

Birds of Conservation Concern 3

The population status of birds in the United Kingdom, Channel Islands and Isle of Man

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Arctic Skua *Stercorarius parasiticus*

Alan Harris

ABSTRACT This is the fourth major review of the status of birds occurring in the UK, Channel Islands and Isle of Man. We present Red, Amber and Green lists of conservation concern based on assessments using objective listing criteria and using the most recent data. The listing criteria assess global conservation status, historical population decline, recent population decline (numbers and geographical range), European conservation status, rarity, localised distribution, and international importance of populations. Some changes have been made to the criteria since the last assessment, and the effect of these changes is discussed. Of 246 species assessed, 52 (21.1%) have been placed on the Red list, 126 (51.2%) on the Amber list and 68 (27.6%) on the Green list. Eighteen species have moved onto the Red list since the last assessment in 2002, and six have moved from Red to Amber.

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Introduction

This paper presents the third 'Birds of Conservation Concern' status assessment for birds in the UK. We have reviewed the status of each regularly occurring species against a set of quantitative criteria in order to place each species on one of three lists: 'Red', 'Amber' or 'Green'. By using such a simple 'traffic light' system, we can provide a single, easily understood measure for each species which can be used to convey concern and hence to help set priorities for conservation action.

It is widely recognised that current pressures upon the global environment are unprecedented, with widespread and severe threats to habitats and the species within them; the great majority of well-studied species are declining in distribution, abundance or both (UNEP 2007; WWF 2008). The scale of the problems caused by the use of natural resources by humans (such as climate change, pollution, land degradation and over-exploitation) at present far exceeds our capacity to tackle these problems, although this capacity is largely limited by the reluctance of those with the power to act. Funds for conservation action are limited, and often the first to be lost in times of economic downturn. Given an inability to conserve all of the species all of the time, prioritising which species should receive conservation attention has become a well-established part of conservation planning.

At a global scale, the IUCN Red Lists of Globally Threatened species highlight those considered most likely to become extinct, by considering measures such as decline in numbers and range (IUCN 2008). Although preventing extinction globally should of course be a high priority for conservation programmes, it is important that biodiversity loss other than extinction is considered. In the UK, and indeed the whole of Europe, relatively few bird species are considered to be at risk of

extinction. Globally, 1,226 of 9,856 (12%) bird species are considered to be at risk, whereas in Europe 24 of 526 (5%) regularly occurring species are Globally Threatened and in the UK just two of 246 (less than 1%) are so threatened (BirdLife International 2008a,b). The relative strength of both governmental and non-governmental conservation organisations in the UK has ensured concerted action to prevent national extinctions in recent decades, and the fortunes of many rare breeding species have been changed for the better.

Thus, it is important to identify which species are under threat of extinction within the UK (and we should not be blasé – there are a growing number), and which species we have a responsibility to conserve in the global battle against extinction. It is also important that any exercise designed to set species priorities for conservation in the UK should consider a wider range of parameters. The 58% decline in numbers of Sky Larks *Alauda arvensis* over the last four decades equates to a loss of approximately 4 million individuals. Although the Sky Lark remains common and is not threatened with national extinction, this is biodiversity loss on an enormous scale. As a result, the setting of species priorities in the UK has evolved to recognise such loss. In addition, it takes accounts of instances where species have been depleted owing to pressures in the past, the



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157. BoCC2 highlighted the problem of population decline among the UK's woodland birds, with eight species on the Red list in 2002. BoCC3 has added four more woodland species to the Red list, among them the Wood Warbler *Phylloscopus sibilatrix*.

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158. There is concern that many of the UK's 'mountain specialists' may be adversely affected by warming climate during the coming decades, but, for now at least, the Ptarmigan *Lagopus muta* remains on the Green list.

importance of preserving small and localised populations, and our responsibility to preserve populations that are important on an international scale.

The first formal, quantitative assessment of the status of the UK's birds, Batten *et al.*'s (1990) *Red Data Book*, listed 117 species as 'demanding care and attention' in Britain. Although the criteria used were not identical to those adopted subsequently for the *Birds of Conservation Concern (BoCC)* assessments, they were similar enough that this list of 117 might be considered analogous to the Red and Amber lists, and most of the 117 have been Red- or Amber-listed by *BoCC* reviews subsequently. The first *BoCC* assessment (hereafter *BoCC1*), published in 1996 (Gibbons *et al.* 1996; JNCC 1996), developed the approach from a single list of concern to Red, Amber and Green lists, allowing finer distinctions to be drawn and identifying a shorter, more usable list of species deserving the greatest concern.

BoCC1 Red-listed 36 species and Amber-listed a further 110. This review was pivotal in the recognition of a number of common and widespread species, most notably those of farmland such as Sky Lark, Linnet *Carduelis cannabina* and Corn Bunting *Emberiza calandra*, as urgent conservation priorities following declines related to agricultural intensification

(e.g. Aebischer *et al.* 2000). The next review, *BoCC2*, was published in 2002 (Gregory *et al.* 2002); the dynamic nature of bird populations and the pressures and threats upon them means that regular reviews are sensible, to ensure that listings are based upon the latest data and reflect current concern. The Red list grew to 40 species (nine species moved onto the Red list, whereas five moved from Red to Amber) and the Amber list to 121. This review saw the addition of a number of woodland birds (e.g. Lesser Spotted Woodpecker *Dendrocopos minor*, Marsh Tit *Poecile palustris* and Willow Tit *P. montana*) to the Red list amid growing concern for declining woodland birds, but recovery in a number of historically depleted species (e.g. Red Kite *Milvus milvus* and Marsh Harrier *Circus aeruginosus*) resulted in them moving from the Red to Amber lists.

Since *BoCC2*, there have been other, alternative, reviews of the status of birds in the UK, which has led to the potential for confusion between listings. Eaton *et al.* (2005) explored the use of IUCN guidelines for regional Red-listing (Gärdenfors *et al.* 2001) in order to assess the extinction risk of birds within the UK. They classified 64 species as being regionally threatened, 12 of which were Critically Endangered. This list had considerable overlap with the Red and Amber lists from *BoCC2*,

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although it was notable that only six of the 12 Critically Endangered species were on the *BoCC2* Red list. However, the authors concluded that applying the guidelines of the global Red-listing process at a regional scale required a considerable degree of subjectivity (although progress has been made since to improve the guidance, e.g. Miller *et al.* 2007). In addition, it was felt that the assessment of extinction risk alone could result in a mismatch with likely conservation priorities in the UK, and stressed that the prevention of extinction at a regional scale does not have to be the sole driver behind conservation action if the future of those species is safeguarded in other regions.

A review of birds on the priority list of the UK Biodiversity Action Plan (UKBAP, see www.ukbap.org.uk) was conducted in 2005 (using data up to 2004) and published in August 2007 (e.g. Eaton *et al.* 2007). Although the four criteria employed in the review were not the same as those used in *BoCC* assessments (and there was no second tier of listing, equivalent to the Amber list), they were similar and hence we should expect extensive overlap between those birds on the UKBAP priority list and those on the *BoCC3* Red list. In a new development, the UKBAP review for birds was conducted at race (subspecies) level, resulting in the 'BAP listing' of races such as the 'St Kilda Wren' *Troglodytes troglodytes hirtensis*, 'Fair Isle Wren' *T. t. fridariensis* and 'Greenland White-fronted Goose' *Anser albifrons flavirostris*, among others. It was felt that setting priorities at a lower taxonomic level would allow more accurate targeting of conservation action, recognise the different needs of races of the same species, emphasise the importance of preserving genetic and ecological diversity within species, and recognise the importance of conserving the UK's endemic races.

The UKBAP review resulted in the priority bird list increasing from 26 species to 59 races of 55 species; 37 of these races belong to species that were Red-listed by *BoCC2*. This list, along with a further 1,100 species across all taxa and 65 habitats, plays a major part in steering the UK Government's action to conserve biodiversity.

Finally, we should mention the new Birds of Conservation Concern in Ireland review (Lynas *et al.* 2007), which presented Red, Amber and Green lists for birds in (the island of) Ireland, and hence overlaps, in Northern Ireland, with UK-based reviews such as *BoCC*.

In this paper, we introduce a new list, the third since Batten *et al.* (1990) – *BoCC3* – to replace *BoCC2*, which is now seven years old. This new list will reflect some rapid changes in the status of the UK's birds in the intervening period. The same general approach has been used as in previous *BoCC* assessments, but with some minor but important changes to the criteria, described below. In a new development, we also present the results of a parallel assessment at the race level, following the pioneering work of the UKBAP review.

Methods

Species list

The species assessment covered all native species on the British Ornithologists' Union (BOU) list (Dudley *et al.* 2006; see also www.bou.org.uk), excluding those species that occur only as vagrants (and thus are considered by the British Birds Rarities Committee, see www.bbrc.org.uk) or scarce migrants (e.g. Fraser & Rogers 2006a,b; see also www.scarce-migrants.org.uk). As in *BoCC2*, we have also included Globally Threatened species (BirdLife International 2008b) that have occurred in the UK in each of the last 25 years (Balearic Shearwater *Puffinus mauretanicus* and Aquatic Warbler *Acrocephalus paludicola*); while they occur in small numbers only, given the context of Global Threat the UK may be important to such species during the non-breeding period.

We have revised the approach used in *BoCC2* by Gregory *et al.* (2002), and excluded a number of species that have bred only occasionally in the UK. *BoCC2* included all species that had bred in any one year in the five years prior to the review. This led to the inclusion of species that are not a regular part of the UK's breeding avifauna (such as Hoopoe *Upupa epops* and Icterine Warbler *Hippolais icterina*), so we modified the criteria to include only those species that had bred for five consecutive years at any point within the last 25 years. The use of the 25-year period allowed us to consider species that were regular breeders until relatively recently, which are no longer so but should not yet be considered extinct (e.g. Wryneck *Jynx torquilla* and Red-backed Shrike *Lanius collurio*). Although we have retained the previously used definition of confirmed breeding as the laying of presumed fertile eggs, we made the presumption of breeding having occurred for a few species that almost undoubtedly breed annually but for which proof

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is hard to obtain (e.g. Common Quail *Coturnix coturnix* and Spotted Crane *Porzana porzana*).

The review concerns native species only and not those introduced to the UK by humans, whether intentionally or accidentally. We do not consider populations of non-native species to be of conservation value; indeed, introduced species can be harmful to the natural environment, for example they are thought to have detrimental effects on 51% of all Globally Threatened bird species (BirdLife International 2008a). While it may be argued that most (although not all) non-native bird species in the UK are relatively benign, and that some may be attractive additions to our avifauna, we do not believe that they should be assessed as the potential recipients of conservation attention. None of the non-native species listed on category C of the British List (i.e. with self-sustaining populations derived from introductions) are considered threatened within their native ranges.

Criteria

The *BoCC* process, as established in the two previous reviews, uses a simple approach whereby species (or races) are assessed against a series of quantitative criteria, listed below. These assess various important aspects of population status in the UK, Europe and globally. Meeting

one or more criteria qualifies a species for the relevant list, with species being placed on the highest-priority list for which they qualify (i.e. those qualifying against a Red criterion will be placed on the Red list regardless of qualification against Amber criteria). Those species that meet none of the criteria are placed on the Green list.

While we believe that it is important to maintain an approach to status assessments that is as constant as possible, we felt that there were a small number of respects in which the process had to be amended to reflect changing circumstances and to improve (slightly) on the approaches used previously. In this review we have addressed the issue of moving time windows, and improved the equality in the treatment of non-breeding populations; these changes are discussed in more detail below. Although we believe that these were necessary changes in the process, they will have had an impact upon the comparability of this list with *BoCC2*, and we highlight and discuss these impacts; it is not our intention to 'move the goalposts' in order to exaggerate declines in the UK's bird populations.

RED-LIST CRITERIA

IUCN: Global conservation status Species that are listed as Globally Threatened (Critically Endangered, Endangered or Vulnerable, but not Near Threatened) under IUCN guidelines (IUCN 2008), as published online by BirdLife International, the IUCN Red List Authority for birds (www.birdlife.org.uk). These species are the highest priorities for action at a global scale, and this should be so in the UK, regardless of national status.

HD: Historical decline in breeding population Species that are judged to have declined severely between 1800 and 1995, and not to have recovered subsequently. A number of the UK's breeding birds were for-



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159. Climate change is one major reason why numbers of wintering wildfowl and waders are starting to decline in the UK, as populations spend the winter farther north and east, in areas closer to the breeding grounds; such areas would formerly have been environmentally hostile in the depths of winter. Owing to a 51% decline since 1974/75, the Dunlin *Calidris alpina* is one of those species, and moves from the Amber list to the Red list in *BoCC3*.

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Rebecca Nason

160. Four seabirds were Red-listed by *BoCC3* (compared with just one by *BoCC2*), but perhaps the most alarming is the Arctic Skua *Stercorarius parasiticus*, which moved straight from Green to Red. Data suggest that declines during the past 22 years may have been as high as 70% in Shetland and 77% in Orkney, reflecting low breeding success, in turn related to failures in sandeel *Ammodytes* stocks. Oceanographic changes linked to climate change may be the ultimate factor responsible and this charismatic species, which is at the edge of its breeding range in the UK, could soon become an extremely rare breeding bird in Britain.

merly much more widespread and common, but underwent massive declines before the advent of modern bird-monitoring schemes, and in a number of cases have since stabilised at much lower levels. When considered over the more recent trend periods (see below), these species might not qualify for Red- or even Amber-listing but, given their depleted state, we believe that they should be considered to be of conservation concern.

Historical decline was measured using the existing assessments given by Gibbons *et al.* (1996), who used an ordinal scoring system to measure decline over five periods during 1800–1995, with the overall decline being assessed by the sum of these scores. Although this method was semi-quantitative, it provided a standardised approach across species, and has proved sufficiently robust to identify those species that have shown the greatest declines over the last two centuries.

Given the nature of the measure, it may take some species many decades to recover to the point where they no longer qualify as 'historical decliners' under this criterion. Therefore, in *BoCC2*, Gregory *et al.* (2002) suggested that

Red-listed species should move to the Amber list if they have doubled in number in the most recent 25-year period, providing that the UK population also exceeds 100 pairs and that the species is not classified as Globally Threatened by the IUCN. Subsequently, five species (Red Kite, Marsh Harrier, Osprey *Pandion haliaetus*, Merlin *Falco columbarius* and Dartford Warbler *Sylvia undata*) were moved to Amber in the 2002 assessment. Furthermore, Gregory *et al.* suggested that, in future reviews, those species that continued to recover (i.e. numbers increase by at least 20% between reviews) should be moved to the Green list if they do not qualify under any other criteria, but that if their recovery falters (i.e. numbers decrease by at least 20%) they should move back to the Red list.

BDp: Breeding population decline Severe decline in the UK breeding population size, of more than 50%, over 25 years (*BDp*¹) or the entire period used for assessments since the first *BoCC* review, starting in 1969 (the 'longer term') (*BDp*²). Previous *BoCC* assessments have used a single time period (or window) of 25 years against which to assess population and range declines,

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in addition to the 200-year period against which historical decline is measured. The latter provides the historical context, while the 25-year period identifies current status. However, the use of the 25-year window – or indeed any time window – is problematic in that as it ‘rolls forward’, some species may no longer qualify for Red- or even Amber-listing because, while still relatively recent, the period of qualifying loss is before the beginning of the 25-year window (e.g. in the current assessment, the 25-year window starts in 1981 for most common breeding birds). Without any change in the assessment process, such species would be moved to the Amber or even Green list without having shown any recovery, or in some cases may have undergone further decline but at a slower rate. We consider it unsatisfactory that species should move to lower concern status without having recovered from what may in some cases have been massive declines, and so we explored a number of approaches to prevent this.

We have chosen to use an additional, longer-term trend period, from the beginning of the 25-year time period used for the first *BoCC* assessment (1969–94) until the most recent data (in effect around 37 years, depending on the data sources used). Consequently, this assessment takes account of species whose declines lie between those that are ‘historical’ and ‘recent’, and which have led to an impoverishment of bird populations from which there has been no recovery. This period also ties in well with the availability of robust monitoring data, coinciding with the start of the Common Birds Census (CBC) and increased Wetland Bird Survey (WeBS) coverage in the late 1960s, the first breeding bird atlas (1968–72; Sharrock 1976), and the first UK seabird census, Operation Seafarer (1969–70; Cramp *et al.* 1974). Note that species Red-listed under BDP² show a wide range in their pattern of decline, although all have declined by at least 50% over the period. Some species (e.g. Song Thrush *Turdus philomelos*) declined steeply in the earlier part of the period but have undergone little decline since; some (e.g. Arctic Skua *Stercorarius parasiticus*) have declined steeply in recent years; and a small number have shown a steady decline throughout the longer period (e.g. Turtle Dove *Streptopelia turtur*). In some instances, species have shown recovery, but not yet reached the 50% of their population level at the beginning of the *BoCC1* period, and so remain Red-listed.

WDp: Non-breeding population decline Severe decline in the UK non-breeding population size, of more than 50%, over 25 years (WDp¹) or the longer-term period (WDp²). Resident species (or, more accurately, species present in the UK year-round, since individuals may not be) were assessed against this criterion only if there was significant difference (and independence) between the breeding and non-breeding populations (e.g. Dunlin *Calidris alpina*), otherwise they were assessed on breeding trend (BDp) alone. This is also true of other criteria that could be applied to both breeding and non-breeding populations (e.g. breeding and non-breeding rarity, see below). As regular monitoring programmes in the non-breeding season exist for waterbirds only, many species were not assessed against this criterion.

