpiper *Tryngites subruficollis* Tyninghame/Aberlady Bay (Lothian), 4th–6th May. Long-billed Dowitcher *Limnodromus scolopaceus* Nosterfield, 1st May; Hayle estuary (Cornwall), long-stayer to 23rd April; Old Hall Marshes (Essex), long-stayer to 1st May.

Laughing Gull *Larus atricilla* In addition to those listed in recent months: Chew Valley Lake (Somerset), 17th April; Bexhill (East Sussex), 21st April; sightings in Cornwall at Restronguet Creek intermittently 21st April to 2nd May, at Penzance 30th April and 4th May, at Hayle 1st May and at Marazion 7th May involved at least two individuals; Waterside (Co. Galway), 4th May; Cork City (Co. Cork), 7th May; Cromer and Cley (both Norfolk), 7th–8th May. Franklin's Gull *Larus pipixcan* Northam Burrows (Devon), long-stayer to 7th May. Bonaparte's Gull *Larus philadelphia* Cardiff Bay Wetlands 14th–15th April; Farmoor Reservoir (Oxfordshire), at least 17th–20th April; Weymouth Bay (Dorset), 21st April. Belfast Harbour Estate and Whitehouse Lagoon (Co. Down), 25th April to 5th May.

Mike Pennington

161. Adult male Hooded Merganser *Lophodytes cucullatus*, Unst, Shetland, April 2006.

Gull-billed Tern *Gelochelidon nilotica* Flamborough Head (East Yorkshire), 1st May; Exe estuary and Seaton (both Devon), 2nd May. Whiskered Tern *Chlidonias hybrida* Chew Valley Lake, 28th–29th April. White-winged Black Tern *Chlidonias leucopterus*, two, Lough Owel (Co. Westmeath), 4th June.

Brünnich's Guillemot *Uria lomvia* Yell (Shetland), found dead, 4th May.

Eurasian Scops Owl *Otus scops* Swining (Shetland), 10th May.

Alpine Swift *Apus melba* In addition to those mentioned last month: Ballycotton (Co. Cork), 11th–19th April; Kilcoole and Bray Head (Co. Wicklow), up to three, 13th–20th April; Barnston, 13th–20th April, presumed same Meols (both Wirral), 24th April; Maidenhead/Summerleaze area (Berkshire), 15th–18th April, perhaps same Little Marlow (Buckinghamshire), 16th April; Porthallow Cliffs (Cornwall), 16th April; St Margaret's at Cliffe, 17th April, presumed same Walmer, 18th April and Foreness Point (all Kent), 20th April; Ogston Reservoir (Derbyshire), 27th–28th April; Arlington Reservoir (East Sussex), 1st May; St Martin's (Scilly), 2nd May.

Michael McKee

162. First-summer Franklin's Gull *Larus pipixcan*, Northam Burrows, Devon, April 2006.

European Bee-eater *Merops apiaster* Porthgwarra (Cornwall), 22nd April; Sheringham (Norfolk), 3rd May; Fairburn Ings (West Yorkshire), 5th May; Stronsay (Orkney), 6th May. Short-toed Lark *Calandrella brachydactyla* St Mary's (Scilly), 23rd–27th April; Spurn (East Yorkshire), 27th April; Fair Isle (Shetland), 6th–7th May; South Gare (Cleveland), 7th–8th May. Red-rumped Swallow *Cecropis daurica* Radipole, 20th April, possibly same Portland (Dorset), 21st April, with at least two at Portland on 3rd May; Petherick Marsh (Cornwall), 23rd April; Pegwell Bay (Kent), 26th April; Kingsdown (Kent), 27th April; Sittingbourne (Kent), 2nd May; Cape Clear Island (Co. Cork), 6th–8th May; South Milton Ley (Devon), 6th May; West High Down (Isle of Wight), 6th May; Unst (Shetland), 6th May; Dungeness, 7th May.

