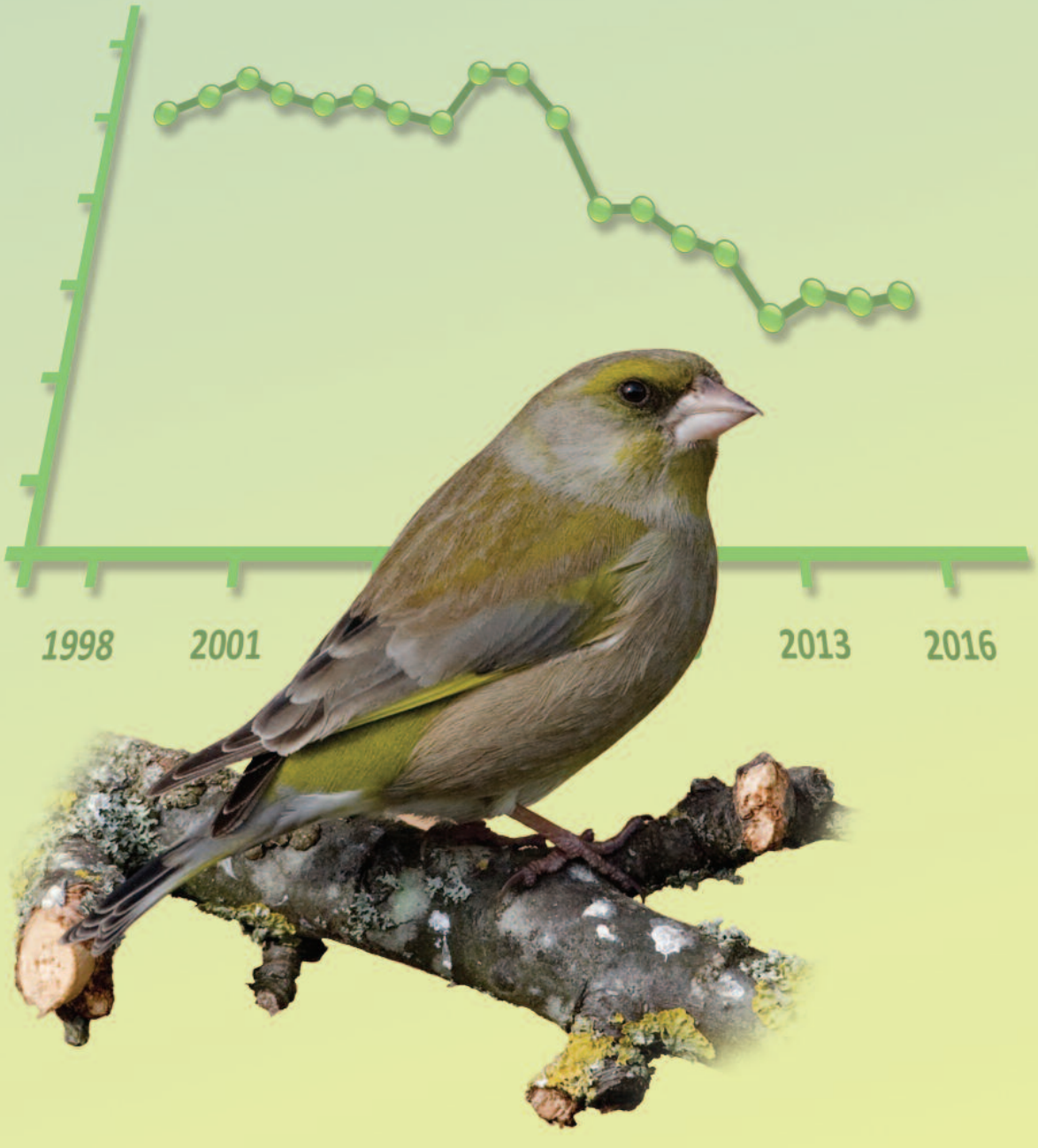
Countryside Bird Survey Report

1998–2016



CBS

Countryside Bird Survey

Summary

The Countryside Bird Survey (CBS) has been in operation since 1998. Its primary aim is to monitor breeding bird populations in the Republic of Ireland.