BDr: Breeding range decline Severe decline in the UK range, of more than 50%, as measured by the number of 10-km squares occupied by breeding birds, over 25 years (BDr¹) or the longer-term period (BDr²). In previous reviews, assessment against this criterion used data from the two national breeding bird atlases (Sharrock 1976; Gibbons *et al.* 1993). However, it was felt that this was no longer tenable, as data from the ongoing BTO/BirdWatch Ireland/SOC 2007–11 bird atlas are not yet available, and the most recent data, from the 1988–91 atlas, are now at least 18 years old. Therefore, we were able to assess only a limited number of species against this criterion. These were those for which recent single-species surveys have recorded range accurately (e.g. European Nightjar *Caprimulgus europaeus* and Dartford Warbler), and seabirds, which were mapped comprehensively by the Seabird 2000 census (Mitchell *et al.* 2004), for which distribution data in 10-km squares are available from the National Biodiversity Network (www.nbn.org.uk). Recent range estimates from these sources were compared with range estimates from the 1968–72 atlas (for the longer-term period) and the 1988–91 atlas (for the 25-year period, although the time-span is shorter). Similar assessments were not made for non-breeding ranges, as such data are not available.

AMBER-LIST CRITERIA

SPEC: European conservation status Species categorised as Species of European Conservation Concern (SPEC 1, 2 or 3). The conservation

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status of all European species was assessed most recently in *Birds in Europe* (BirdLife International 2004). SPEC 1 species are those of global conservation concern (including those classified as Near Threatened, and hence not Red-listed under criterion 'IUCN' by this assessment); SPEC 2 species are those of unfavourable conservation status within Europe and concentrated in Europe; while SPEC 3 species are those of unfavourable conservation status but not concentrated in Europe. European conservation status is determined by regional Red-list assessments, and additional factors such as rarity, localisation and decline. In a change from *BoCC2*, we have Amber-listed those SPEC species that occur in the UK as non-breeders only (e.g. Jack Snipe *Lymnocyptes minimus*).



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161. The Bullfinch *Pyrrhula pyrrhula* is one of six species moving from Red to Amber in the *BoCC3* review; in this case, because of a degree of population recovery since the previous assessment in 2002.

HDrec: Historical decline – recovery Red-listed for Historical Decline in a previous review but with substantial recent recovery (more than doubled in the last 25 years).

BDMp: Breeding population decline As for Red-list criterion BDp, but with moderate decline (by more than 25% but less than 50%) over 25 years (BDMp¹) or the longer-term period (BDMp²).

WDMp: Non-breeding population decline As for Red-list criterion WDP, but with moderate decline (by more than 25% but less than 50%) over 25 years (WDMp¹) or the longer-term period (WDMp²).

BDMr: Breeding range decline As for Red-list criterion BDr, but with moderate decline (by more than 25% but less than 50%) over 25 years (BDMr¹) or the longer-term period (BDMr²).

BR & WR: Breeding and non-breeding rarity Species were categorised as rare breeders (BR) if they had a UK breeding population of fewer than 300 pairs, and as rare non-breeders (WR) if the non-breeding population was fewer than 900 individuals. Breeding population size was assessed using estimates from recent single-

species surveys (e.g. Black-throated Diver *Gavia arctica* in 2006), or from the Rare Breeding Birds Panel, in which case the mean number of pairs (maximum total number) over the five most recent years for which data were available (2002–06) was used. Non-breeding rarity was assessed using estimates from a variety of sources, including WeBS, and the Avian Population Estimates Panel (APEP) (Baker *et al.* 2006). In a few cases (e.g. Wood Sandpiper *Tringa glareola*, Lapland Bunting *Calcarius lapponicus*), species were assessed as being rare non-breeders without robust estimates being available, based on expert opinion. The use of a criterion for non-breeding rarity was new in *BoCC3*, and was adopted to reflect the fact that small populations of non-breeding species are as susceptible to loss as those of breeding species.

BL & WL: Localisation At least 50% of the UK breeding (BL) or non-breeding (WL) population found in ten or fewer sites. As with previous applications of this criterion, sites were defined as those designated as either Special Protection Areas (SPAs – Stroud *et al.* 2001) or Important Bird Areas (IBAs – Heath & Evans 2000). If data were available for both categories of sites, assessments were conducted for each (but not using a combination of SPAs and IBAs

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162. Three raptors, Red Kite *Milvus milvus* (shown here), Marsh Harrier *Circus aeruginosus* and Osprey *Pandion haliaetus*, represent significant conservation success stories in the UK in the past decade, and have continued to recover since being moved from the Red to the Amber list in the *BoCC2* review.

together). The sum of birds in the ten most important sites in the breeding season, in winter and, for a small number of species for which data were available, during passage periods were compared against the UK population estimate for the same period, using population estimates from APEP, RBBP, WeBS and single-species surveys. Species with more than 50% of their population in the ten most important SPAs or IBAs were designated as localised; if the UK population estimate was presented as a range, we took a conservative approach by requiring that the population held by the best ten sites exceeded 50% of the upper range limit.

This measure is dependent on data being available. In the case of SPAs, data were available only for those species listed on Annex 1 of

the EU Birds Directive and other migratory species, and then only for SPAs that have been designated for each species. Site estimates were obtained from Stroud *et al.* (2001), and so were somewhat dated. In addition, site estimates often came from a range of different years, while the total population estimate (against which the sum of estimates from the ten best sites was compared) was from a different year again. For non-breeding populations, site estimates are maxima and may not reflect regular patterns of site usage; moreover, for species with a comprehensive network of designated sites, the sum of site totals may comfortably exceed the total population estimate owing to the same individual birds using multiple sites. For IBA assessments, data were obtained from BirdLife International's World Birds Database and were mostly more recent than data for SPAs. The use of IBAs and SPAs as 'sites' for the purpose of this assessment is thus not perfect, owing to issues with

data availability and the varying nature of the sites themselves (they vary enormously in size, for example). However, we believe that this is a more standardised approach than using any other definition of sites (reserves or WeBS count sites, for example) and maintains consistency with previous *BoCC* assessments.

Rare breeders or non-breeders (species qualifying under criteria BR or WR) were not assessed against this criterion since, by virtue of their small numbers (and hence often small range), such species are likely to be restricted to a small number of sites. Amber-listing under the localised criterion is intended to signal a species' vulnerability, as relatively small-scale pressures (e.g. development) could affect a large proportion of the population adversely.

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BI & WI: International Importance Species for which the UK holds at least 20% of the European population in either the breeding (BI) or the non-breeding (WI) season were considered to be present in internationally important numbers. Population estimates for Europe were taken from *Birds in Europe* (BirdLife International 2004). For non-breeding waterbirds, we followed the approach used in previous *BoCC* assessments by using estimates for the northwest European (for wildfowl) or East Atlantic (for waders) flyways, taken from *Waterbird Population Estimates* (Wetlands International 2006).

Although there is considerable variation among species, the European estimates are often of uncertain quality and expressed as a large range owing to poor knowledge in many countries. For example, the European estimate for Twite *Carduelis flavirostris* is 170,000–760,000 pairs, and even within the UK, there can be considerable variation in estimates for our more common and widespread species (e.g. see Newson *et al.* 2008). As with assessing localisation, we therefore required the UK population estimate to exceed 20% of the upper range limit of the European or flyway population estimate for a species to qualify under this criterion.

Data sources

The monitoring of bird populations in the UK is almost unparalleled, thanks largely to the many skilled and enthusiastic volunteer birdwatchers who participate in schemes such as those listed below. Such monitoring provides a rich resource for informing status assessments; even so, there are considerable gaps in our knowledge for certain groups and these were highlighted by the assessment process. The main monitoring schemes, and thus sources of data for assessment against the criteria described above, are outlined below.

BTO/JNCC Common Birds Census (CBC) and BTO/JNCC/RSPB Breeding Bird Survey (BBS)

These two surveys have provided the backbone of monitoring of common breeding birds in the UK since 1966. The former ran from 1966 to 2000 and involved observers mapping territories within relatively small plots they had chosen themselves. Although it measured population trends of breeding birds in most habitats, it had a small sample size, biases in habitat coverage, and very poor coverage outside England. As a result of these deficiencies, the BBS was started in 1994, with an overlap of seven years before the CBC ceased in 2000. The BBS uses a line-transect method in randomly selected 1-km



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163. Recent fieldwork in parts of Shetland that held 45% of the UK breeding population of Whimbrels *Numenius phaeopus* in the last national survey (in the 1980s) has suggested a decline of up to 70%, and this alarming statistic has meant that this species was Red-listed by *BoCC3*.

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squares, and is more representative both geographically and of all habitats (see Risely *et al.* 2008 for further details of the scheme and results). A far greater sample size (e.g. more than 3,600 squares in 2007) means that the BBS is able to monitor trends in more species, so some (e.g. Wood Warbler *Phylloscopus sibilatrix*) are reported from 1994 onwards only.

For species covered by both surveys, the overlap period means that in most cases data from both surveys can be jointly modelled to produce trends spanning 1966 to date (Freeman *et al.* 2007). However, for a small number of species, the divergence in CBC and BBS trends within the 1994–2000 overlap period means that joint models cannot be produced. In such cases, UK trends have been produced by modelling trends from the two schemes separately and ‘anchoring’ the two together in 1994. As is good

practice when using smoothing, the last year of indices has not been used (although the full run of years is used in deriving the indices), so trends run to 2006: 1969–2006 for the longer-term trend, 1981–2006 for the 25-year trend, and 1994–2006 for those species monitored by the BBS only.

For a small number of wetland species, it was considered more appropriate to use trends from the Waterways Bird Survey (WBS), which has monitored plots along rivers, streams and canals since 1974. A similar modelling approach was used as with CBC and BBS data, with smoothing and hence the end year excluded.

BTO/JNCC/RSPB/WWT Wetland Bird Survey (WeBS)

National Wildfowl Counts started in the UK in 1947, since when coverage has grown and evolved into the present-day WeBS, which utilises volunteer counters to monitor waterbirds at a network of key sites throughout the winter. Around 3,000 observers now make counts at 2,000 sites on the same weekend every month from September to March (many sites are counted year-round). More details on the scheme and the latest results can be found in Austin *et al.* (2008).

Robust trends can be generated for most wildfowl species from 1966/67 onwards, and from 1974/75 for waders; a few other waterbird species are covered from later years (e.g. Common Coot *Fulica atra* and Great Crested Grebe *Podiceps cristatus* from 1983/84). As with trends for common breeding species, these indices are smoothed (using counts from peak winter months) and used to the penultimate year for which data are available, i.e. 2005/06. For some species of the open coast (e.g. Purple Sandpiper *Calidris maritima*), WeBS trends may not be representative of overall changes in the population as WeBS coverage of the principal habitats used is poor, and trends are



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164. The Tree Pipit *Anthus trivialis* joins three other woodland breeders (Wood Warbler *Phylloscopus sibilatrix*, Lesser Redpoll *Carduelis cabaret* and Hawfinch *Coccothraustes coccothraustes*) moving from the Amber to the Red list in BoCC3. The factors responsible for declines in woodland bird populations are less clear-cut than (for example) those of farmland birds. Furthermore, two of these four species, Tree Pipit and Wood Warbler, are long-distance migrants, and problems on the wintering grounds or on passage routes may be compounding pressures in the breeding areas.

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biased towards populations on estuaries. In a few cases, trends from periodic Non-Estuarine Coastal Waterbird Surveys are used instead.

Trends for a number of geese (e.g. Pink-footed Goose *Anser brachyrhynchus*) are based on data from the WWT/JNCC Goose and Swan Monitoring Programme, which co-ordinates annual counts at key sites.

Seabird monitoring

Trends in breeding seabird numbers come from two main sources. Three UK censuses have produced complete estimates of most species at 15-year intervals: Operation Seafarer (1969–70; Cramp *et al.* 1974), Seabird Colony Register (1985–88; Lloyd *et al.* 1991) and Seabird 2000 (1998–2001; Mitchell *et al.* 2004). However, not all species were covered in the earlier censuses (e.g. European Storm-petrel *Hydrobates pelagicus* and Leach's Storm-petrel *Oceanodroma leucorhoa*), or were surveyed using methods incomparable between surveys (e.g. Black Guillemot *Cephus grylle*). In addition, the Seabird Monitoring Programme, initiated in 1986 to survey a UK-wide sample of colonies annually, provides annual indices for the more widespread seabird species (see Mavor *et al.* 2008 for further details). For some species it is possible to combine census estimates from 1969–70 onwards with SMP results to report on changes in seabird population sizes over the longer-term trend period.

Rare Breeding Birds Panel (RBBP)

This independent body has collated records of rare breeding birds since 1973, with the most recent report covering 2006 (Holling *et al.* 2009). For a few species (e.g. White-tailed Eagle *Haliaeetus albicilla*), more recent data (up to 2008) were available from annual RSPB monitoring. In order to smooth the between-year variation in numbers of breeding birds reported by the RBBP, the mean number of pairs (using the maximum total number of pairs) was calculated over five-year

periods at the beginning and end of trend periods: 1973–77 for the longer period, and 1977–81 for the 25-year period, to 2002–06. Population trends were calculated as the percentage change between these means.

Periodic surveys

Many of the species trends (and population estimates) used in this status assessment were generated from surveys conducted under the Statutory Conservation Agency and RSPB Annual Breeding Bird Scheme (SCARABBS), which entails periodic (nowadays at intervals of six or 12 years) surveys of rare and localised breeding species such as Red-throated Diver *G. stellata* (Dillon *et al.* in press) and Hen Harrier *Circus cyaneus* (Sim *et al.* 2007).

Other sources of trends and population estimates include BTO-led surveys, for example of Ringed *Charadrius hiaticula* and Little Ringed Plovers *C. dubius* and the 2003/04–2005/06 Winter Gull Roost Survey (WinGS). Trends for a few game species (e.g. Red Grouse *Lagopus lagopus* and Woodcock *Scolopax rusticola*) are derived from the Game & Wildlife Conservation Trust's National Gamebag Census (Aebischer & Baines 2008).

Race-level assessments

The assessment of BoCC at race level was undertaken following the species-level



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165. Many species of wildfowl winter in the UK in internationally important numbers. Some of these, among them Common Pochard *Aythya ferina*, have shown a moderate decline in numbers over the longer-term period considered by this review (Pochard is Amber-listed). This may not necessarily mean that the population as a whole is declining, but may reflect a shift in distribution in response to milder winters.

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approach, as described above, as closely as possible, using exactly the same criteria and data sources. However, in many cases the information available for races is considerably poorer than that for species. Bird monitoring is rarely targeted at bird races, with a few exceptions such as races of geese (or even populations of the same race, such as the Svalbard and East Canadian high Arctic populations of 'Pale-bellied Brent Geese' *Branta bernicla hrota*, which have been long treated as separate entities for monitoring and conservation purposes). In many cases it was straightforward to derive race-level data from species-level monitoring: when, for example, there is only one regularly occurring race in the UK, or when the ranges of the individual races are distinct. However, there were cases where assumptions had to be made or inferences drawn, and thus we are aware that the *BoCC* listing for races presented in this paper may be less robust than that for species.

The first stage in the race-level assessment, that of identifying a list of regularly occurring races, was in many ways the most problematical and remains unsatisfactory in some respects. The same approach was used as for the species assessment, in that vagrants and scarce migrants

were excluded. For the latter, as there is no accepted list of scarce-migrant races comparable with that for species, we made our own assessments using broadly similar thresholds. For example, the continental race of Great Spotted Woodpecker *Dendrocopos major major* was excluded as we felt that it was a scarce migrant.

A greater problem was lack of clarity on the existence in the UK (and indeed anywhere in the world, in the case of supposed endemic races) of a number of races. The BOU maintains a list of races occurring in the UK in their *Checklist of the Birds of Britain* (Dudley *et al.* 2006), but we felt that this did not provide a definitive starting point for our assessment, as in a number of instances this list is at odds with other key references. A number of races not included in the BOU list (thus, in the case of endemic races, suggesting that they are not valid) are still considered extant by others. For example, Common Eider *Somateria mollissima* of the race *S. m. faeroensis* is not listed by the BOU, but there is evidence that it is a valid race (Tiedemann *et al.* 2004), and that it is highly likely that the breeding birds in the Northern Isles are of this race (e.g. Heubeck 1993).

It is not surprising that there is some confusion over the existence and occurrence of



Richard Chandler

166. By assessing birds at race level in addition to species level, *BoCC3* was able to distinguish the contrasting fortunes of different races of the same species. A good example is the Black-tailed Godwit *Limosa limosa*. The nominate race (shown here) is Red-listed, reflecting its status as a rare and historically depleted breeder in southern Britain. In contrast, the Icelandic breeding *L. l. islandica* has increased significantly in recent decades; it is Amber-listed by this review, reflecting its localisation and international importance in the UK.

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such races, given the lack of studies in recent years. Scepticism over the existence of some endemic races is inevitable, particularly given that many arise from the work of just a few nineteenth- and twentieth-century ornithologists with a penchant for splitting. Phillip A. Clancey, for example, was responsible for naming a host of endemic races such as a Linnet *C. c. autochthona*, a Greenfinch *C. chloris harrisoni*, a Meadow Pipit *Anthus pratensis whistleri*, a Wren *T. t. indigenus* and a Yellowhammer *E. citrinella caliginosa* (and after emigrating, described a further 200 subspecies of bird in southern Africa). In many cases (such as the west of Scotland races of Song Thrush *T. p. catherinae* and Blackbird *T. merula ticehursti*), such races have long been disregarded, but there is still support for others within the ornithological literature. We have erred on the side of including such races within our review when they are covered by at least one of three significant sources: *BWP* (including Snow & Perrins 1998), *Birds in Scotland* (Forrester *et al.* 2008) and *Handbook of the Birds of the World* (del Hoyo *et al.* 1992–2008). Our inclusion of a race-level assessment should not be taken as a judgement on the provenance of a race, and we call for more research in this area.