Tawny Pipit *Anthus campestris* St Agnes (Scilly), 21st April, with same or another 24th April; St Mary's (Scilly), one or two, 23rd April, with one to 26th April; Porthgwarra, 5th May; Flamborough Head, 6th May. Red-throated Pipit *Anthus cervinus* St Margaret's at Cliffe, 4th May. Citrine Wagtail *Motacilla citreola* Holland Haven (Essex), 7th–8th May. American Robin *Turdus migratorius* Glenmore Forest (Highland), 4th May.

Subalpine Warbler *Sylvia cantillans* Spurn, 24th–26th April; Hilbre Island (Wirral), 30th April to 7th May; St Mary's (Scilly), 6th May; Sumburgh Head (Shetland), 7th May; Grutness (Shetland), 8th May; Vidlin (Shetland), 8th May. Greenish Warbler *Phylloscopus trochiloides*

Hugh Harrop

163. Eurasian Scops Owl *Otus scops*, Swining, Shetland, May 2006.

Hugh Harrop

164. Adult male Collared Flycatcher *Ficedula albicollis*, Brow Marsh, Shetland, May 2006.

Kit Day

165. Female Woodchat Shrike *Lanius senator*, Hambledon, Hampshire, May 2006.

Gringley Carr (Nottinghamshire), 6th May. Yellow-browed Warbler *Phylloscopus inornatus* Dungeness, 4th May. Iberian Chiffchaff *Phylloscopus ibericus* Pressmennan Lake (Lothian), 6th–8th May. Collared Flycatcher *Ficedula albicollis* Brow Marsh (Shetland), 9th–10th May. Woodchat Shrike *Lanius senator* Between Rodden and Abbotsbury (Dorset), 16th–26th April; Pett Level, 22nd April; Porthgwarra, 22nd–28th April and 7th May; Long Eaton (Derbyshire), 1st–3rd May; Great Orme (Conwy), 5th May; North Ronaldsay (Orkney), 6th May; Tover Low Common (Cumbria), 6th–7th May; Hambledon (Hampshire), 7th May.

Arctic Redpoll *Carduelis hornemanni* Drinkfield Marsh (Co. Durham), 15th–17th April; Thetford (Norfolk), 28th April; Unst (Shetland), two, 29th April, one 30th April. Cirl Bunting *Emberiza cirlus* Mizen Head (Co. Cork), 8th–9th May (first for Ireland, if accepted). Rose-breasted Grosbeak *Pheucticus ludovicianus* Holme (Norfolk), taken into care on 4th May after it flew into a window, then released on 5th May.

British Birds Corrections

A missing reference from the note on wintering European Golden Plovers *Pluvialis apricaria* from the April issue (*Brit. Birds* 99: 206–208) is as follows:

Gillings, S. 2005. International workshop on passage and wintering Eurasian Golden Plovers. *Wader Study Group Bulletin* 108: 5–12.

A line of text was missing from the Editorial Comment to the letter on avian influenza in the May issue (*Brit. Birds* 99: 263). The full comment is as follows:

EDITORIAL COMMENT David Stroud has commented: 'It is correct that this subtype (H5N1) of AIV occurred [in the UK], but it was a quite different genotype (strain) from the genotype(s) of East Asian lineage H5N1 now in circulation. A further infection of turkeys with H5N1 occurred in England in 1991 (Alexander, D. J., Lister, S. A., Johnston, M. J., Randall, C. J., & Thomas, P. J. 1993. An outbreak of highly pathogenic avian influenza in turkeys in Great Britain. *Veterinary Record* 132: 535–536). Dennis Alexander, in another review, pointed out that most of the 17 documented outbreaks of HPAI (i.e. H5 and H7 subtypes), including the English one, have been self-limiting and confined to individual flocks.'

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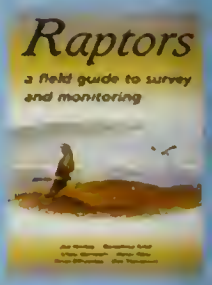

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