A random sample of 10 km squares was selected, and within each, the most southwesterly 1 km square is surveyed twice during each breeding season. Bird numbers are counted along two roughly parallel 1km transects in each square.

This report summarises the results for the 19-year period between 1998 and 2016.

- A total of 401 squares has been surveyed, with between 259 and 325 squares covered in any one season.
- The total number of species recorded was 158. This includes 53 species that occurred in 30 or more squares and that are eligible for meaningful trend analyses, of which 20 are species of conservation concern in Ireland.
- Wren *Troglodytes troglodytes*, Robin *Erithacus rubecula,* Blackbird *Turdus merula* and Chaffinch *Fringilla coelebs* were the most widespread occurring species, being found in 90% or more of squares, while Rook *Corvus frugilegus,* Starling *Sturnus vulgaris* and Wren were the most abundant.
- Overall, 26 species showed increasing trends, 12 species declined, while the remaining 15 species remained relatively stable. Greatest increases were seen in Blackcap *Sylvia atricapilla* and Goldfinch *Carduelis carduelis.* Greatest declines were in Greenfinch *Chloris chloris,* Stock Dove *Columba oenas* and Swift *Apus apus.*
- The trend results have shown that species affected by the three cold winters between 2009/10 and 2011/12 inclusive have all shown varying levels recovery. Index values for Skylark *Alauda arvensis*, Meadow Pipit *Anthus pratensis* and Stonechat *Saxicola torquata* have returned to or now exceed baseline levels in 1998.
- Ireland's national-level trends are broadly consistent with those presented for Europe overall in terms of the overall trend result, but the specific patterns of change differ greatly.
- The value of the CBS continues to deliver a range of functions alongside its primary objectives of monitoring Ireland's common and widespread breeding bird populations.

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An Roinn Ealaíon, Oidhreachta, Gnóthaí Réigiúnacha, Tuaithe agus Gaeltachta

Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs

Introduction

The status of Ireland's terrestrial breeding bird populations prior to 1998 is not fully known, although two breeding bird atlases, undertaken between 1968 and 1972 (Sharrock 1976) and between 1988 and 1991 (Gibbons *et al.* 1993), showed that some severe range contractions had taken place over the twenty-year span. This in turn had implications for changes in population levels. The declines in distribution range of several farmland bird species coincided with a period of increased agricultural intensification and land use change. Similar declines in bird populations occurred throughout Europe over the same period, and were attributed to agricultural intensification which was brought about by increased demand for agricultural productivity following the Second World War (Krebs *et al.* 1999, Donald *et al.* 2001). A third breeding atlas produced for the period 2007 to 2011 (Balmer *et al.* 2013) has shown ongoing declines in some species, but that other factors are also playing a role in influencing distributions, in particular climate change.

Agriculture continues to occupy the largest proportion (almost two-thirds) of Ireland's land surface area (Department of Agriculture and Food 2008), with the remaining land area consisting mostly of peatland (14% of total land area, Connolly *et al.* 2007) and woodland and forests (9%, Anon. 2007). It is perhaps as a consequence of a long history of a continuously changing environment that the majority of Ireland's countryside birds are habitat generalists. They have adapted and occur in a variety of habitats and many are very widely distributed. Thus, it is difficult to detect subtle changes in status.

The Countryside Bird Survey (CBS) was initiated in 1998 with the primary objective of monitoring the trends of these common and widespread breeding bird species in the Republic of Ireland. It is an annual survey that employs the efforts of around 200 observers each year, and results are summarized and published every three years. To date it has shown that changes in relative abundance in many species have been broadly stable or increasing, but for some species, such as Skylark, Swift and Greenfinch, the declines are continuing. This report presents a summary of the results of the CBS over the 19-year period from 1998 to 2016 inclusive.