For many polytypic species there is only one race that occurs with regularity in the UK, so assessments against most criteria (historical decline, trends in population and range, rarity and localisation) were the same as for the parent species. For others, there is more than one regularly occurring (i.e. on the list of races to be assessed) race (see table 10, pp. 326–327). In order to assess such races against these criteria, we needed to be able to determine the range (from published literature such as *BWP*) and produce appropriate data. In many cases (e.g. clearly isolated populations such the Fair Isle Wren, or races that are present in the UK at different times such as Black-tailed Godwits *Limosa limosa limosa* and *L. l. islandica*) this was straightforward, although data to enable an assessment were often lacking. In some cases, it was possible to disaggregate datasets such as the BBS to produce new population estimates and trends corresponding (approximately, in most cases) to the ranges of races of interest. In other cases this was not possible, and some assessments were based on informed opinion, often steered by knowledge of the status of the parent species.

A further complication arose when considering criteria that required some knowledge of status outside the UK: IUCN status, SPEC, and international importance (BI & WI). IUCN assessments of global threat and SPEC assessments do not exist for races. We had therefore to create 'pseudo-assessments' using the best data available. In many cases, the race we were assessing was the only race for a given species occurring in Europe, or was at least the main representative of the species within the continent. In such cases, we used the SPEC status given in *Birds in Europe* (BirdLife International 2004). Otherwise, we used descriptions of species range and the country population size and trend estimates from *Birds in Europe* to calculate IUCN and SPEC assessments as best we could. We should stress that these were not formal IUCN or SPEC assessments, rather pseudo-assessments solely for the purpose of this review. Likewise, by adding population estimates from countries within the range of races, we derived new population estimates against which to assess whether UK populations of races were internationally important.

Results

Species-level assessment

A total of 246 species were assessed, one fewer than in 2002. Five species were dropped from the assessment: Snow Goose *Anser caerulescens*, Hoopoe, Bluethroat *Luscinia svecica*, Icterine Warbler and Common Rosefinch *Carpodacus erythrinus*. Conversely, Balearic Shearwater, Yellow-legged Gull *Larus michahellis*, Shore Lark *Eremophila alpestris* and Hooded Crow *Corvus cornix* were assessed for the first time, all except the lark owing to their being recognised by BOU as full species since the last assessment.

The definition of 'regular breeder', employed

continued on page 314

Table 1. Formerly regular breeding species that have become extinct in the UK since 1800.

Species	Date of last recorded breeding
Great Bustard <i>Otis tarda</i>	c. 1833
Kentish Plover <i>Charadrius alexandrinus</i>	1979
Black Tern <i>Chlidonias niger</i>	1975
Great Auk <i>Pinguinus impennis</i> ¹	c. 1812
Snowy Owl <i>Bubo scandiacus</i>	1975

¹ Became globally extinct in 1844

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Table 2. BoCC3: Red-listed species and the criteria under which they qualify.

	BoCC2 ^a	Red-list criteria ^b								Additional Amber-list criteria under which species qualifies ^c													
		IUCN	HD	BDp ¹	BDp ²	WDp ¹	WDp ²	BDr ¹	BDr ²	SPEC	HDrec	BDMp ¹	BDMp ²	WDMp ¹	WDMp ²	BDMr ¹	BDMr ²	BR	WR	BL	WL	BI	WI
Greater Scaup <i>Aythya marila</i>	A						•		•													•	
Common Scoter <i>Melanitta nigra</i>	R			•	•										•		•					•	
Black Grouse <i>Tetrao tetrix</i>	R		•	•					•														
Capercaillie <i>Tetrao urogallus</i>	R							•							•								
Grey Partridge <i>Perdix perdix</i>	R			•	•				•														
Balearic Shearwater <i>Puffinus mauretanicus</i>	NA	•							•														
Eurasian Bittern <i>Botaurus stellaris</i>	R		•						•								•	•					
White-tailed Eagle <i>Haliaeetus albicilla</i>	R		•						•								•						
Hen Harrier <i>Circus cyaneus</i>	R		•						•														
Corn Crake <i>Crex crex</i>	R		•	•				•															
Northern Lapwing <i>Vanellus vanellus</i>	A			•					•			•											•
Temminck's Stint <i>Calidris temminckii</i>	A			•	•												•						
Dunlin <i>Calidris alpina</i>	A						•		•				•							•	•		•
Ruff <i>Philomachus pugnax</i>	A			•	•				•					•			•						
Black-tailed Godwit <i>Limosa limosa</i>	R		•						•								•				•		•
Whimbrel <i>Numenius phaeopus</i>	A			•													•						
Red-necked Phalarope <i>Phalaropus lobatus</i>	R		•														•						
Arctic Skua <i>Stercorarius parasiticus</i>	G			•																			
Herring Gull <i>Larus argentatus</i>	A				•	•						•											•
Roseate Tern <i>Sterna dougallii</i>	R			•	•				•								•						
Turtle Dove <i>Streptopelia turtur</i>	R			•	•				•														
Common Cuckoo <i>Cuculus canorus</i>	A			•	•																		
European Nightjar <i>Caprimulgus europaeus</i>	R								•	•											•		
Wryneck <i>Jynx torquilla</i>	R		•	•	•				•								•						
Lesser Spotted Woodpecker <i>Dendrocopos minor</i>	R			•	•																		
Sky Lark <i>Alauda arvensis</i>	R				•				•		•												
Tree Pipit <i>Anthus trivialis</i>	A			•	•																		
Yellow Wagtail <i>Motacilla flava</i>	A			•	•																		
Ring Ouzel <i>Turdus torquatus</i>	R			•																			
Fieldfare <i>Turdus pilaris</i>	A				•						•						•						
Song Thrush <i>Turdus philomelos</i>	R				•																		
Redwing <i>Turdus iliacus</i>	A				•																•		
Grasshopper Warbler <i>Locustella naevia</i>	R			•	•																		
Savi's Warbler <i>Locustella luscinioides</i>	R			•	•												•						
Aquatic Warbler <i>Acrocephalus paludicola</i>	R	•				•			•											•			
Marsh Warbler <i>Acrocephalus palustris</i>	R			•	•															•			
Wood Warbler <i>Phylloscopus sibilatrix</i>	A			•					•														
Spotted Flycatcher <i>Muscicapa striata</i>	R			•	•				•														
Willow Tit <i>Poecile montana</i>	R			•	•																		
Marsh Tit <i>Poecile palustris</i>	R			•					•		•												
Golden Oriole <i>Oriolus oriolus</i>	A			•								•								•			
Red-backed Shrike <i>Lanius collurio</i>	R		•	•	•				•											•			
Common Starling <i>Sturnus vulgaris</i>	R			•	•				•														
House Sparrow <i>Passer domesticus</i>	R			•	•				•														
Tree Sparrow <i>Passer montanus</i>	R			•	•				•														
Linnet <i>Carduelis cannabina</i>	R				•				•		•												
Twite <i>Carduelis flavirostris</i>	R		•	•																			

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Table 2. BoCC3: Red-listed species and the criteria under which they qualify. *continued*

	BoCC2 ^a	Red-list criteria ^b								Additional Amber-list criteria under which species qualifies ^c														
		IUCN	HD	BDp ¹	BDp ²	WDp ¹	WDp ²	BDr ¹	BDr ²	SPEC	HDrec	BDMp ¹	BDMp ²	WDMp ¹	WDMp ²	BDMr ¹	BDMr ²	BR	WR	BL	WL	BI	WI	
Lesser Redpoll <i>Carduelis cabaret</i>	A			•	•																			
Hawfinch <i>Coccothraustes coccothraustes</i>	A			•																				
Yellowhammer <i>Emberiza citrinella</i>	R			•	•																			
Cirl Bunting <i>Emberiza cirlus</i>	R								•							•								
Corn Bunting <i>Emberiza calandra</i>	R		•	•	•					•														

^aBoCC2 assessments
NA=Not assessed, R=Red, A=Amber, G=Green.

^bRed-list criteria
IUCN: Globally Threatened. HD: Historical decline in breeding population. BDp^{1/2}: Severe breeding population decline over 25 years/longer term. WDp^{1/2}: Severe non-breeding population decline over 25 years/longer term. BDr^{1/2}: Severe breeding range decline over 25 years/longer term.

^cAmber-list criteria
SPEC: Species of European Conservation Concern. HDrec: Historical decline – recovery. BDMp^{1/2}: Moderate breeding population decline over 25 years/longer term. WDMp^{1/2}: Moderate non-breeding population decline over 25 years/longer term. BDMr^{1/2}: Moderate breeding range decline over 25 years/longer term. BR/WR: Breeding/non-breeding rarity. BL/WL: Breeding/non-breeding localisation. BI/WI: Breeding/non-breeding international importance.



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167. The Corn Bunting *Emberiza calandra* has been Red-listed by all three BoCC reviews, and it is one of the signal species of farmland bird declines. It is one of 15 species that have declined by over 80% during the period considered by this review, and remains an urgent conservation priority.

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Table 3. BoCC3: Amber-listed species and the criteria under which they qualify.

	BoCC2 ^a	Amber-list criteria ^b												
		SPEC	HDrec	BDMp ¹	BDMp ²	WDMp ¹	WDMp ²	BDMr ¹	BDMr ²	BR	WR	BL	WL	BI
Bewick's Swan <i>Cygnus columbianus</i>	A	•										•		•
Whooper Swan <i>Cygnus cygnus</i>	A									•			•	
Bean Goose <i>Anser fabalis</i>	A										•			
Pink-footed Goose <i>Anser brachyrhynchus</i>	A											•		•
Greylag Goose <i>Anser anser</i>	A											•		•
Barnacle Goose <i>Branta leucopsis</i>	A											•		
Brent Goose <i>Branta bernicla</i>	A	•										•		•
Common Shelduck <i>Tadorna tadorna</i>	A											•		•
Eurasian Wigeon <i>Anas penelope</i>	A											•		•
Gadwall <i>Anas strepera</i>	A	•												•
Eurasian Teal <i>Anas crecca</i>	A													•
Mallard <i>Anas platyrhynchos</i>	G					•	•							
Pintail <i>Anas acuta</i>	A	•								•		•		•
Garganey <i>Anas querquedula</i>	A	•								•				
Shoveler <i>Anas clypeata</i>	A	•												•
Common Pochard <i>Aythya ferina</i>	A					•	•							•
Tufted Duck <i>Aythya fuligula</i>	G	•												
Common Eider <i>Somateria mollissima</i>	A					•								
Velvet Scoter <i>Melanitta fusca</i>	A	•											•	
Common Goldeneye <i>Bucephala clangula</i>	A									•				
Smew <i>Mergellus albellus</i>	G	•									•			
Red Grouse <i>Lagopus lagopus</i>	A			•	•									
Common Quail <i>Coturnix coturnix</i>	R	•	•											
Red-throated Diver <i>Gavia stellata</i>	A	•												
Black-throated Diver <i>Gavia arctica</i>	A	•								•	•			
Great Northern Diver <i>Gavia immer</i>	A													•
Little Grebe <i>Tachybaptus ruficollis</i>	G			•	•									
Red-necked Grebe <i>Podiceps grisegena</i>	A					•					•			
Slavonian Grebe <i>Podiceps auritus</i>	A	•		•	•					•	•			
Black-necked Grebe <i>Podiceps nigricollis</i>	A									•	•			
Fulmar <i>Fulmarus glacialis</i>	A			•								•		
Sooty Shearwater <i>Puffinus griseus</i>	G	•												
Manx Shearwater <i>Puffinus puffinus</i>	A	•						•			•			•
European Storm-petrel <i>Hydrobates pelagicus</i>	A											•		
Leach's Storm-petrel <i>Oceanodroma leucorhoa</i>	A	•										•		•
Northern Gannet <i>Morus bassanus</i>	A											•		•
Shag <i>Phalacrocorax aristotelis</i>	A			•	•							•		•
Little Egret <i>Egretta garzetta</i>	A											•		
Eurasian Spoonbill <i>Platalea leucorodia</i>	A	•									•			
Honey-buzzard <i>Pernis apivorus</i>	A									•				
Red Kite <i>Milvus milvus</i>	A	•												
Marsh Harrier <i>Circus aeruginosus</i>	A										•	•		
Montagu's Harrier <i>Circus pygargus</i>	A									•				
Golden Eagle <i>Aquila chrysaetos</i>	A	•												
Osprey <i>Pandion haliaetus</i>	A	•								•				
Common Kestrel <i>Falco tinnunculus</i>	A	•												
Merlin <i>Falco columbarius</i>	A		•											
Spotted Crane <i>Porzana porzana</i>	A									•				
Common Crane <i>Grus grus</i>	A	•								•				
Oystercatcher <i>Haematopus ostralegus</i>	A												•	•
Avocet <i>Recurvirostra avosetta</i>	A											•	•	
Stone-curlew <i>Burhinus oedicnemus</i>	R	•								•		•		

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Table 3. BoCC3: Amber-listed species and the criteria under which they qualify. *continued*

	BoCC2 ^a	Amber-list criteria ^b													
		SPEC	HDrec	BDMp ¹	BDMp ²	WDMp ¹	WDMp ²	BDMr ¹	BDMr ²	BR	WR	BL	WL	BI	WI
Ringed Plover <i>Charadrius hiaticula</i>	A			•											•
Dotterel <i>Charadrius morinellus</i>	A											•			
European Golden Plover <i>Pluvialis apricaria</i>	G														•
Grey Plover <i>Pluvialis squatarola</i>	A												•		•
Red Knot <i>Calidris canutus</i>	A	•											•		•
Purple Sandpiper <i>Calidris maritima</i>	A					•				•					
Jack Snipe <i>Lymnocyptes minimus</i>	G	•													
Common Snipe <i>Gallinago gallinago</i>	A	•													
Woodcock <i>Scolopax rusticola</i>	A	•													
Bar-tailed Godwit <i>Limosa lapponica</i>	A												•		•
Eurasian Curlew <i>Numenius arquata</i>	A	•		•	•									•	•
Common Sandpiper <i>Actitis hypoleucos</i>	G	•		•											
Green Sandpiper <i>Tringa ochropus</i>	A									•					
Spotted Redshank <i>Tringa erythropus</i>	A	•									•				
Wood Sandpiper <i>Tringa glareola</i>	A	•								•	•				
Common Redshank <i>Tringa totanus</i>	A	•		•	•										•
Turnstone <i>Arenaria interpres</i>	A														•
Great Skua <i>Stercorarius skua</i>	A											•		•	
Mediterranean Gull <i>Larus melanocephalus</i>	A									•					
Common Gull <i>Larus canus</i>	A	•													•
Lesser Black-backed Gull <i>Larus fuscus</i>	A											•		•	
Glaucous Gull <i>Larus hyperboreus</i>	G										•				
Iceland Gull <i>Larus glaucoideus</i>	G										•				
Yellow-legged Gull <i>Larus michahellis</i>	NA									•					
Great Black-backed Gull <i>Larus marinus</i>	G					•									
Little Gull <i>Hydrocoloeus minutus</i>	G	•													
Black-headed Gull <i>Chroicocephalus ridibundus</i>	A					•									•
Kittiwake <i>Rissa tridactyla</i>	A			•								•			
Little Tern <i>Sternula albifrons</i>	A	•							•			•			
Black Tern <i>Chlidonias niger</i>	G	•													
Sandwich Tern <i>Sterna sandvicensis</i>	A	•							•			•			
Common Tern <i>Sterna hirundo</i>	G											•			
Arctic Tern <i>Sterna paradisaea</i>	A								•						
Common Guillemot <i>Uria aalge</i>	A											•		•	
Razorbill <i>Alca torda</i>	A											•			
Black Guillemot <i>Cepphus grylle</i>	A	•													
Puffin <i>Fratercula arctica</i>	A	•										•			
Stock Dove <i>Columba oenas</i>	A													•	
Barn Owl <i>Tyto alba</i>	A	•													
Short-eared Owl <i>Asio flammeus</i>	A	•													
Common Swift <i>Apus apus</i>	G			•											
Common Kingfisher <i>Alcedo atthis</i>	A	•													
Green Woodpecker <i>Picus viridis</i>	A	•													
Wood Lark <i>Lullula arborea</i>	R	•							•			•			
Shore Lark <i>Eremophila alpestris</i>	NA											•			
Sand Martin <i>Riparia riparia</i>	A	•													
Barn Swallow <i>Hirundo rustica</i>	A	•													
House Martin <i>Delichon urbicum</i>	A	•		•	•										
Meadow Pipit <i>Anthus pratensis</i>	A			•	•										
Water Pipit <i>Anthus spinoletta</i>	G										•				
Grey Wagtail <i>Motacilla cinerea</i>	A					•									
Dunnock <i>Prunella modularis</i>	A					•									

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Table 3. BoCC3: Amber-listed species and the criteria under which they qualify. *continued*

	BoCC2 ^a	Amber-list criteria ^b													
		SPEC	HDrec	BDMp ¹	BDMp ²	WDMp ¹	WDMp ²	BDMr ¹	BDMr ²	BR	WR	BL	WL	BI	WI
Common Nightingale <i>Luscinia megarhynchos</i>	A			•											
Black Redstart <i>Phoenicurus ochruros</i>	A			•	•					•					
Common Redstart <i>Phoenicurus phoenicurus</i>	A	•													
Whinchat <i>Saxicola rubetra</i>	G			•											
Northern Wheatear <i>Oenanthe oenanthe</i>	G	•													
Mistle Thrush <i>Turdus viscivorus</i>	A			•	•										
Common Whitethroat <i>Sylvia communis</i>	G				•										
Dartford Warbler <i>Sylvia undata</i>	A	•										•			
Willow Warbler <i>Phylloscopus trochilus</i>	A			•	•										
Firecrest <i>Regulus ignicapilla</i>	A									•					
Pied Flycatcher <i>Ficedula hypoleuca</i>	G			•											
Bearded Tit <i>Panurus biarmicus</i>	A							•				•			
Crested Tit <i>Lophophanes cristatus</i>	G	•													
Short-toed Treecreeper <i>Certhia brachydactyla</i>	G									•					
Red-billed Chough <i>Pyrrhocorax pyrrhocorax</i>	A	•													
European Serin <i>Serinus serinus</i>	A			•						•					
Scottish Crossbill <i>Loxia scotica</i>	R	•												•	
Parrot Crossbill <i>Loxia pytyopsittacus</i>	A									•					
Bullfinch <i>Pyrrhula pyrrhula</i>	R			•	•										
Lapland Bunting <i>Calcarius lapponicus</i>	G											•			
Snow Bunting <i>Plectrophenax nivalis</i>	A									•					
Reed Bunting <i>Emberiza schoeniclus</i>	R				•										

^a BoCC2 assessments
NA=Not assessed, R=Red, A=Amber, G=Green.

^b Amber-list criteria
SPEC: Species of European Conservation Concern. HDrec: Historical decline – recovery. BDMp^{1/2}: Moderate breeding population decline over 25 years/longer term. WDMp^{1/2}: Moderate non-breeding population decline over 25 years/longer term. BDMr^{1/2}: Moderate breeding range decline over 25 years/longer term. BR/WR: Breeding/non-breeding rarity. BL/WL: Breeding/non-breeding localisation. BI/WI: Breeding/non-breeding international importance.

for the first time by this assessment, resulted in Snowy Owl *Bubo scandiacus* being added to the list of birds to have become extinct in the UK since 1800 (table 1), since it qualifies as a formerly regular breeder (in Shetland between 1967 and 1975) that has not bred for over 20 years.

Of these 246 species, the current review placed 52 (21.1%) species on the Red list, 126 (51.2%) on the Amber list and 68 (27.6%) on the Green list (tables 2, 3 and 4). The Red list has increased by 12 species since BoCC2, with 18 species Red-listed for the first time and six moving from Red to Amber. Of the 18 new Red-listed species, one (Balearic Shearwater) was not assessed previously, and one (Arctic Skua) moved straight from Green to Red; the other 16 species were Amber-listed by BoCC2.

Thirty-four species have remained on the

Red list since BoCC2, and 23 of these were on the BoCC1 Red list. None of the five species moved from Red to Amber by the BoCC2 assessment has returned to the Red list. All five were moved originally in response to recovery from historical declines, and four (Red Kite, Marsh Harrier, Osprey and Dartford Warbler) have continued this recovery to the extent that they no longer qualify for the Amber list under this criterion. All four still qualify for the Amber list under at least one other criterion, preventing us from celebrating the first complete recovery from the highest level of conservation concern.

Most species on the Red list were placed there because of breeding population decline: 32 showed a severe decline over 25 years, 31 over the longer-term period and 40 over at least one of the two periods (77% of those Red-listed).

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Table 4. BoCC3: Green-listed species.

Species	BoCC2 ¹	Species	BoCC2 ¹
Mute Swan <i>Cygnus olor</i>	A	Waxwing <i>Bombycilla garrulus</i>	G
White-fronted Goose <i>Anser albifrons</i>	A	Dipper <i>Cinclus cinclus</i>	G
Long-tailed Duck <i>Clangula hyemalis</i>	A	Wren <i>Troglodytes troglodytes</i>	G
Red-breasted Merganser <i>Mergus serrator</i>	G	Robin <i>Erithacus rubecula</i>	G
Goosander <i>Mergus merganser</i>	G	Common Stonechat <i>Saxicola torquatus</i>	A
Ptarmigan <i>Lagopus muta</i>	G	Blackbird <i>Turdus merula</i>	G
Great Crested Grebe <i>Podiceps cristatus</i>	G	Cetti's Warbler <i>Cettia cetti</i>	G
Great Shearwater <i>Puffinus gravis</i>	G	Sedge Warbler <i>Acrocephalus schoenobaenus</i>	G
Great Cormorant <i>Phalacrocorax carbo</i>	A	Reed Warbler <i>Acrocephalus scirpaceus</i>	G
Grey Heron <i>Ardea cinerea</i>	G	Blackcap <i>Sylvia atricapilla</i>	G
Northern Goshawk <i>Accipiter gentilis</i>	G	Garden Warbler <i>Sylvia borin</i>	G
Eurasian Sparrowhawk <i>Accipiter nisus</i>	G	Lesser Whitethroat <i>Sylvia curruca</i>	G
Common Buzzard <i>Buteo buteo</i>	G	Common Chiffchaff <i>Phylloscopus collybita</i>	G
Hobby <i>Falco subbuteo</i>	G	Goldcrest <i>Regulus regulus</i>	A
Peregrine Falcon <i>Falco peregrinus</i>	A	Long-tailed Tit <i>Aegithalos caudatus</i>	G
Water Rail <i>Rallus aquaticus</i>	A	Blue Tit <i>Cyanistes caeruleus</i>	G
Moorhen <i>Gallinula chloropus</i>	G	Great Tit <i>Parus major</i>	G
Common Coot <i>Fulica atra</i>	G	Coal Tit <i>Periparus ater</i>	G
Little Ringed Plover <i>Charadrius dubius</i>	G	Eurasian Nuthatch <i>Sitta europaea</i>	G
Sanderling <i>Calidris alba</i>	G	Eurasian Treecreeper <i>Certhia familiaris</i>	G
Little Stint <i>Calidris minuta</i>	G	Eurasian Jay <i>Garrulus glandarius</i>	G
Curlew Sandpiper <i>Calidris ferruginea</i>	G	Magpie <i>Pica pica</i>	G
Greenshank <i>Tringa nebularia</i>	G	Western Jackdaw <i>Corvus monedula</i>	G
Pomarine Skua <i>Stercorarius pomarinus</i>	G	Rook <i>Corvus frugilegus</i>	G
Long-tailed Skua <i>Stercorarius longicaudus</i>	G	Carrion Crow <i>Corvus corone</i>	G
Little Auk <i>Alle alle</i>	G	Hooded Crow <i>Corvus cornix</i>	NA
Rock Dove/Feral Pigeon <i>Columba livia</i>	G	Common Raven <i>Corvus corax</i>	G
Wood Pigeon <i>Columba palumbus</i>	G	Common Chaffinch <i>Fringilla coelebs</i>	G
Collared Dove <i>Streptopelia decaocto</i>	G	Brambling <i>Fringilla montifringilla</i>	G
Tawny Owl <i>Strix aluco</i>	G	Greenfinch <i>Carduelis chloris</i>	G
Long-eared Owl <i>Asio otus</i>	G	Goldfinch <i>Carduelis carduelis</i>	G
Great Spotted Woodpecker <i>Dendrocopos major</i>	G	Siskin <i>Carduelis spinus</i>	G
Rock Pipit <i>Anthus petrosus</i>	G	Common Redpoll <i>Carduelis flammea</i>	G
Pied Wagtail <i>Motacilla alba</i>	G	Common Crossbill <i>Loxia curvirostra</i>	G

¹BoCC2 assessments
NA=Not assessed, R=Red, A=Amber, G=Green.

Table 6 shows the declines in population or range for species qualifying for Red or Amber lists under these criteria. Fifteen species have declined by more than 80% over at least one of the two time periods: Common Scoter *Melanitta nigra*, Black Grouse *Tetrao tetrix*, Grey Partridge *Perdix perdix*, Roseate Tern *Sterna dougallii*, Turtle Dove, Lesser Spotted Woodpecker, Tree Pipit *Anthus trivialis*, Grasshopper Warbler *Locustella naevia*, Marsh Warbler *Acrocephalus palustris*, Spotted Flycatcher *Muscicapa striata*, Willow Tit, Red-backed Shrike, Tree Sparrow *Passer montanus*, Lesser Redpoll *Carduelis cabaret* and Corn Bunting. Only five species have shown a severe range decline over either time period (Capercaillie *Tetrao urogallus*, Corn

Crake *Crex crex*, Roseate Tern, European Nightjar and Cirl Bunting *Emberiza cirrus*), and a further eight showed a moderate decline, although these figures may reflect the relatively small number of species for which range change could be assessed rather than retention of range in the UK's declining species. With one exception, Balearic Shearwater, all of the 18 species new to the Red list were moved there because of population declines. The shearwater has been added to the IUCN global Red List since BoCC2 owing to sustained population decline and a small geographical range.

There was little change in the number of species Red-listed because of historical decline; just one species, Common Quail, showed a

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Table 5. Changes to the Red, Amber and Green lists between *BoCC2* and *BoCC3*.

Species	Reason for status change
Species with worsened status	
Newly assessed, straight to Red	
Balearic Shearwater	Globally Threatened (Critically Endangered)
Green to Red	
Arctic Skua	Breeding population decline $\geq 50\%$ over 25 years
Amber to Red	
Greater Scaup	Non-breeding population decline $\geq 50\%$ over longer-term period
Northern Lapwing	Breeding population decline $\geq 50\%$ over 25 years
Nemminck's Stint	Breeding population decline $\geq 50\%$ over 25 years and longer-term period
Dunlin	Non-breeding population decline $\geq 50\%$ over longer-term period
Ruff	Breeding population decline $\geq 50\%$ over 25 years and longer-term period
Whimbrel	Breeding population decline $\geq 50\%$ over 25 years
Herring Gull	Breeding population decline $\geq 50\%$ over longer-term period Non-breeding population decline $\geq 50\%$ over 25 years
Common Cuckoo	Breeding population decline $\geq 50\%$ over 25 years and longer-term period
Tree Pipit	Breeding population decline $\geq 50\%$ over 25 years and longer-term period
Yellow Wagtail	Breeding population decline $\geq 50\%$ over 25 years and longer-term period
Fieldfare	Breeding population decline $\geq 50\%$ over longer-term period
Redwing	Breeding population decline $\geq 50\%$ over longer-term period
Wood Warbler	Breeding population decline $\geq 50\%$ over 25 years
Golden Oriole	Breeding population decline $\geq 50\%$ over 25 years
Lesser Redpoll	Breeding population decline $\geq 50\%$ over 25 years and longer-term period
Hawfinch	Breeding population decline $\geq 50\%$ over 25 years
Green to Amber	
Mallard	Non-breeding population decline $\geq 25\%$ over 25 years and longer-term period
Tufted Duck	SPEC status
Smew	SPEC status and rare non-breeder
Little Grebe	Breeding population decline $\geq 25\%$ over 25 years and longer-term period
Sooty Shearwater	SPEC status
European Golden Plover	International importance of non-breeding population
Jack Snipe	SPEC status
Common Sandpiper	SPEC status Breeding population decline $\geq 25\%$ over 25 years
Glaucous Gull	Rare non-breeder
Iceland Gull	Rare non-breeder
Great Black-backed Gull	Non-breeding population decline $\geq 25\%$ over 25 years
Little Gull	SPEC status
Black Tern	SPEC status
Common Tern	Localised breeder
Common Swift	Breeding population decline $\geq 25\%$ over 25 years
Water Pipit	Rare non-breeder
Whinchat	Breeding population decline $\geq 25\%$ over 25 years
Northern Wheatear	SPEC status
Common Whitethroat	Breeding population decline $\geq 25\%$ over longer-term period
Pied Flycatcher	Breeding population decline $\geq 25\%$ over 25 years
Crested Tit	SPEC status
Short-toed Treecreeper	Rare breeder
Lapland Bunting	Rare non-breeder
Species with improved status	
Red to Amber	
Common Quail	Partial recovery from historical decline: $\geq 100\%$ increase in 25 years
Stone-curlew	Breeding range decline now $< 50\%$ over 25 years and longer-term period
Wood Lark	Breeding range decline now $< 50\%$ over 25 years and longer-term period
Scottish Crossbill	No longer qualifies as Globally Threatened
Bullfinch	Breeding population decline now $< 50\%$ over 25 years and longer-term period

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Table 5. Changes to the Red, Amber and Green lists between BoCC2 and BoCC3. *continued*

Species	Reason for status change
Species with improved status	
Red to Amber	
Reed Bunting	Breeding population decline now <50% over 25 years and longer-term period
Amber to Green	
Mute Swan	No longer qualifies as a localised breeder
White-fronted Goose	No longer qualifies as a localised non-breeder
Long-tailed Duck	No longer qualifies as a localised non-breeder
Great Cormorant	No longer qualifies as an internationally important breeder
Peregrine Falcon	No longer SPEC
Water Rail	Breeding range decline not assessed
Common Stonechat	No longer SPEC
Goldcrest	Breeding population decline now <25% over 25 years and longer-term period

recovery from historical decline in this review, being one of six species to move from Red to Amber. Of the other five, the two widespread species (Reed Bunting *Emberiza schoeniclus* and Bullfinch *Pyrrhula pyrrhula*) did so because of population recovery to the extent that neither now shows a severe population decline (although this is only just so in the case of Bullfinch). Stone-curlew *Burhinus oedicnemus* and Wood Lark *Lullula arborea* both moved from Red to Amber because of recoveries in

range, while Scottish Crossbill *Loxia scotica* was moved to Amber because a recent survey (the first ever) has revealed that it is not as scarce as was previously thought and so should not qualify as Globally Threatened (Summers & Buckland in prep.). This is an example of reclassification due not to a change in status, but to an improvement in our knowledge. A full list of which species have moved between the Red, Amber and Green lists, and the reasons for these moves, is given in table 5.



Chris Gomersall (rspb-images.com)

168. The recovery in the range of the Stone-curlew *Burhinus oedicnemus*, which has resulted in the species moving from Red to Amber in the latest BoCC assessment, reflects the creation and management of suitable areas of semi-natural grassland, and the provision of suitable nesting plots within farmland. The latter is dependent on the continuation of funding support, without which the population would certainly decline (and contract in range) again. Although a major conservation success story, this is still a vulnerable species – if success makes it less of a priority, the withdrawal of resources may mean that hard-won gains are soon wiped out.

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Table 6. Trends of Red- and Amber-listed species with declining populations or ranges.

Species	Season	Population trends			Range trends		
		25-year trend	Longer trend	Data source ¹	25-year trend	Longer trend	Data source ¹
Mallard	NB	-34	-36	WeBS, 1968/69-2005/06			
Common Pochard	NB	-38	-40	WeBS, 1968/69-2005/06			
Greater Scaup	NB	-28	-66	WeBS, 1968/69-2005/06			
Common Eider	NB	-83	-84	WeBS, 1968/69-2005/06			
Common Scoter	B	-83	-84	RBBP, 1973-2006. Trend confirmed by species surveys in 1995 and 2007	-32		1988-91 atlas, 2007 survey
Red Grouse	B	-33	-44	GWCT Game Bag Census			
Black Grouse	B	-80		Surveys in 1991-92 and 2004	-29	-76	1968-72 and 1988-91 atlases, RSPB species database 2004-08
Capercaillie	B						
Grey Partridge	B	-78	-88	Smoothed UK joint CBC-BBS, 1969-2006			
Little Grebe	B	-28	-33	Smoothed UK trend from WBS and BBS, 1974-2006			
Red-necked Grebe	NB	-30		WeBS summed site maxima 1995/96-2005/06			
Slavonian Grebe	B	-41	-27	RBBP, 1973-2006			
Fulmar	B	-25		Seabird censuses & SMP			
Manx Shearwater	B	-45	-33	Seabird censuses & SMP		-29	1968-72 atlas, Seabird 2000
Shag	B		-54	1968-72 breeding bird atlas and annual RSPB monitoring			
Corn Crane	B						
Stone-curlew	B						
Ringed Plover	B	-37		WeBS, 1974/75-2005/06			
Northern Lapwing	B	-53	-45	Smoothed UK joint CBC-BBS, 1969-2006			
Temminck's Stint	B	-75	-69	RBBP, 1973-2006			
Purple Sandpiper	NB	-27		Non-estuarine surveys 1984/85 and 2007/08			
Dunlin	NB	-26	-51	WeBS, 1974/75-2005/06			
Ruff	B	-63	-69	RBBP, 1973-2006			
Ruff	NB		-36	WeBS, 1974/75-2005/06			
Whimbrel	B	Decline of at least 50%		Full surveys in mid 1980s and partial resurveys in late 2000s: see text for further details			
Eurasian Curlew	B	-31	-34	Smoothed England Joint CBC-BBS, 1969-2006			
Common Sandpiper	B	-28		Smoothed UK WBS, 1974-2006			

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Table 6. Trends of Red- and Amber-listed species with declining populations or ranges, continued

Species	Season	Population trends			Range trends		
		25-year trend	Longer trend	Data source ¹	25-year trend	Longer trend	Data source ¹
Common Redshank	B	-45	-47	Smoothed UK WBS, 1974-2006			
Arctic Skua	B	-56		SMP			
Herring Gull	B	-29	-63	Seabird censuses & SMP			
Herring Gull	NB	-53 to -60		Wintering gull surveys, 1983/84-2004/05			
Great Black-backed Gull	NB	-33 to -58		Wintering gull surveys, 1983/84-2004/05			
Black-headed Gull	NB	-33 to -41		Wintering gull surveys, 1983/84-2004/05			
Kittiwake	B	-36		Seabird censuses & SMP			
Little Tern	B						-40 1968-72 atlas, Seabird 2000
Sandwich Tern	B						-28 1968-72 atlas, Seabird 2000
Arctic Tern	B						-36 1968-72 atlas, Seabird 2000
Roseate Tern	B	-83	-84	RBBP, 1973-2006			-70 1968-72 atlas, Seabird 2000
Turtle Dove	B	-82	-86	Smoothed UK joint CBC-BBS, 1969-2006			
Common Cuckoo	B	-61	-60	Smoothed England joint CBC-BBS, 1969-2006			
European Nightjar	B						-51 1968-72 atlas, 2004 survey
Common Swift	B	-29		Smoothed UK BBS, 1994-2006			
Wryneck	B	-78	-69	RBBP, 1973-2006			
Lesser Spotted Woodpecker	B	-85	-71	Smoothed UK joint CBC-BBS, 1969-2006			
Wood Lark	B						
Sky Lark	B	-47	-58	Smoothed UK joint CBC-BBS, 1969-2006			
House Martin	B	-46	-37	Smoothed UK anchored CBC-BBS, 1969-2006			
Tree Pipit	B	-70	-85	Smoothed UK anchored CBC-BBS, 1969-2006			
Meadow Pipit	B	-41	-39	Smoothed UK anchored CBC-BBS, 1969-2006			
Yellow Wagtail	B	-70	-72	Smoothed UK joint CBC-BBS, 1969-2006			
Grey Wagtail	B		-27	Smoothed UK WBS, 1974-2006			
Duncock	B		-30	Smoothed UK joint CBC-BBS, 1969-2006			
Common Nightingale	B	-49		Smoothed UK BBS, 1994-2006			
Black Redstart	B	-40	-32	RBBP, 1973-2006			
Whinchat	B	-37		Smoothed UK BBS, 1994-2006			
Ring Ouzel	B	-58		1988-91 breeding bird atlas and 1999 survey			
Fieldfare	B	-46	-66	RBBP, 1973-2006			
Song Thrush	B		-51	Smoothed UK joint CBC-BBS, 1969-2006			