Dick Coombes

Skylark.
Declining species, although showing some recovery since 2011.

Methods

The CBS uses a line-transect method. Two bird-recording visits to each survey square per year are undertaken. These visits are timed so that the first is in the early part of the breeding season (April to mid-May) and the second at least four weeks later (from mid-May to the end of June). This reflects the abundance of residents and early migrants, which tend to be more easily detected on the first visit, and later migrants, which are more abundant in the second visit. Observers are asked to begin their counts between 06:00 and 07:00 hours to coincide with maximum bird activity, but to avoid concentrated song activity at dawn. Observers are also encouraged to record only adult birds they see or hear as they walk along their transect routes. Bird counts in heavy rain, poor visibility, or strong winds are discouraged. Survey work has been undertaken during all seasons since 1998, but was prevented in 2001 by foot-and-mouth restrictions. Population trends were produced for the Republic of Ireland and were also produced for each of the eight sampling regions (Fig. 1). Full details on the survey design and production of species indices are presented in the Appendix.

The CBS is largely targeted at monitoring species with widespread distributions across the island. Accordingly, many of the colonial-nesting species, such as the seabirds whose breeding distributions are largely confined to coastal wetlands or to inland lakes, and/or dispersed and shy or skulking species with sparse distributions such as breeding Curlew and Snipe are not adequately monitored using the CBS methodology. Trends for these species are not presented here.

The scientific names of all species mentioned are given in Tables 1 and 2.

Results

Coverage

The CBS continues to be undertaken by a combination of BirdWatch Ireland volunteers and professional staff of the National Parks and Wildlife Service and BirdWatch Ireland. A total of 607 observers have taken part in the CBS between 1998 and 2017.

In total, 401 1-km squares have been surveyed between 1998 and 2016 (Fig. 1), all of which have been surveyed in two or more years. The number of squares covered in any one season ranged from 259 in 1998 to 325 in 2000. Overall, 16% of squares were covered in all 18 years, 49% of squares were covered in at least 15 years and 82% of squares in 10 years or more.

Species

A total of 158 species was recorded between 1998 and 2017. Of this total, 53 species were recorded in 30 or more squares and were included in trend analyses (Table 1). This excludes three species that met the 30-square threshold but which are not adequately monitored by the CBS, namely Snipe, Lesser Black-backed Gull and Herring Gull. The list of monitored species includes three that are Red-listed on the *Birds of Conservation Concern in Ireland* (Colhoun and Cummins 2013), Meadow Pipit, Grey Wagtail and Yellowhammer, and a further 17 that are Amber-listed.

A further 16 breeding bird species that occurred in between 5 and 20 squares is presented in Table 2. It includes Golden Plover, Lapwing and Curlew, all of which are Red-listed (Colhoun and Cummins 2013), and a further eight species which are Amber-listed. Other species recorded are presented in Appendix 2.