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Table 6. Trends of Red- and Amber-listed species with declining populations or ranges, continued

Species	Season	Population trends			Range trends	
		25-year trend	Longer trend	Data source ¹	25-year trend	Longer trend
Redwing	B		-53	RBBP, 1973-2006		
Mistle Thrush	B	-38	-45	Smoothed UK joint CBC-BBS, 1969-2006		
Grasshopper Warbler	B	-80	-91	Smoothed UK joint CBC-BBS, 1969-2006		
Savi's Warbler	B	-78	-53	RBBP, 1973-2006		
Aquatic Warbler	NB	-68		Scarce Migrant report		
Marsh Warbler	B	-83	-86	RBBP, 1973-2006		
Common Whitethroat	B		-28	Smoothed UK joint CBC-BBS, 1969-2006		
Wood Warbler	B	-62		Smoothed UK BBS, 1994-2006		
Willow Warbler	B	-43	-45	Smoothed UK anchored CBC-BBS, 1969-2006		
Spotted Flycatcher	B	-81	-85	Smoothed UK joint CBC-BBS, 1969-2006		
Pied Flycatcher	B	-49		Smoothed UK BBS, 1994-2006		
Bearded Tit	B				-27	1988-91 atlas, 2002 survey
Willow Tit	B	-82	-88	Smoothed UK joint CBC-BBS, 1969-2006		
Marsh Tit	B	-38	-66	Smoothed UK joint CBC-BBS, 1969-2006		
Golden Oriole	B	-67	-32	RBBP, 1973-2006		
Red-backed Shrike	B	-95	-96	RBBP, 1973-2006		
Common Starling	B	-69	-75	Smoothed UK anchored CBC-BBS, 1969-2006		
House Sparrow	B	-56	-67	Smoothed UK anchored CBC-BBS, 1969-2006		
Tree Sparrow	B	-87	-93	Smoothed UK anchored CBC-BBS, 1969-2006		
European Serin	B	-45		RBBP, 1973-2006		
Linnet	B	-37	-59	Smoothed UK anchored CBC-BBS, 1969-2006		
Twite	B	-56		Smoothed UK BBS, 1994-2006		
Lesser Redpoll	B	-87	-88	Smoothed UK anchored CBC-BBS, 1969-2006		
Bullfinch	B	-28	-49	Smoothed UK joint CBC-BBS, 1969-2006		
Hawfinch	B	-74		RSPB woodland surveys between 1984/85 and 2003/04		
Yellowhammer	B	-53	-54	Smoothed UK joint CBC-BBS, 1969-2006		
Chil Bunting	B				-46	1968-72 & 1988-91 atlases, 2003 survey
Reed Bunting	B	-30		Smoothed UK joint CBC-BBS, 1969-2006		
Corn Bunting	B	-84	-88	Smoothed UK joint CBC-BBS, 1969-2006		

¹ Data sources and abbreviations as described previously: B=breeding, NB=non-breeding.

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169. As breeding birds in the UK, Red-necked Phalaropes *Phalaropus lobatus* are confined to the Northern Isles and the Outer Hebrides. Research has suggested that, by 2080, the breeding range of the Red-necked Phalarope may lie entirely to the north and east of the UK as the climate warms.



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170. Dark-bellied Brent Geese *Branta bernicla bernicla* are considered Globally Threatened at the race-level owing to recent population declines. The UK is internationally important for its wintering population of this distinctive race, which was Red-listed in this review (table 11). The species as a whole was Amber-listed, given that the Pale-bellied Brent Geese *B. b. hrota*, which also winter in the UK in important numbers, are considered less at risk and have increased markedly in recent decades.

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Table 7. Rare breeding and non-breeding species, and localised species.

Species	Population estimate	Data source for UK estimate	Percentage of UK population in ten best sites
	breeding populations (see footnote for units)		
Whooper Swan	5.2 ¹	RBBP 2002–2006	
Pintail	26 ¹	RBBP 2002–2006	
Garganey	69 ¹	RBBP 2002–2006	
Common Scoter	52 ⁴	2007 national survey	
Common Goldeneye	156.2 ¹	RBBP 2002–2006	
Black-throated Diver	217 ²	2006 national survey	
Slavonian Grebe	45.2 ¹	RBBP 2002–2006	
Black-necked Grebe	61.2 ¹	RBBP 2002–2006	
Fulmar			50–60 ^{IBA}
Manx Shearwater			90–100 ^{IBA/SPA}
European Storm-petrel			90–100 ^{IBA/SPA}
Leach's Storm-petrel			90–100 ^{IBA/SPA}
Northern Gannet			90–100 ^{IBA/SPA}
Shag			50–60 ^{SPA}
Eurasian Bittern	54.4 ³	RSPB monitoring 2004–08	
Little Egret			70–80 ^{SPA}
Honey-buzzard	69 ¹	2000 national survey	
White-tailed Eagle	32 ⁴	RSPB monitoring 2004–08	
Marsh Harrier			50–60 ^{SPA}
Montagu's Harrier	12.8 ¹	RBBP 2002–2006	
Osprey	173.8 ¹	RBBP 2002–2006	
Spotted Crake	73 ⁵	1999 national survey	
Common Crane	5.8 ¹	RBBP 2002–2006	
Avocet			90–100 ^{IBA}
Stone-curlew			70–80 ^{IBA/SPA}
Dotterel			70–80 ^{SPA}
Temminck's Stint	1 ¹	RBBP 2002–2006	
Purple Sandpiper	1.6 ¹	RBBP 2002–2006	
Dunlin			70–80 ^{IBA/SPA}
Ruff	5 ⁶	RBBP 2002–2006	
Black-tailed Godwit	61 ¹	RBBP 2002–2006	
Whimbrel	<300 ⁴	Expert opinion	
Green Sandpiper	2.4 ¹	RBBP 2002–2006	
Wood Sandpiper	12.8 ¹	RBBP 2002–2006	
Red-necked Phalarope	32 ⁷	RBBP 2002–2006	
Great Skua			60–70 ^{SPA}
Mediterranean Gull	244.6 ¹	RBBP 2002–2006	
Lesser Black-backed Gull			70–80 ^{IBA/SPA}
Yellow-legged Gull	2.2 ¹	RBBP 2002–2006	
Kittiwake			70–80 ^{SPA}
Little Tern			60–70 ^{IBA/SPA}
Sandwich Tern			90–100 ^{IBA/SPA}
Common Tern			60–70 ^{IBA}
Roseate Tern	95.2 ⁴	RBBP 2002–2006	
Common Guillemot			50–60 ^{IBA}
Razorbill			60–70 ^{IBA}
Puffin			80–90 ^{IBA/SPA}
European Nightjar			60–70 ^{SPA}
Wryneck	2.8 ¹	RBBP 2002–2006	
Wood Lark			60–70 ^{SPA}
Black Redstart	54.6 ¹	RBBP 2002–2006	
Fieldfare	2.6 ¹	RBBP 2002–2006	

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Table 7. Rare breeding and non-breeding species, and localised species. *continued*

Species	Population estimate	Data source for UK estimate	Percentage of UK population in ten best sites
breeding populations (see footnote for units)			
Redwing	14.2 ¹	RBBP 2002–2006	
Savi's Warbler	5.6 ¹	RBBP 2002–2006	
Marsh Warbler	10.8 ¹	RBBP 2002–2006	
Dartford Warbler			80–90 ^{SPA}
Firecrest	246.6 ¹	RBBP 2002–2006	
Bearded Tit			60–70 ^{SPA}
Short-toed Treecreeper	<300 ⁴	Expert opinion	
Golden Oriole	8.6 ¹	RBBP 2002–2006	
Red-backed Shrike	2.2 ¹	RBBP 2002–2006	
European Serin	1.2 ⁸	RBBP 2002–2006	
Parrot Crossbill	12 ¹	RBBP 2002–2006	
Snow Bunting	19 ¹	RBBP 2002–2006	
non-breeding populations (individuals)			
Bewick's Swan			90–100 ^{IBA/SPA}
Whooper Swan			90–100 ^{IBA/SPA}
Bean Goose	500	WeBS	
Pink-footed Goose			90–100 ^{IBA/SPA}
Greylag Goose			80–90 ^{SPA}
Barnacle Goose			70–80 ^{SPA}
Brent Goose			90–100 ^{IBA/SPA}
Common Shelduck			70–80 ^{IBA/SPA}
Eurasian Wigeon			50–60 ^{IBA/SPA}
Pintail			90–100 ^{IBA/SPA}
Greater Scaup			90–100 ^{IBA}
Common Scoter			90–100 ^{IBA}
Velvet Scoter			90–100 ^{IBA}
Smew	390	WeBS	
Black-throated Diver	700	WeBS	
Red-necked Grebe	200	WeBS	
Slavonian Grebe	775	WeBS	
Black-necked Grebe	120	WeBS	
Eurasian Bittern	<900	Expert opinion	
Eurasian Spoonbill	<900	Expert opinion	
Marsh Harrier	<900	Expert opinion	
Oystercatcher			60–70 ^{IBA/SPA}
Avocet			90–100 ^{IBA/SPA}
Grey Plover			80–90 ^{IBA/SPA}
Red Knot			90–100 ^{IBA/SPA}
Dunlin			60–70 ^{SPA}
Black-tailed Godwit			90–100 ^{IBA}
Bar-tailed Godwit			80–90 ^{IBA}
Spotted Redshank	<900		
Wood Sandpiper	<900	Expert opinion	
Glaucous Gull	<900	Expert opinion	
Iceland Gull	<900	Expert opinion	
Shore Lark	<900	Expert opinion	
Water Pipit	<900	Expert opinion	
Aquatic Warbler	<900	Expert opinion	
Lapland Bunting	<900	Expert opinion	

Units for breeding population estimates: ¹ maximum total pairs; ² summering territories; ³ booming males; ⁴ breeding pairs; ⁵ singing males; ⁶ females at leks; ⁷ males; ⁸ maximum total pairs in UK only.

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Table 8. Species occurring in internationally important numbers in the UK.

Species	Percentage of the European breeding population	Percentage of the European or flyway non-breeding population
Bewick's Swan		40–50
Pink-footed Goose		80–90
Greylag Goose		30–40
Brent Goose		50–60
Common Shelduck		20–30
Eurasian Wigeon		20–30
Gadwall		20–30
Eurasian Teal		30–40
Pintail		40–50
Shoveler		30–40
Common Pochard		20–30
Great Northern Diver		60–70
Manx Shearwater	80–90	
Leach's Storm-petrel	20–30	
Northern Gannet	70–80	
Shag	30–40	
Oystercatcher	30–40	30–40
Ringed Plover		40–50
European Golden Plover		20–30
Grey Plover		20–30
Northern Lapwing		20–30
Red Knot		70–80
Dunlin		40–50
Black-tailed Godwit		30–40
Bar-tailed Godwit		50–60
Eurasian Curlew	30–40	30–40
Common Redshank		50–60
Turnstone		30–40
Great Skua	60–70	
Common Gull		30–40
Lesser Black-backed Gull	30–40	
Herring Gull		20–30
Black-headed Gull		30–40
Common Guillemot	40–50	
Stock Dove	40–50	
Scottish Crossbill	100	

The influence of changes in the BoCC assessment criteria

As outlined in the methods section, there were four changes in the assessment process since *BoCC2*. Three of these were relatively minor: the change in definition of 'regular breeder'; the Amber-listing of non-breeding species due to SPEC-listing; and the use of a rarity criterion for non-breeders. One change, however, was more significant: the adoption of a longer-term period for assessing breeding and non-breeding

population trends and breeding range change.

Table 9 lists the 27 species that would have received a different *BoCC3* listing if this review had been conducted using *BoCC2* assessment criteria. Three species (Black-winged Stilt *Himantopus himantopus*, Pectoral Sandpiper *Calidris melanotos* and European Bee-eater *Merops apiaster*) were not assessed by the *BoCC3* review as they were not considered regular breeders, but would have been Amber-listed using *BoCC2* criteria. Two Green-listed species, Brambling *Fringilla montifringilla* and Common Redpoll *Carduelis flammea*, were assessed only as non-breeders by *BoCC3* but would have been classified as breeders by *BoCC2* criteria, and Amber-listed in consequence.

Of the remaining 22 species, seven were Amber-listed (instead of Green) because of changes in how non-breeding species were considered (the use of a rare non-breeder criterion and recognition of SPEC status for such species), but the other 15 species (11 of which were Red-listed) were given a higher concern listing because of the additional longer-term period used for measuring population (eight Red-listed species) and range (three Red-listed species) trends. Most notably, Song Thrush, which has shown a moderate recovery in recent years, would have been moved to the Green list if only the 25-year period had been used to measure population trends, but as the recovery has yet to bring it to 50% of 1969 levels – hence the longer-term decline still exceeds 50% – it remains on the Red list. Thus while we believe that the modified approach is appropriate, given that it recognises the failure of species to recover from declines in recent decades, the adoption of the new longer-term period has prevented seven species (Capercaillie, European Nightjar, Sky Lark, Song Thrush, Marsh Tit, Linnet and Cirl Bunting) from being moved from Red to Amber or even Green, and has been responsible for a further four species moving from Amber to Red (Greater Scaup *Aythya marila*, Dunlin, Fieldfare *Turdus pilaris* and Redwing *T. iliacus*).

Race-level assessment

New *BoCC* assessments were made for 226 races of 173 species (the remaining 73 regularly occurring species are monotypic). Of those 173 species, 130 have only one race that occurs regularly in the UK. The remaining 43 species have two or more regularly occurring races (up to six in the case of the Wren) and are detailed in

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Table 9. Species for which the BoCC3 listing would be different if the BoCC2 criteria had been used unchanged.

Species	Change in listing due to new criteria ¹	Reason for listing change
Greater Scaup	A → R	Non-breeding population decline over long term
Smew	G → A	SPEC status of UK non-breeder, and rare non-breeder
Capercaillie	A → R	Breeding range decline over long term
Black-winged Stilt <i>Himantopus himantopus</i>	A → NA	Not assessed as regular breeder (would be rare breeder if assessed)
Pectoral Sandpiper <i>Calidris melanotos</i>	A → NA	Not assessed as regular breeder (would be rare breeder if assessed)
Dunlin	A → R	Non-breeding population decline over long term
Jack Snipe	G → A	SPEC status of UK non-breeder
Glaucous Gull	G → A	Rare non-breeder
Iceland Gull	G → A	Rare non-breeder
Little Gull	G → A	SPEC status of UK non-breeder
European Nightjar	A → R	Breeding range decline over long term
European Bee-eater <i>Merops apiaster</i>	A → NA	Not assessed as regular breeder (would be rare breeder if assessed)
Sky Lark	A → R	Breeding population decline over long term
Water Pipit	G → A	Rare non-breeder
Grey Wagtail	G → A	Breeding population decline over long term
Duncock	G → A	Breeding population decline over long term
Fieldfare	A → R	Breeding population decline over long term
Song Thrush	G → R	Breeding population decline over long term
Redwing	A → R	Breeding population decline over long term
Common Whitethroat	G → A	Breeding population decline over long term
Marsh Tit	A → R	Breeding population decline over long term
Brambling	A → G	Not assessed as regular breeder (would be rare breeder if assessed)
Linnet	A → R	Breeding population decline over long term
Common Redpoll	A → G	Not assessed as regular breeder (would be rare breeder if assessed)
Lapland Bunting	G → A	Rare non-breeder
Cirl Bunting	A → R	Breeding range decline over long term
Reed Bunting	G → A	Breeding population decline over long term

¹ BoCC assessments: NA=Not assessed, R=Red, A=Amber, G=Green.

table 10, with those races that are endemic or near-endemic indicated. There are another ten endemic or near-endemic races not listed as they are the only races of their species occurring in the UK regularly: Red Grouse *L. l. scotica*, Great Spotted Woodpecker *D. m. anglicus*, Lesser Spotted Woodpecker *D. m. comminutus*, Long-tailed Tit *Aegithalos caudatus rosaceus*, Crested Tit *Lophophanes cristatus scoticus*, Willow Tit *P. m. kleinschmidti*, Eurasian Treecreeper *Certhia familiaris britannica*, Red-billed Chough *Pyrrhocorax pyrrhocorax pyrrhocorax*, Goldfinch *Carduelis carduelis britannica* and Bullfinch *P. p. pileata*. All ten are at least Amber-listed on account of the UK's internationally important populations.

Of the 226 races assessed, 48 were Red-listed, 117 Amber-listed and the remaining 61 Green-listed; full lists and qualifying criteria are given in

tables 11–13. The proportions of races placed on each of the three lists are extremely similar to those for the species assessment: 21.2% of races were Red-listed (21.1% of species were), 51.7% Amber-listed (51.4%) and 27.0% Green-listed (27.5%).

The majority of race-level assessments concord with those for the parent species: there was agreement in 177 instances (78.3%). Where there was disagreement (table 14), this resulted in races having a worse BoCC status than their parent species in 30 cases (including four Red-listed races of Green-listed species), and a better status in 19 (five Green-listed races of Red-listed species). Endemism was influential in changing BoCC status for races; the endemic or near-endemic status of 18 races of species of low conservation concern resulted in their Amber-listing.