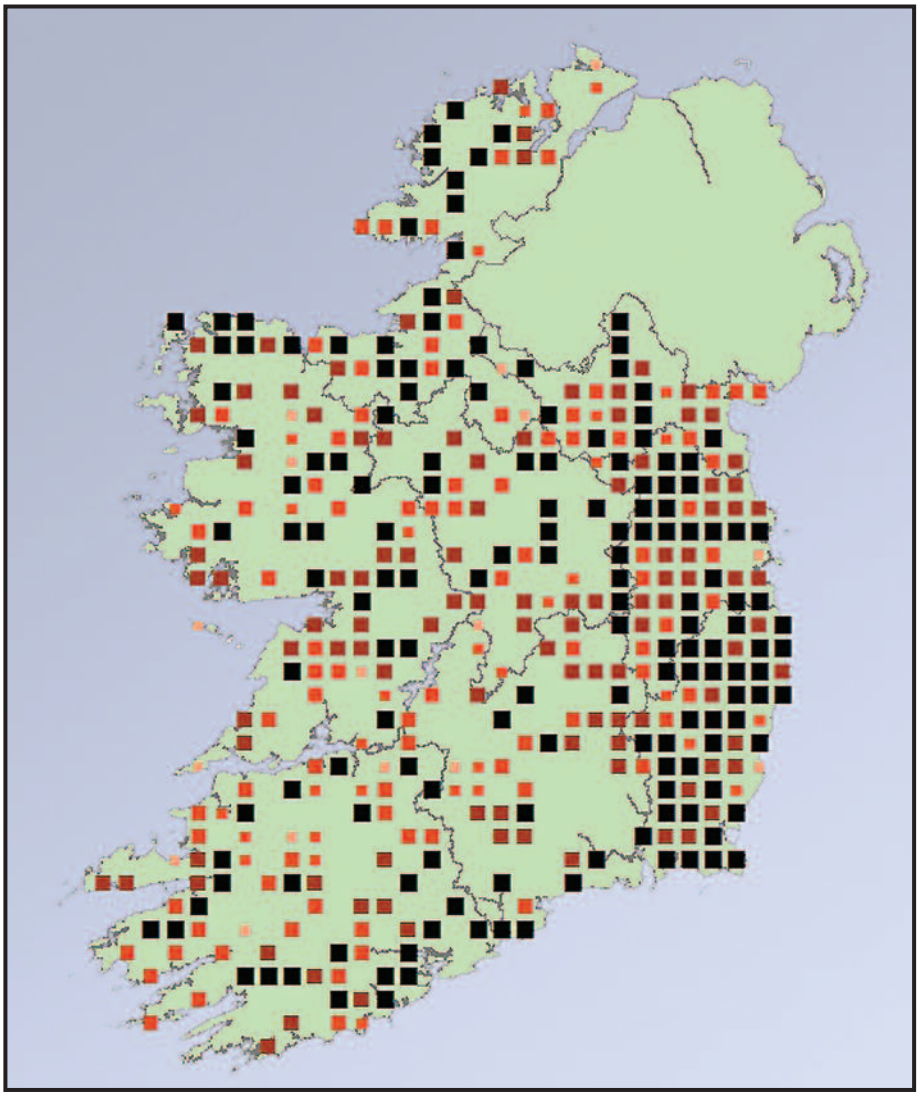

Figure 1. Map showing coverage during the CBS between 1998 and 2016, illustrating the eight sampling regions, also showing the extent of coverage within each ranging from best coverage (largest and darkest squares, 15-18 years) through to poor coverage (smallest lightest-coloured squares, 2-5 years).

As indicated above, species occurring in on average 30 squares during the course of the CBS are included in trend analyses, and from one reporting period to the next, this list has not changed greatly. However, there are several species on the cusp of this threshold, of which just Spotted Flycatcher was excluded from the present analyses as it was present in 29 squares on average. Closer inspection of the patterns of occurrence shown (number of squares each year) indicates that Spotted Flycatcher and Stock Dove are on balance occurring in fewer squares each year, and that if these patterns continue then these species may (continue to) be excluded from future analyses (Fig. 2). There were no discernible patterns in the occurrence of all other species occurring in 25 to 35 squares, which were instead shown to fluctuate. However, consistent and ongoing increases in the spread of records of Buzzard, Siskin and Jay mean that these species will undoubtedly be included in analyses in the very near future (Fig. 2).