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Table 10. Polytypic species with two or more races occurring in the UK regularly.

Species and relevant race ¹	Notes on range and occurrence within UK
'Taiga Bean Goose' <i>A. f. fabalis</i>	Regular winter immigrant populations in central Scotland & Norfolk
'Tundra Bean Goose' <i>A. f. rossicus</i>	Scattered winter immigrants
'European White-fronted Goose' <i>A. a. albifrons</i>	Winter immigrants in southern England
'Greenland White-fronted Goose' <i>A. a. flavirostris</i>	Winter immigrants in Scotland, Wales & Northern Ireland
'Dark-bellied Brent Goose' <i>B. b. bernicla</i>	Winter immigrants in southern England, south Wales
'Pale-bellied Brent Goose' <i>B. b. hrota</i>	Winter immigrants in northeast England, north Wales & Ireland
Common Eider <i>S. m. mollissima</i>	All UK breeding population except for Northern Isles
Common Eider <i>S. m. faeroensis</i>	Northern Isles breeding population
Great Cormorant <i>P. c. carbo</i>	Coastal & some inland breeders
Great Cormorant <i>P. c. sinensis</i>	Recently colonised inland breeders
Merlin <i>F. c. aesalon</i>	All UK breeding population
Merlin <i>F. c. subaesalon</i>	Some of wintering population
Ringed Plover <i>C. h. hiaticula</i>	All UK breeding population
Ringed Plover <i>C. h. tundrae</i>	Passage only
Dunlin <i>C. a. alpina</i>	All UK wintering population
Dunlin <i>C. a. arctica</i>	Passage only
Dunlin <i>C. a. schinzii</i>	All UK breeding population
Common Snipe <i>G. g. gallinago</i>	All UK breeding population except possibly Northern Isles
Common Snipe <i>G. g. faeroensis</i>	Some of UK wintering population, possibly breeds on Northern Isles
Black-tailed Godwit <i>L. l. limosa</i>	Nearly all of UK breeding population
Black-tailed Godwit <i>L. l. islandica</i>	Occasional breeders in north Scotland, all UK wintering population
Common Redshank <i>T. t. totanus</i>	All UK breeding population except possibly Northern Isles, some of UK wintering population
Common Redshank <i>T. t. robusta</i>	Some of UK wintering population, possibly breeds on Northern Isles
Lesser Black-backed Gull <i>L. f. graellsii</i>	All UK breeding population
Lesser Black-backed Gull <i>L. f. intermedius</i>	Some winter immigrants and passage migrants
Herring Gull <i>L. a. argentatus</i>	Some winter immigrants
Herring Gull <i>L. a. argentus</i>	All UK breeding population
Common Guillemot <i>U. a. aalge</i>	Scottish breeding population
Common Guillemot <i>U. a. albionis</i>	England, Wales & Northern Ireland breeding population
Razorbill <i>A. t. torda</i>	Some winter immigrants
Razorbill <i>A. t. islandica</i>	All UK breeding population
Sky Lark <i>A. a. arvensis</i>	England (possibly not northwest England) & Wales breeding population
Sky Lark ^c <i>A. a. scotica</i>	(Possibly northwest England), Scotland & Northern Ireland breeding population
Meadow Pipit <i>A. p. pratensis</i>	England, Wales & southeast Scotland breeding population
Meadow Pipit ^c <i>A. p. whistleri</i>	West Scotland & Northern Ireland breeding population
Rock Pipit <i>A. p. petrosus</i>	All UK breeding population
Rock Pipit <i>A. p. littoralis</i>	Some winter immigrants
'Blue-headed Wagtail' <i>M. f. flava</i>	Passage, occasional breeding
Yellow Wagtail ^c <i>M. f. flavissima</i>	All UK breeding population
'Grey-headed Wagtail' <i>M. f. thunbergi</i>	Passage only
'White Wagtail' <i>M. a. alba</i>	Passage only
Pied Wagtail <i>M. a. yarrellii</i>	All UK breeding population
Dipper ^c <i>C. c. gularis</i>	Scotland (but not in west), England & Wales breeding population
Dipper ^c <i>C. c. hibernicus</i>	Outer Hebrides & west coast of Scotland breeding population
Wren <i>T. t. troglodytes</i>	Central & southern England breeding population
Wren ^c <i>T. t. indigenus</i>	All UK except central & southern England & Scottish Islands, resident
'Fair Isle Wren' ^c <i>T. t. fridariensis</i>	Fair Isle only breeding population
'Hebridean Wren' ^c <i>T. t. hebridensis</i>	Outer Hebrides breeding population

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Table 10. Polytypic species with two or more races occurring in the UK regularly. *continued*

Species and relevant race ¹	Notes on range and occurrence within UK
'Shetland Wren' ^e <i>T. t. zetlandicus</i>	Shetland breeding population
'St Kilda Wren' ^e <i>T. t. hirtensis</i>	St Kilda only breeding population
Duncock <i>P. m. modularis</i>	Some winter immigrants
Duncock ^e <i>P. m. hebridium</i>	Hebrides & Northern Ireland breeding population
Duncock ^e <i>P. m. occidentalis</i>	England, Wales & eastern Scotland breeding population
Robin <i>E. r. rubecula</i>	Southeast England breeding population
Robin ^e <i>E. r. melophilus</i>	All UK breeding population except southeast England
Northern Wheatear <i>O. o. oenanthe</i>	All UK breeding population
'Greenland Wheatear' <i>O. o. leucorhoa</i>	Passage only
Song Thrush <i>T. p. philomelos</i>	Winter immigrants
'Hebridean Song Thrush' ^e <i>T. p. hebridensis</i>	Outer Hebrides only
Song Thrush ^e <i>T. p. clarkei</i>	All UK breeding population except Outer Hebrides
Redwing <i>T. i. coburni</i>	Some winter immigrants
Redwing <i>T. i. iliacus</i>	All UK breeding population, winter immigrants
Willow Warbler <i>P. t. trochilus</i>	All UK breeding population
Willow Warbler <i>P. t. acredula</i>	Passage only
Blue Tit <i>C. c. caeruleus</i>	Some winter immigrants
Blue Tit ^e <i>C. c. obscurus</i>	All UK breeding population
Great Tit <i>P. m. major</i>	Southeast England breeding population
Great Tit ^e <i>P. m. newtoni</i>	All UK breeding population except southeast England
Coal Tit <i>P. a. ater</i>	Some winter immigrants
Coal Tit <i>P. a. hibernicus</i>	Northern Ireland breeding population
Coal Tit ^e <i>P. a. britannicus</i>	All UK breeding population (except parts of Northern Ireland)
Marsh Tit <i>P. p. palustris</i>	Possibly northern England and southern Scotland breeding population
Marsh Tit ^e <i>P. p. dresseri</i>	All UK breeding population except possibly northern England and southern Scotland
Eurasian Jay <i>G. g. glandarius</i>	Some winter immigrants
Eurasian Jay ^e <i>G. g. hibernicus</i>	Northern Ireland breeding population
Eurasian Jay ^e <i>G. g. rufitergum</i>	All UK breeding population except Northern Ireland
Western Jackdaw <i>C. m. monedula</i>	Some winter immigrants
Western Jackdaw <i>C. m. spermologus</i>	All UK breeding population
Common Starling ^e <i>S. v. zetlandicus</i>	Shetland & Outer Hebrides
Common Starling <i>S. v. vulgaris</i>	All UK breeding population except Shetland & Outer Hebrides
Common Chaffinch <i>F. c. coelebs</i>	Winter immigrants
Common Chaffinch ^e <i>F. c. gengleri</i>	All UK breeding population
Greenfinch <i>C. c. chloris</i>	Northern Scotland and winter immigrants
Greenfinch ^e <i>C. c. harrisoni</i>	Possibly all UK breeding population except northern Scotland
Linnet <i>C. c. cannabina</i>	All UK breeding population except Scotland
Linnet ^e <i>C. c. autochthona</i>	Scotland
Twite ^e <i>C. f. bensonorum</i>	Possibly Outer Hebrides
Twite <i>C. f. pipilans</i>	All UK breeding population except possibly Outer Hebrides
Lapland Bunting <i>C. l. lapponicus</i>	Some winter immigrants
Lapland Bunting <i>C. l. subcalcaratus</i>	Some winter immigrants
Snow Bunting <i>P. n. nivalis</i>	Some of UK breeding population, winter immigrants
Snow Bunting <i>P. n. insulae</i>	Some of UK breeding population, winter immigrants
Yellowhammer <i>E. c. citrinella</i>	England breeding population
Yellowhammer ^e <i>E. c. caliginosa</i>	Wales, Scotland and Northern Ireland breeding population
Corn Bunting <i>E. c. calandra</i>	All UK breeding population except possibly Outer Hebrides
Corn Bunting ^e <i>E. c. clanceyi</i>	Possibly Outer Hebrides

¹ English names given are as for species. In instances where a well-known English name exists for the race, this is given in inverted commas.

^e Endemic or near-endemic race, including British & Irish endemics.

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Table 11. Red-listed races and the criteria under which they qualify.

Species and relevant race ^a	Species-level BoCC3 result ^b	Red-list criteria ^c							Additional Amber-list criteria under which species qualifies ^d														
		IUCN	HD	BDp ¹	BDp ²	WDp ¹	WDp ²	BDf ¹	BDf ²	SPEC	HDrec	BDMp ¹	BDMp ²	WDMp ¹	WDMp ²	BDMr ¹	BDMr ²	BR	WR	BL	WL	BI	WI
'Taiga Bean Goose' <i>A. f. fabalis</i>	A	•							•									•					
'European White-fronted Goose' <i>A. a. albifrons</i>	G					•	•														•		
'Greenland White-fronted Goose' <i>A. a. flavirostris</i>	G	•							•												•		•
'Dark-bellied Brent Goose' <i>B. b. bernicla</i>	A	•							•												•		•
Common Eider <i>S. m. mollissima</i>	A	•							•	•													
Black Grouse <i>T. t. britannicus</i>	R	•	•	•					•														•
Capercaillie <i>T. u. urogallus</i>	R							•							•								
Grey Partridge <i>P. p. perdix</i>	R	•	•	•					•														
Eurasian Bittern <i>B. s. stellaris</i>	R	•							•									•	•				
Hen Harrier <i>C. c. cyaneus</i>	R	•							•														
Stone-curlew <i>B. o. oediconemus</i>	A	•							•							•				•			
Dunlin <i>C. a. alpina</i>	R						•		•				•								•		•
Black-tailed Godwit <i>L. l. limosa</i>	R	•							•									•					
Whimbrel <i>N. p. phaeopus</i>	R		•															•					
Herring Gull <i>L. a. argentus</i>	R	•		•	•				•	•	•												•
Roseate Tern <i>S. d. dougallii</i>	R		•	•				•	•								•						
Turtle Dove <i>S. t. turtur</i>	R		•	•					•														
Common Cuckoo <i>C. c. canorus</i>	R		•	•																			
European Nightjar <i>C. e. europaeus</i>	R							•	•											•			
Wryneck <i>J. t. torquilla</i>	R	•	•	•					•									•					
Lesser Spotted Woodpecker <i>D. m. comminutus</i>	R	•	•	•					•														•
Sky Lark <i>A. a. arvensis</i>	R			•					•		•												
Tree Pipit <i>A. t. trivialis</i>	R		•	•					•														
Yellow Wagtail <i>M. f. flavissima</i>	R	•	•	•					•														•
'Fair Isle Wren' <i>T. t. fridariensis</i>	G	•							•									•					•
'St Kilda Wren' <i>T. t. hirtensis</i>	G	•							•									•					•
Ring Ouzel <i>T. t. torquatus</i>	R		•																				
'Hebridean Song Thrush' <i>T. p. hebridensis</i>	R	•							•														•
Song Thrush <i>T. p. clarkei</i>	R		•						•														•
Redwing <i>T. i. iliacus</i>	R		•															•					
Grasshopper Warbler <i>L. n. naevia</i>	R		•	•																			
Savi's Warbler <i>L. l. luscinioides</i>	R		•	•														•					
Spotted Flycatcher <i>M. s. striata</i>	R		•	•					•														
Willow Tit <i>P. m. kleinschmidti</i>	R	•	•	•					•														•
Marsh Tit <i>P. p. palustris</i>	R		•	•					•		•												
Marsh Tit <i>P. p. dresseri</i>	R		•	•					•		•												•
Golden Oriole <i>O. o. oriolus</i>	R		•								•							•					
Red-backed Shrike <i>L. c. collurio</i>	R	•	•	•					•									•					
Common Starling <i>S. v. vulgaris</i>	R		•	•					•														
House Sparrow <i>P. d. domesticus</i>	R		•	•					•														
Tree Sparrow <i>P. m. montanus</i>	R		•	•					•														

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Table 11. Red-listed races and the criteria under which they qualify. *continued*

Species and relevant race ^a	Species-level BoCC3 result ^b	Red-list criteria ^c							Additional Amber-list criteria under which species qualifies ^d															
		IUCN	HD	BDp ¹	BDp ²	WDP ¹	WDP ²	BDr ¹	BDr ²	SPEC	HDrec	BDMp ¹	BDMp ²	WDMp ¹	WDMp ²	BDMr ¹	BDMr ²	BR	WR	BL	WL	BI	WI	
Linnet <i>C. c. cannabina</i>	R				•					•		•												
Twite <i>C. f. pipilans</i>	R		•	•																				
Hawfinch <i>C. c. coccothraustes</i>	R			•																				
Yellowhammer <i>E. c. citrinella</i>	R			•	•																			
Yellowhammer <i>E. c. caliginosa</i>	R			•	•					•													•	
Corn Bunting <i>E. c. calandra</i>	R		•	•	•					•														
Corn Bunting <i>E. c. clanceyi</i>	R	•	•	•	•					•								•					•	

^a English names given are as for species. In instances where a well-known English name exists for the race, this is given in inverted commas.

^b BoCC3 assessments: NA=Not assessed, R=Red, A=Amber, G=Green.

^c Red-list criteria. IUCN: Globally Threatened: 'pseudo-assessment' for BoCC3 purposes only.
 HD: Historical decline in breeding population. BDp^{1/2}: Severe breeding population decline over 25 years/ longer term. WDP^{1/2}: Severe non-breeding population decline over 25 years/longer term.
 BDr^{1/2}: Severe breeding range decline over 25 years/longer term.

^d Amber-list criteria. SPEC: Species of European Conservation Concern: 'pseudo-assessment' for BoCC3 purposes only. HDrec: Historical decline – recovery. BDMp^{1/2}: Moderate breeding population decline over 25 years/ longer term. WDMp^{1/2}: Moderate non-breeding population decline over 25 years/longer term.
 BDMr^{1/2}: Moderate breeding range decline over 25 years/longer term. BR/WR: Breeding/non-breeding rarity.
 BL/WL: Breeding/non-breeding localisation. BI/WI: Breeding/non-breeding international importance.

This table lists Red-listed races of polytypic species only: it does not include monotypic species, e.g. Corn Crake.



Richard Chandler

171. Yellow Wagtail *Motacilla flava* is among 18 newly Red-listed species, and one of five of the 18 which is also a long-distance Afro-Palaearctic migrant. The race which breeds regularly in the UK, *M. f. flavissima* (shown here), is distinctive, and is a Red-listed race in terms of its breeding population (table 11); other races, which are regular passage migrants here (Blue-headed *M. f. flava* and Grey-headed Wagtail *M. f. thunbergi*), are Amber-listed.

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Table 12. Amber-listed races and the criteria under which they qualify.