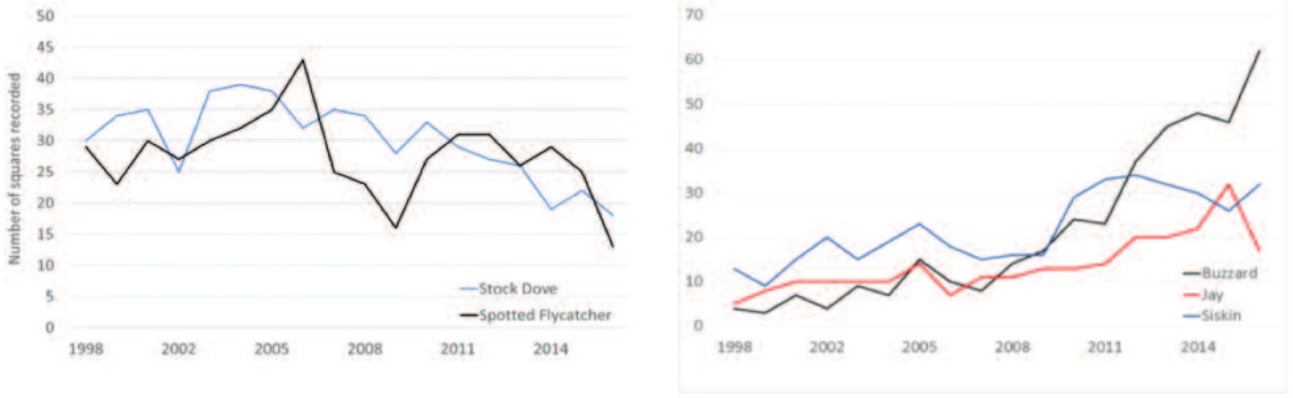

Figure 2. Frequency of occurrence of a selection of species (number of squares each year), illustrating declining patterns in Stock Dove and Spotted Flycatcher (left graph) and increasing patterns in Buzzard, Jay and Siskin (right graph).

Of the monitored species (Table 1), Wren was the most widespread occurring in 96% of squares, followed by Robin, Blackbird and Chaffinch, with all of these species occurring in at least 90% of squares. Mean abundance was by far the highest in Rook (33 per square) followed by Starling, Wren, Woodpigeon and Jackdaw.

A total of 12 species were shown to decline between 1998 and 2016, while 26 species increased and the remaining 15 species were stable (Table 1). Increasing trends were by far the greatest in Blackcap followed by Goldfinch, and both species were classified as strongly increasing (Fig. 3). All remaining increasing trends were classified as moderately increasing, and were highest in Redpoll, Collared Dove and Chiffchaff.

Figure 3. Selection of increasing trends shown between 1998 and 2016, illustrating patterns of change in Blackcap, Goldfinch, Redpoll, Collared Dove, whose trends showed the greatest increases overall. Note that the index scales (y-axis) differ between figures.

Table 1. Species recorded in 30 squares or more during the CBS between 1998 and 2017, indicating the mean number and proportion of squares in which each species was recorded, mean abundance per square and the mean annual change (trend). Where the trend has changed when compared with the last report (to 2013), an indication of the direction is given. Red- and amber-listed species of Birds of Conservation Concern in Ireland (BoCCI) are also indicated. Significant trends are represented by asterisks. A ** indicates a highly significant trend (p<0.01), and * of moderate significance (p<0.05).

Species		BoCCI[1]	Mean squares (%)	Mean abundance[2]	Mean change[3]	Change in trend[4]
Mallard	*Anas platyrhynchos*		89 (29.2)	4	1.32**	+
Pheasant	*Phasianus colchicus*		241 (79.4)	4	1.59**	
Grey Heron	*Ardea cinerea*		60 (19.8)	2	-2.23**	
Sparrowhawk	*Accipiter nisus*	A	30 (10)	1	-0.66	
Kestrel	*Falco tinnunculus*	A	37 (12.2)	1	-3.26**	
Moorhen	*Gallinula chloropus*		36 (11.9)	2	-0.2	
Feral Pigeon	*Columba livia*		37 (12)	7	1.99*	+
Stock Dove	*Columba oenas*	A	30 (10)	3	-4.76**	
Woodpigeon	*Columba palumbus*		271 (89.4)	14	1.78**	
Collared Dove	*Streptopelia decaocto*		65 (21.5)	3	4.55**	
Cuckoo	*Cuculus canorus*		74 (24.4)	2	0.96*	+
Swift	*Apus apus*	A	37 (12.2)	4	-4.67**	
Magpie	*Pica pica*		253 (83.5)	5	-1.07**	-
Jackdaw	*Corvus monedula*		227 (74.7)	14	1.77**	
Rook	*Corvus frugilegus*		246 (81.2)	33	0.41	+
Hooded Crow	*Corvus cornix*		242 (79.9)	4	1.97**	
Raven	*Corvus corax*		70 (22.8)	2	-0.75	+
Goldcrest	*Regulus regulus*	A	154 (50.6)	3	-0.26	+
Blue Tit	*Cyanistes caeruleus*		243 (80)	5	0.68**	
Great Tit	*Parus major*		223 (73.4)	4	2.88**	
Coal Tit	*Periparus ater*		179 (59.1)	3	1.48**	
Skylark	*Alauda arvensis*	A	124 (40.8)	6	-1.12**	
Sand Martin	*Riparia riparia*	A	33 (10.9)	9	-1.93	
Swallow	*Hirundo rustica*	A	271 (89.4)	12	-0.08	
House Martin	*Delichon urbicum*	A	94 (31)	5	2.03**	
Long-tailed Tit	*Aegithalos caudatus*		52 (17.2)	3	-0.12	
Chiffchaff	*Phylloscopus collybita*		138 (45.6)	3	4.21**	
Willow Warbler	*Phylloscopus trochilus*		223 (73.6)	7	3.78**	
Blackcap	*Sylvia atricapilla*		116 (38)	3	17.38**	
Whitethroat	*Sylvia communis*		67 (22.1)	2	2.01**	
Grasshopper Warbler	*Locustella naevia*		38 (12.6)	2	0.94	-
Sedge Warbler	*Acrocephalus schoenobaenus*		66 (21.9)	3	0.64	
Wren	*Troglodytes troglodytes*		293 (96.5)	15	0.6**	+
Starling	*Sturnus vulgaris*	A	220 (72.5)	16	-0.41	+
Blackbird	*Turdus merula*		284 (93.6)	13	0.94**	
Song Thrush	*Turdus philomelos*		259 (85.3)	5	-0.4	+
Mistle Thrush	*Turdus viscivorus*	A	134 (44.3)	2	-1.03**	
Robin	*Erithacus rubecula*	A	284 (93.6)	10	-0.9**	
Stonechat	*Saxicola torquatus*	A	64 (20.9)	2	-2.71**	
Wheatear	*Oenanthe oenanthe*	A	31 (10.1)	3	0.04	
Dunnock	*Prunella modularis*		229 (75.6)	4	1.29**	+
House Sparrow	*Passer domesticus*	A	150 (49.5)	8	3.39**	
Grey Wagtail	*Motacilla cinerea*	R	37 (12.1)	2	-6.07**	
Pied Wagtail	*Motacilla alba*		156 (51.3)	2	2.1**	+
Meadow Pipit	*Anthus pratensis*	R	177 (58.3)	9	-1.31**	
Chaffinch	*Fringilla coelebs*		279 (92)	10	1.89**	
Greenfinch	*Chloris chloris*	A	165 (54.4)	4	-4.19**	
Goldfinch	*Carduelis carduelis*		146 (48.2)	4	6.57**	
Linnet	*Carduelis cannabina*	A	126 (41.5)	5	0.31	
Redpoll	*Carduelis flammea*		61 (20.1)	4	5.13**	
Bullfinch	*Pyrrhula pyrrhula*		139 (45.8)	3	3.49**	
Yellowhammer	*Emberiza citrinella*	R	76 (25.2)	5	0.24	
Reed Bunting	*Emberiza schoeniclus*		90 (29.6)	2	1.04*	+

[1] From the Birds of Conservation Concern in Ireland (Colhoun and Cummins 2013)
[2] Based on squares where the respective species were present only
[3] Mean annual change per year
[4] Compared with that published in the last report (Crowe *et al.* 2014). A '+' indicates an improvement in trend, from significantly declining to stable or from stable to significantly increasing, while a '-' indicates the converse.