Species and relevant race ^a	Species-level BoCC3 result ^b	Amber-list criteria ^c												
		SPEC	HDrec	BDMp ¹	BDMp ²	WDMp ¹	WDMp ²	BDMr ¹	BDMr ²	BR	WR	BL	WL	BI
Bewick's Swan <i>C. c. bewickii</i>	A	•										•		•
'Tundra Bean Goose' <i>A. f. rossicus</i>	A										•			
Greylag Goose <i>A. a. anser</i>	A											•		•
'Pale-bellied Brent Goose' <i>B. b. hrota</i>	A											•		•
Eurasian Teal <i>A. c. crecca</i>	A													•
Mallard <i>A. p. platyrhynchos</i>	A					•	•							
Pintail <i>A. a. acuta</i>	A	•								•		•		•
Common Eider <i>S. m. faeroensis</i>	A	•		•	•									•
Common Goldeneye <i>B. c. clangula</i>	A									•				
Red Grouse <i>L. l. scotica</i>	A	•		•	•									•
Ptarmigan <i>L. m. millaisi</i>	G	•												•
Common Quail <i>C. c. coturnix</i>	A	•	•											
Black-throated Diver <i>G. a. arctica</i>	A	•								•	•			
Little Grebe <i>T. r. ruficollis</i>	A			•	•									
Red-necked Grebe <i>P. g. griseogena</i>	A					•					•			
Black-necked Grebe <i>P. n. nigricollis</i>	A									•	•			
Fulmar <i>F. g. glacialis</i>	A			•								•		
Leach's Storm-petrel <i>O. l. leucorhoa</i>	A	•										•		•
Great Cormorant <i>P. c. carbo</i>	G													•
Great Cormorant <i>P. c. sinensis</i>	G											•		
Shag <i>P. a. aristotelis</i>	A			•	•							•		•
Little Egret <i>E. g. garzetta</i>	A											•		
Eurasian Spoonbill <i>P. l. leucorodia</i>	A	•									•			
Red Kite <i>M. m. milvus</i>	A	•												
Marsh Harrier <i>C. a. aeruginosus</i>	A										•	•		
Golden Eagle <i>A. c. chrysaetos</i>	A	•												
Osprey <i>P. h. haliaetus</i>	A	•								•				
Common Kestrel <i>F. t. tinnunculus</i>	A	•												
Merlin <i>F. c. aesalon</i>	A		•											
Merlin <i>F. c. subaesalon</i>	A	•												•
Peregrine Falcon <i>F. p. peregrinus</i>	G	•												•
Oystercatcher <i>H. o. ostralegus</i>	A											•	•	•
Ringed Plover <i>C. h. hiaticula</i>	A			•										•
Red Knot <i>C. c. islandica</i>	A	•												•
Dunlin <i>C. a. schinzii</i>	R											•		
Common Snipe <i>G. g. gallinago</i>	A	•												
Common Snipe <i>G. g. faeroensis</i>	A													•
Black-tailed Godwit <i>L. l. islandica</i>	R											•		•
Bar-tailed Godwit <i>L. l. lapponica</i>	A											•		•
Eurasian Curlew <i>N. a. arquata</i>	A	•		•	•								•	•
Common Redshank <i>T. t. totanus</i>	A	•		•	•									
Common Redshank <i>T. t. robusta</i>	A													•
Turnstone <i>A. i. interpres</i>	A													•
Common Gull <i>L. c. canus</i>	A	•												•
Lesser Black-backed Gull <i>L. f. graellsii</i>	A											•		•
Glaucous Gull <i>L. h. hyperboreus</i>	A										•			
Iceland Gull <i>L. g. glaucoides</i>	A										•			
Yellow-legged Gull <i>L. m. michahellis</i>	A									•				
Kittiwake <i>R. t. tridactyla</i>	A			•								•		

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Table 12. Amber-listed races and the criteria under which they qualify. *continued*

Species and relevant race ^a	Species-level BoCC3 result ^b	Amber-list criteria ^c												
		SPEC	HDrec	BDMp ¹	BDMp ²	WDMp ¹	WDMp ²	BDMr ¹	BDMr ²	BR	WR	BL	WL	BI
Little Tern <i>S. a. albifrons</i>	A	•							•			•		
Black Tern <i>C. n. niger</i>	A	•												
Sandwich Tern <i>S. s. sandvicensis</i>	A	•							•			•		
Common Tern <i>S. h. hirundo</i>	A											•		
Common Guillemot <i>U. a. aalge</i>	A											•		
Common Guillemot <i>U. a. albionis</i>	A											•		•
Razorbill <i>A. t. islandica</i>	A											•		•
Stock Dove <i>C. o. oenas</i>	A													•
Barn Owl <i>T. a. alba</i>	A	•												
Short-eared Owl <i>A. f. flammeus</i>	A	•												
Common Swift <i>A. a. apus</i>	A			•										
Common Kingfisher <i>A. a. ispida</i>	A	•												
Green Woodpecker <i>P. v. viridis</i>	A	•												
Great Spotted Woodpecker <i>D. m. anglicus</i>	G													•
Wood Lark <i>L. a. arborea</i>	A	•							•			•		
Sky Lark <i>A. a. scotica</i>	R													•
Shore Lark <i>E. a. flava</i>	A	•									•			
Sand Martin <i>R. r. riparia</i>	A	•												
Barn Swallow <i>H. r. rustica</i>	A	•												
House Martin <i>D. u. urbicum</i>	A	•		•	•									
Meadow Pipit <i>A. p. pratensis</i>	A			•	•									
Meadow Pipit <i>A. p. whistleri</i>	A													•
Water Pipit <i>A. s. spinoletta</i>	A										•			
Rock Pipit <i>A. p. petrosus</i>	G													•
'Blue-headed Wagtail' <i>M. f. flava</i>	R										•			
'Grey-headed Wagtail' <i>M. f. thunbergi</i>	R	•									•			
Grey Wagtail <i>M. c. cinerea</i>	A				•									
Pied Wagtail <i>M. a. yarrellii</i>	G													•
Dipper <i>C. c. gularis</i>	G													•
Dipper <i>C. c. hibernicus</i>	G	•												•
Wren <i>T. t. indigenus</i>	G													•
'Hebridean Wren' <i>T. t. hebridensis</i>	G	•												•
'Shetland Wren' <i>T. t. zetlandicus</i>	G	•												•
Dunnock <i>P. m. hebridium</i>	A													•
Dunnock <i>P. m. occidentalis</i>	A				•									•
Common Nightingale <i>L. m. megarhynchos</i>	A			•										
Black Redstart <i>P. o. gibraltariensis</i>	A			•	•					•				
Common Redstart <i>P. p. phoenicurus</i>	A	•												
Northern Wheatear <i>O. o. oenanthe</i>	A	•												
Mistle Thrush <i>T. v. viscivorus</i>	A			•	•									
Common Whitethroat <i>S. c. communis</i>	A				•									
Dartford Warbler <i>S. u. dartfordiensis</i>	A											•		
Willow Warbler <i>P. t. trochilus</i>	A	•		•	•									
Firecrest <i>R. i. ignicapilla</i>	A									•				
Pied Flycatcher <i>F. h. hypoleuca</i>	A			•										
Bearded Tit <i>P. b. biarmicus</i>	A							•				•		
Long-tailed Tit <i>A. c. rosaceus</i>	G													•
Blue Tit <i>C. c. obscurus</i>	G													•
Great Tit <i>P. m. newtoni</i>	G													•

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Table 12. Amber-listed races and the criteria under which they qualify. *continued*

Species and relevant race ^a	Species-level BoCC3 result ^b	Amber-list criteria ^c													
		SPEC	HDrec	BDMp ¹	BDMp ²	WDMp ¹	WDMp ²	BDMr ¹	BDMr ²	BR	WR	BL	WL	BI	WI
Crested Tit <i>L. c. scoticus</i>	A	•													•
Coal Tit <i>P. a. britannicus</i>	G														•
Eurasian Treecreeper <i>C. f. britannica</i>	G														•
Short-toed Treecreeper <i>C. b. megarhyncha</i>	A									•					
Eurasian Jay <i>G. g. hibernicus</i>	G														•
Eurasian Jay <i>G. g. rufitergum</i>	G														•
Red-billed Chough <i>P. p. pyrrhocorax</i>	A	•													•
Common Starling <i>S. v. zetlandicus</i>	R														•
Common Chaffinch <i>F. c. gengleri</i>	G														•
Greenfinch <i>C. c. harrisoni</i>	G														•
Goldfinch <i>C. c. britannica</i>	G														•
Linnet <i>C. c. autochthona</i>	R	•													•
Twite <i>C. f. bensonorum</i>	R	•													•
Bullfinch <i>P. p. pileata</i>	A	•		•	•										•
Lapland Bunting <i>C. l. lapponicus</i>	A														
Lapland Bunting <i>C. l. subcalcaratus</i>	A														
Snow Bunting <i>P. n. nivalis</i>	A														
Snow Bunting <i>P. n. insulae</i>	A														
Reed Bunting <i>E. s. schoeniclus</i>	A				•										

^a English names given are as for species. In instances where a well-known English name exists for the race, this is given in inverted commas.

^b BoCC3 assessments: NA=Not assessed, R=Red, A=Amber, G=Green.

^c Amber-list criteria. SPEC: Species of European Conservation Concern – ‘pseudo-assessment’ for BoCC3 purposes only. HDrec: Historical decline – recovery. BDMp^{1/2}: Moderate breeding population decline over 25 years/longer term. WDMp^{1/2}: Moderate non-breeding population decline over 25 years/longer term. BDMr^{1/2}: Moderate breeding range decline over 25 years/longer term. BR/WR: Breeding/non-breeding rarity. BL/WL: Breeding/non-breeding localisation. BI/WI: Breeding/non-breeding international importance.

Note that this table lists Amber-listed races of polytypic species only: it does not include monotypic species, e.g. Red-throated Diver.

Chris Gomersall (rsfb-images.com)



172. An increase in the species' breeding range in the UK has enabled the Wood Lark *Lullula arborea* to move from the Red to the Amber list between BoCC2 and BoCC3.

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Table 13. Green-listed races.

Species and relevant race ¹	Species-level BoCC3 result ²	Species and relevant race ¹	Species-level BoCC3 result ²
Goosander <i>M. m. merganser</i>	G	Common Stonechat <i>S. t. hibernans</i>	G
Great Crested Grebe <i>P. c. cristatus</i>	G	'Greenland Wheatear' <i>O. o. leucorhoa</i>	A
Grey Heron <i>A. c. cinerea</i>	G	Blackbird <i>T. m. merula</i>	G
Northern Goshawk <i>A. g. gentilis</i>	G	Song Thrush <i>T. p. philomelos</i>	R
Eurasian Sparrowhawk <i>A. n. nisus</i>	G	Redwing <i>T. i. coburni</i>	R
Common Buzzard <i>B. b. buteo</i>	G	Cetti's Warbler <i>C. c. cetti</i>	G
Hobby <i>F. s. subbuteo</i>	G	Reed Warbler <i>A. s. scirpaceus</i>	G
Water Rail <i>R. a. aquaticus</i>	G	Blackcap <i>S. a. atricapilla</i>	G
Moorhen <i>G. c. chloropus</i>	G	Garden Warbler <i>S. b. borin</i>	G
Common Coot <i>F. a. atra</i>	G	Lesser Whitethroat <i>S. c. curruca</i>	G
Little Ringed Plover <i>C. d. curonicus</i>	G	Common Chiffchaff <i>P. c. collybita</i>	G
Ringed Plover <i>C. h. tundrae</i>	A	Willow Warbler <i>P. a. acredula</i>	A
Dunlin <i>C. a. arctica</i>	R	Goldcrest <i>R. r. regulus</i>	G
Long-tailed Skua <i>S. l. longicaudus</i>	G	Blue Tit <i>C. c. caeruleus</i>	G
Lesser Black-backed Gull <i>L. f. intermedius</i>	A	Great Tit <i>P. m. major</i>	G
Herring Gull <i>L. a. argentatus</i>	R	Coal Tit <i>P. a. ater</i>	G
Razorbill <i>A. t. torda</i>	A	Coal Tit <i>P. a. hibernicus</i>	G
Black Guillemot <i>C. g. arcticus</i>	A	Eurasian Nuthatch <i>S. e. caesia</i>	G
Little Auk <i>A. a. alle</i>	G	Eurasian Jay <i>G. g. glandarius</i>	G
Rock Dove/Feral Pigeon <i>C. l. livia</i>	G	Magpie <i>P. p. pica</i>	G
Wood Pigeon <i>C. p. palumbus</i>	G	Western Jackdaw <i>C. m. monedula</i>	G
Collared Dove <i>S. d. decaocto</i>	G	Western Jackdaw <i>C. m. spermologus</i>	G
Tawny Owl <i>S. a. sylvatica</i>	G	Rook <i>C. f. frugilegus</i>	G
Long-eared Owl <i>A. o. otus</i>	G	Carrion Crow <i>C. c. corone</i>	G
Rock Pipit <i>A. p. littoralis</i>	G	Hooded Crow <i>C. c. cornix</i>	G
'White Wagtail' <i>A. a. alba</i>	G	Common Raven <i>C. c. corax</i>	G
Waxwing <i>B. g. garrulus</i>	G	Common Chaffinch <i>F. c. coelebs</i>	G
Wren <i>T. t. troglodytes</i>	G	Greenfinch <i>C. c. chloris</i>	G
Duncock <i>P. m. modularis</i>	A	Common Redpoll <i>C. f. flammea</i>	G
Robin <i>E. r. rubecula</i>	G	Common Crossbill <i>L. c. curvirostra</i>	G
Robin <i>E. r. melophilus</i>	G		

¹ English names given are as for species. In instances where a well-known English name exists for the race, this is given in inverted commas.

² BoCC3 assessments: NA=Not assessed, R=Red, A=Amber, G=Green.

Note that this table lists Green-listed races of polytypic species only: it does not include monotypic species, e.g. Mute Swan.



Chris Gomersall (rspb-images.com)

173. Six of the newly Red-listed species in BoCC3 are rare or scarce breeders in the UK, and at the southern or western limit of their breeding range. The Redwing *Turdus iliacus* is one of these, and the nominate race (shown here, and which breeds in Britain) is Red-listed. The Icelandic race, *T. i. coburni*, which is a regular passage and winter visitor, is not threatened and was Green-listed in the race assessment (tables 13 & 14).

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Table 14. Races with different BoCC3 assessments from the parent species.

Species and relevant race	Reason for difference between assessments
Species Green, race Red	
'European White-fronted Goose' <i>A. a. albifrons</i>	Race has declined severely in the UK over both trend periods
'Greenland White-fronted Goose' <i>A. a. flavirostris</i>	Race Globally Threatened due to recent population decline
'Fair Isle Wren' <i>T. t. fridariensis</i>	Race Globally Threatened due to small population size
'St Kilda Wren' <i>T. t. hirtensis</i>	Race Globally Threatened due to small population size
Species Amber, race Red	
'Taiga Bean Goose' <i>A. f. fabalis</i>	Race Globally Threatened due to recent population decline
'Dark-bellied Brent Goose' <i>B. b. bernicla</i>	Race Globally Threatened due to recent population decline
Common Eider <i>S. m. mollissima</i>	Race Globally Threatened due to recent population decline
Stone-curlew <i>B. o. oediconemus</i>	Race Globally Threatened due to recent population decline
Species Green, race Amber	
Ptarmigan <i>L. m. millaisi</i>	Race (pseudo-) SPEC-listed and internationally important (endemic race)
Great Cormorant <i>P. c. carbo</i>	Internationally important
Great Cormorant <i>P. c. sinensis</i>	Localised breeder
Peregrine Falcon <i>F. p. peregrinus</i>	Race (pseudo-) SPEC-listed and internationally important
Great Spotted Woodpecker <i>D. m. anglicus</i>	Internationally important (endemic race)
Rock Pipit <i>A. p. petrosus</i>	Internationally important
Pied Wagtail <i>M. a. yarrellii</i>	Internationally important (near-endemic race)
Dipper <i>C. c. gularis</i>	Internationally important (endemic race)
Dipper <i>C. c. hibernicus</i>	Race (pseudo-) SPEC-listed and internationally important (near-endemic race)
Wren <i>T. t. indigenus</i>	Internationally important (endemic race)
'Hebridean Wren' <i>T. t. hebridensis</i>	Race (pseudo-) SPEC-listed and internationally important (endemic race)
'Shetland Wren' <i>T. t. zetlandicus</i>	Race (pseudo-) SPEC-listed and internationally important (endemic race)
Long-tailed Tit <i>A. c. rosaceus</i>	Internationally important (endemic race)
Blue Tit <i>C. c. obscurus</i>	Internationally important (near-endemic race)
Great Tit <i>P. m. newtoni</i>	Internationally important (near-endemic race)
Coal Tit <i>P. a. britannicus</i>	Internationally important (endemic race)
Eurasian Treecreeper <i>C. f. britannica</i>	Internationally important (endemic race)
Eurasian Jay <i>G. g. hibernicus</i>	Internationally important (endemic to Ireland)
Eurasian Jay <i>G. g. rufitergum</i>	Internationally important (near-endemic race)
Common Chaffinch <i>F. c. gengleri</i>	Internationally important (endemic race)
Greenfinch <i>C. c. harrisoni</i>	Internationally important (endemic race)
Goldfinch <i>C. c. britannica</i>	Internationally important (endemic race)
Species Red, race Green	
Dunlin <i>C. a. arctica</i>	Red-listing of species is due to decline in wintering <i>alpina</i> ; <i>arctica</i> are passage migrants only
Herring Gull <i>L. a. argentatus</i>	Red-listing of species is due to decline in breeding and wintering <i>argenteus</i> ; trend in <i>argentatus</i> unknown
Song Thrush <i>T. p. philomelos</i>	Red-listing of species is due to decline in breeding <i>clarkei</i> ; <i>philomelos</i> are winter immigrants
Redwing <i>T. i. coburni</i>	Red-listing of species is due to decline in breeding <i>iliacus</i> ; <i>coburni</i> are winter immigrants
Species Red, race Amber	
Dunlin <i>C. a. schinzii</i>	Red-listing of species is due to decline in wintering <i>alpina</i> ; <i>schinzii</i> are UK breeders
Black-tailed Godwit <i>L. l. islandica</i>	Red-listing of species is due to historical decline in breeding <i>limosa</i> ; <i>islandica</i> are winter immigrants
Sky Lark <i>A. a. scotica</i>	Red-listing is due to decline in breeding <i>arvensis</i> ; <i>scotica</i> not believed to have declined to the same extent
'Blue-headed Wagtail' <i>M. f. flava</i>	Red-listing is due to decline in breeding <i>flavissima</i> ; <i>flava</i> are passage migrants/occasional breeders only

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Table 14. Races with different BoCC3 assessments from the parent species. *continued*

Species and relevant race	Reason for difference between assessments
Species Red, race Amber	
'Grey-headed Wagtail' <i>M. f. thunbergi</i>	Red-listing is due to decline in breeding <i>flavissima</i> ; <i>thunbergi</i> are passage migrants
Common Starling <i>S. v. zetlandicus</i>	Red-listing is due to decline in breeding <i>vulgaris</i> ; <i>zetlandicus</i> not believed to have declined to the same extent, if at all
Linnet <i>C. c. autochthona</i>	Red-listing is due to decline in breeding <i>cannabina</i> ; <i>autochthona</i> not believed to have declined to the same extent
Twite <i>C. f. bensonorum</i>	Red-listing is due to historical and recent decline; <i>bensonorum</i> not known to have declined to same extent
Species Amber, race Green	
Ringed Plover <i>C. h. tundrae</i>	Amber-listing of species is due to decline in breeding <i>hiaticula</i> ; <i>tundrae</i> are passage migrants only
Lesser Black-backed Gull <i>L. f. intermedius</i>	Amber-listing is due to localised breeding of <i>graellsii</i> ; <i>intermedius</i> are winter immigrants
Razorbill <i>A. t. torda</i>	Amber-listing is due to localised breeding <i>islandica</i> ; <i>torda</i> are winter immigrants
Black Guillemot <i>C. g. arcticus</i>	European <i>arcticus</i> population is not depleted and is not (pseudo-) SPEC-listed
Dunnock <i>P. m. modularis</i>	Amber-listing of species is due to decline in breeding population; <i>modularis</i> are winter immigrants
'Greenland Wheatear' <i>O. o. leucorhoa</i>	Amber-listing is due to SPEC status of <i>oenanthe</i> ; <i>leucorhoa</i> is not known to have declined, hence is not (pseudo-) SPEC-listed
Willow Warbler <i>P. t. acredula</i>	Amber-listing of species is due to decline in breeding <i>trochilus</i> ; <i>acredula</i> are passage migrants only

Discussion*How to use the new BoCC3 lists*

The Red, Amber and Green lists presented in this paper are an attempt to classify the UK's bird species objectively, according to the conservation concern with which they should be regarded. We stress that, as with any such assessment, the BoCC3 list (or any other priority or status list) should not be the only basis for setting priorities. Other factors, both objective and subjective, should be considered when deciding which species to target in conservation programmes. Factors which should be included in decision making are logistical (e.g. feasibility, conflicting issues), biological (e.g. likelihood of success, benefits to other species), societal (e.g. cultural importance, role as flagship species) and economic (e.g. cost of action). For example, Red-listing does not mean that species should immediately or automatically become the highest priorities for recovery programmes and, for some species, it may be appropriate that no action is taken beyond monitoring.