Table 2. Other breeding birds that were recorded during the CBS between 1998 and 2017 but not included in trend analyses, indicating the mean number and proportion of squares in which each species was recorded and mean abundance per square. They include species that were recorded in between 5 and 30 squares. Refer to footnotes given under Table 1. Species recorded in less than five squares on average are listed in Appendix 2.

Species		BoCCI	Mean squares	Mean abundance
Mute Swan	*Cygnus olor*	A	21 (7)	4
Cormorant	*Phalacrocorax carbo*	A	23 (7.7)	3
Little Grebe	*Tachybaptus ruficollis*	A	5 (1.7)	2
Buzzard	*Buteo buteo*		21 (6.9)	2
Coot	*Fulica atra*	A	7 (2.2)	2
Oystercatcher	*Haematopus ostralegus*	A	7 (2.2)	5
Golden Plover	*Pluvialis apricaria*	R	6 (1.8)	15
Lapwing	*Vanellus vanellus*	R	12 (3.9)	2
Curlew	*Numenius arquata*	R	26 (8.6)	2
Common Sandpiper	*Actitis hypoleucos*	A	7 (2.2)	2
Jay	*Garrulus glandarius*		14 (4.5)	2
Treecreeper	*Certhia familiaris*		24 (7.8)	1
Dipper	*Cinclus cinclus*		6 (1.9)	1
Spotted Flycatcher	*Muscicapa striata*	A	28 (9.1)	2
Tree Sparrow	*Passer montanus*	A	15 (5.1)	4
Siskin	*Carduelis spinus*		22 (7.2)	3

It is interesting to note that the pattern of increase most of these species seems to have abated since 2012 (Fig. 3), and their trends have since shown fluctuations. This is especially notable for Blackcap and Goldfinch which have shown remarkable increases throughout the course of the CBS.

Meanwhile, all declining trends were classified as moderately declining, and were greatest in Greenfinch, Stock Dove and Swift (Fig. 4). The ongoing decline that has been shown in Greenfinch seems to have levelled out since 2013, while the decline in the latter two species is continuing. The decline in Grey Wagtail was also significant (Fig. 4), although further detailed inspection of the trend pattern clearly

Grasshopper Warbler. A difficult species to see – the 'fisherman's reel' song best heard in calm weather.

Dick Coombes

illustrates that numbers of this species are showing some recovery following the cold winters of 2009/10 to 2011/12. Meanwhile, numbers of other species reported previously as being adversely affected by the cold winters, namely Stonechat, Goldcrest, Skylark and Meadow Pipit, have all recovered at least to baseline levels (Fig. 5).

When compared with the last report (Crowe *et al.* 2014), the status of 12 species has improved (namely Mallard, Feral Pigeon, Cuckoo, Rook, Raven, Goldcrest, Wren, Starling, Song Thrush, Dunnock, Pied Wagtail, Reed Bunting), while the status of two species dis-improved (Magpie and Grasshopper Warbler).

On balance, the 1998 to 2016 period had the greatest number of significant trends, and conversely the smallest number of species showing stable trends. This period supported the greatest number of species showing increasing trends.