Data availability, constraints on the assessment and expert opinion

The BoCC3 review was based upon the best

and most recent data available. The development of joint CBC-BBS trends since BoCC2 means that we now have more faith that trends for common breeding birds are representative. BoCC2 did not Red-list species with declines of over 50% if the CBC trend was felt to be unrepresentative (e.g. Tree Pipit, Goldcrest *Regulus regulus*). In BoCC3, however, we felt able to do so because the BBS data used were not geographically biased. We were, however, hampered by the lack of recent range data for the majority of species, so only a few species were assessed against the range criteria. In addition, trends or reliable population estimates were available for very few non-breeding visitors not covered by WeBS. In some cases we had to rely upon 'expert opinion' to assess species, most notably in the case of the Whimbrel *Numenius phaeopus*, for which there has not been a complete survey since the 1980s (Richardson 1990). Recent surveys in areas of Shetland that held 45% of the population previously have revealed a decline of 70% (M. Grant pers. comm.); we decided that a decline of such severity warranted Red-listing, despite the lack of knowledge on trends elsewhere in the range.

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The influence of changed criteria

The change in criteria to ensure parity in the treatment of breeding and non-breeding populations, by adding a non-breeding rarity criterion (WR) and considering non-breeding species for Amber-listing under the SPEC criterion, has introduced an element of non-comparability between the *BoCC3* and *BoCC2* lists. Seven species are Amber-listed solely because of these changes, but it could be argued that none should be of conservation concern in the UK, and certainly some (e.g. Iceland Gull *Larus glaucooides*) are unlikely to be recipients of conservation action. However, we feel that the UK's importance as a home for wintering bird populations equals (or perhaps even exceeds) its importance for breeding bird populations, and so it is only right that the *BoCC* process should reflect this even-handedly.

Conversely, six species have either not been assessed by *BoCC3*, or have been assessed only as non-breeders owing to the change in how species are defined as regular breeders: five of these species would have been on the Amber list if they had been assessed.

The other change adopted, the use of an additional, longer-term time window for assessing trends in breeding and non-breeding populations, and trends in breeding ranges, had a significant affect on the Red list. Eleven species were Red-listed because of this new criterion. Of these ten, seven were Red-listed by *BoCC2* and

would have been Amber-listed (with the exception of Song Thrush, which would have been Green-listed) had we not introduced this criterion. Importantly, however, none of these six species have recovered from the declines which led them to be Red-listed originally, and we felt that if species were allowed to move from Red to Amber without recovery, the credibility of *BoCC* assessments would have been undermined. We feel that this demonstrates the need to adapt the *BoCC* criteria to meet changing circumstances, in this case the increasing length of monitoring data available for many species, and the time elapsed since periods of known decline in the 1970s. The change also allows Greater Scaup, Dunlin, Redwing and Fieldfare to qualify for the Red list: species that declined only moderately (i.e. by less than 50%) over any 25-year period, but which have declined severely over the longer term. It may be argued that use of the longer-term period 'lowers the bar' for Red-listing, but such species have suffered a similar loss in numbers to others that may have declined in the 1970s then stabilised (e.g. Song Thrush), or undergone severe declines only more recently (e.g. Northern Lapwing *Vanellus vanellus*), so surely deserve the same treatment.

By way of example, fig. 1 shows how trends in Yellowhammer (decline since 1975, severe decline over both longer-term and 25-year periods), Song Thrush (decline since 1969, but

some recovery since 1998 and severe decline over longer-term period only) and Northern Lapwing (decline since 1984, severe decline over 25-year period only) had resulted in a proportionately similar fall in population by 2006 despite the varying patterns; we believe that all three species should be Red-listed.

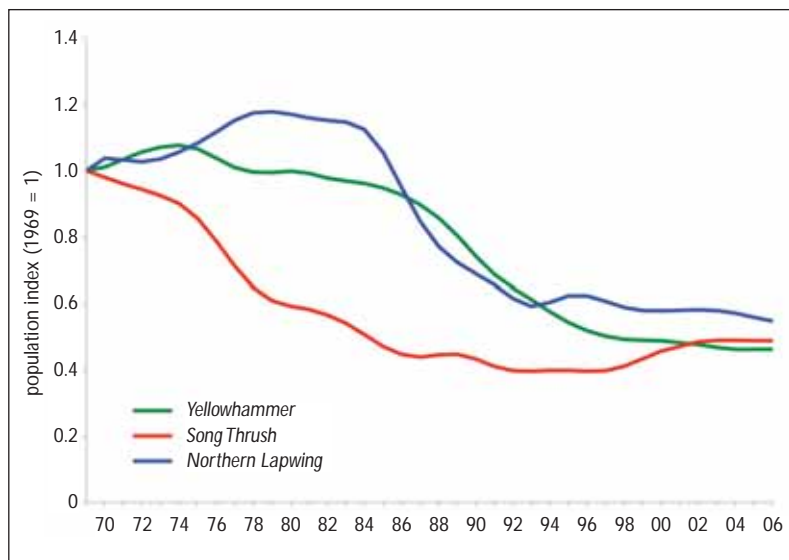


Fig. 1. Breeding population trends in three Red-listed species, illustrating differing patterns of decline.

Source: BTO/JNCC Common Birds Census and BTO/JNCC/RSPB Breeding Bird Survey

The new BoCC lists: themes in UK bird conservation

The enlarged Red list contains a wide range of species. Some are likely to be Red-listed for reasons external to the UK. For example, the status of the two Globally Threatened species, Balearic Shearwater and Aquatic Warbler, are unlikely to be affected by changes within the UK. The same is likely to be true for some rare migrant species, for which the availability of habitat of suitable quality seems unlikely to be limiting UK populations. Nonetheless, it is easy to identify a number of themes running through the new list which reflect concerns in UK conservation both new and old.

The first *BoCC* assessment recognised the decline of farmland birds in the UK, and there has been little change since, even though one species, the Reed Bunting, has now moved from Red to Amber. Of 19 species contributing towards the UK Farmland Bird Indicator (www.defra.gov.uk/ENVIRONMENT/statistics/wildlife/kf/wdkf03.htm), ten are now Red-listed (with the addition of Lapwing and Yellow Wagtail *Motacilla flava* to the Red list in this review), with nine of these ten considered farmland specialists. Farmland birds have been the recipients of much research, to establish the precise, species-specific causes of decline and then identify suitable remedial action for population recovery (e.g. Vickery *et al.* 2004). Despite this, the delivery of this action through Government-funded agri-environment schemes has in many cases failed to initiate species recovery, and there is growing concern that some species continue to decline.

BoCC2 highlighted the declines in woodland birds, with eight woodland species Red-listed in 2002 (using species-habitat classifications given by Gibbons *et al.* 1993). In 2009, another four woodland birds have joined the list: Tree Pipit, Wood Warbler, Lesser Redpoll and Hawfinch *Coccothraustes coccothraustes*. Two further (Amber-listed) species, Common Nightingale *Luscinia megarhynchos* and Pied Flycatcher *Ficedula hypoleuca*, showed declines of 49% between 1994 and 2006, so only just escape Red-listing. Our knowledge of the drivers of woodland bird declines is more rudimentary than that for farmland species. Although potential causes have been identified (e.g. Fuller *et al.* 2005), more research is needed to determine which are affecting which species, and then to identify potential management

methods, in woodlands or more broadly, to counter these impacts.

A complication when considering declines in breeding birds of woodland, farmland and other habitats is the influence of factors away from the breeding grounds. Five of the 18 newly Red-listed species (Common Cuckoo *Cuculus canorus*, Tree Pipit, Yellow Wagtail, Wood Warbler and Golden Oriole *Oriolus oriolus*) are Afro-Palaearctic migrants, joining a further 13 migrants Red-listed already (thus 35% of all Red-listed species). Of 50 UK breeding species classified as long-distance migrants by Sanderson *et al.* (2006), 18 (36%) were Red-listed, 25 (50%) Amber-listed and just seven (14%) Green-listed by *BoCC3*: this is significantly more Red-listed and fewer Green-listed species than would be expected by chance ($\chi^2 = 8.1$, 2 df, $P \leq 0.05$). Sanderson *et al.* found that, across Europe, inter-continental migrants showed significantly worse trends between 1970 and 1990 than short-distance migrants or resident species.

The causes of migrant declines might include degradation or loss of habitat on sub-Saharan wintering grounds, degradation or loss of staging areas, hunting pressure in southern Europe and North Africa, and climate change (Ewing 2008). However, determining the causes of decline is difficult, and complicated by pressures on the breeding grounds (e.g. although seven woodland migrants are Red-listed, so are seven resident woodland species) and possibly by interactions between influences on both the breeding and the non-breeding grounds.

The influence of climate change is beginning to be felt in the UK, and some of the changes in the *BoCC3* lists probably reflect this. Following decades of year-on-year increases in many of our wintering waterbirds, in response to better flyway-level protection (e.g. reduced hunting pressure and a network of well-maintained protected sites), some species have now begun to decline. *BoCC2* saw Dunlin Amber-listed following a moderate decline and now, just seven years later, it has been moved to the Red list owing to a 51% decline over the longer-term period. At the race level, 'European White-fronted Goose' *A. a. albifrons* has been Red-listed because of population decline, and species such as Mallard *Anas platyrhynchos*, Pochard *Aythya ferina* and Purple Sandpiper have been Amber-listed. These declines may not necessarily be due to declining populations (although it is possible

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that they may be), but may reflect a shift in distribution as milder winters enable populations to winter farther north and east, nearer to breeding grounds. Rehfishch *et al.* (2004) demonstrated such shifts for wader populations, including Purple Sandpiper and Dunlin, on non-estuarine coastlines.

The Red-listing of Greater Scaup is due to the disappearance of large wintering flocks attracted to sewage and distillery waste discharges on the east coast of Scotland, before the removal of these food sources in the late 1970s (Campbell 1984). Recent improvements in the generation of waterbird trends mean that only now are we able to produce a trend for Greater Scaup; had

we been able to do so previously, it would have been Red-listed by earlier *BoCC* reviews.

Six of the newly Red-listed species are rare or scarce breeders for which the UK lies at the southern or western edge of their breeding range: Temminck's Stint *Calidris temminckii*, Ruff *Philomachus pugnax*, Whimbrel, Arctic Skua, Fieldfare and Redwing. Huntley *et al.* (2007) suggested that, on average, bird populations in Europe might shift their ranges north and east through the twenty-first century in response to climate change, as their 'climatic envelopes' (the climatic conditions that define their current range) move with projected climatic warming. They predicted

that the ranges of all six of the above species, plus those of Red-necked Phalarope *Phalaropus lobatus* and Common Scoter, might lie entirely to the north and east of the UK by 2080. Of course, there is a considerable degree of uncertainty in such predictions, both in terms of how the climate and habitats might change and then in terms of how the birds themselves will be able to respond, but, as with wintering birds, there is evidence that this process is already occurring. Green *et al.* (2008) found that changes in climate could explain a significant amount of the variation in trends of rare breeding birds in the UK since 1980, and that Temminck's Stint, Ruff, Fieldfare and Redwing all had declining trends in both climate suitability and population over the study period. Gregory *et al.* (2009) have extended the work in the UK to show a general population response of widespread European birds to projected climatic change.

Another theme with potential links to climatic



Mark Hamblin (rspb-images.com)

174. The Common Cuckoo *Cuculus canorus* is another of the long-distance migrants added to the Red list during the *BoCC3* review as a result of the serious decline in breeding populations in the UK, of more than 50% in the past 25 years.

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change is declining seabird populations. In *BoCC3*, the number of Red-listed seabirds has grown from one to four with the addition of Balearic Shearwater, Arctic Skua and Herring Gull *Larus argentatus*. The decline of the Arctic Skua is particularly worrying; recent analyses suggest declines over 22 years, of 70% in Shetland and 77% in Orkney, driven by low productivity related to failures in sandeel *Ammodytes marinus* stocks (Parsons *et al.* 2006). Although the causes of crashes in sandeel numbers are poorly understood, they may be related to oceanographic changes, possibly driven by climatic change.

The fact that six species have moved from Red to Amber does give some slight cause for optimism. One species, the Scottish Crossbill, has moved not because of a change in status, but through knowledge of the population size following the first-ever survey. The apparent recovery of Common Quail (from historical decline) may not be due to a genuine improvement in status either. This migrant species shows massive between-year fluctuations in the numbers breeding in the UK, with occasional years of high abundance ('quail years'). The apparent increase that led to the downgrading may simply be due to the fact that a quail year (2005) fell within the recent five-year period used to calculate the trend.

However, two of the species that have moved from Red to Amber demonstrate what can be achieved if well-informed and adequately resourced conservation effort is directed at a species. Wood Lark has moved to the Amber list because of range expansion (accompanying an increase in numbers). This species has responded to improvements in the area and condition of lowland heathland and appropriate management of conifer plantations. Similarly, a recovery in the range of the Stone-curlew reflects the creation and management of suitable areas of semi-natural grassland, and the provision of suitable nesting plots within farmland. The latter requires a high level of ongoing funding, in the absence of which the population would undoubtedly decline (and contract in range) again. This prompts consideration of how to help such conservation-dependent species; if success brings a downgrading in priority and thus (potentially) a fall in funding, the progress made previously may be lost.

New directions: BoCC at race level

Although the main emphasis of this paper is a review of the status of the UK's bird species, comparable with those conducted previously, we have in addition produced the first *BoCC* lists of races occurring regularly in the UK.

The first finding from this exercise did not surprise us: that, compared with our knowledge of bird species, there are clear deficiencies in our knowledge of the distribution, numbers, population trends, ecology and conservation requirements of birds at the race, or subspecies, level. Outside taxonomic circles and groups with a passion for field identification, rather little attention has been paid to bird races in the UK, and this holds true in conservation circles, except in cases where it is felt that races may actually be hitherto unrecognised species, for example taxa in the Common Chiffchaff *Phylloscopus collybita* and large white-headed gull complexes (Helbig *et al.* 1996; Collinson 2001). Indeed, the very validity of some races currently recognised in the UK is uncertain. Thus, while we recognise the limitations of resources, we would encourage the BOURC Taxonomic Sub-committee to clarify the validity of a number of taxa that some authorities maintain are not only diagnosable but also occur in the UK with regularity and in internationally important numbers.

Of course, there are good reasons to target conservation resources at the species rather than the race level, but as conservationists we are also keen to recognise and preserve biological and genetic diversity at all scales, this goal being enshrined in the Convention on Biological Diversity (www.cbd.int/). There are also considerable practical difficulties in studying (and conserving) races, not least in their identification under field conditions. We perceive a tendency for non-taxonomists, professional conservationists included, to disregard those races that do not differ markedly from one another in the field, although such practicality is hard to avoid. A focus at race level has two important consequences. Firstly, it highlights the fact that the UK is home to a number of endemic races and holds internationally important populations of many others. A considerable number of these are declining and several endemics could even be at the risk of extinction in the UK, and hence globally.

Secondly, reference to racial identity allows us to be more discriminating in our assignment

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of status. The status of individual races within the same species may differ widely, perhaps because they occupy different geographical areas and are exposed to very different threats and opportunities. Drawing these distinctions can only serve to help target action more precisely and efficiently. For example, while at the species level the Black-tailed Godwit is Red-listed, race-level listing allows us to distinguish between concern for the depleted numbers of the nominate race *L. l. limosa*, which is a now a rare breeder in southern Britain (and declining elsewhere in its range), and the Icelandic breeding *L. l. islandica*, which has increased massively in recent decades (and is Amber-listed by this review owing to its localisation and international importance in the UK). This was recognised by the review of bird priorities for the UK BAP at race level, which priority-listed many of the races Red-listed by this review. We hope that by presenting Red, Amber and Green lists for races in this paper, we may encourage work to fill knowledge gaps (thus ensuring that future assessments might be more robust) and stimulate debate on the importance of bird races in the UK and the correct taxonomic level at which to set conservation priorities.

The future

The *BoCC3* lists should provide a valuable basis for setting conservation priorities in the UK, alongside other references such as the UKBAP priority list. As stated before, such lists should not be considered in isolation, but decisions should reflect a wider range of considerations. There are a number of Red-listed species for which UK-based action seems futile (e.g. Savi's Warbler *Locustella luscinioides*), other than adequate monitoring, but we hope that this review prompts a speedy response to the deterioration in the status of such iconic species as the Lapwing and Cuckoo, and the lack of recovery in species such as the Sky Lark and Turtle Dove.

We recommend that *BoCC* reviews continue at regular intervals to allow conservation priorities to be updated and hence remain relevant, and that support for the excellent monitoring programmes that underpin such reviews is continued and, where possible, enhanced.

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