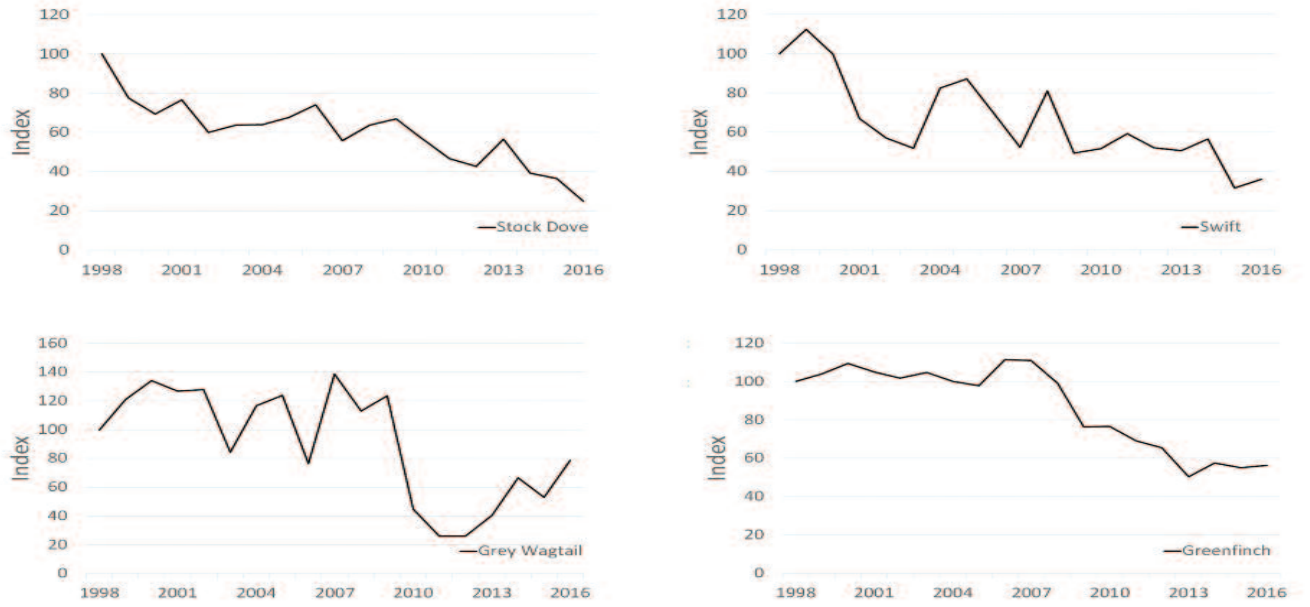

Figure 4. Trends in a selection of species that have been shown to greatest declines. Note that the index scales (y-axis) differ between figures.

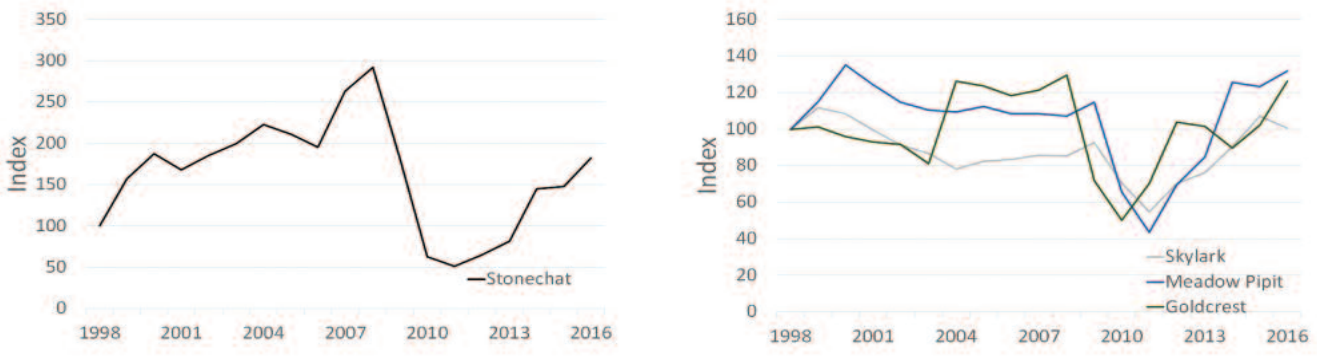

Figure 5. Trends in species previously reported as affected by severely cold winters 2009/10 to 2011/12, showing apparent recovery.

Figure 6. Trends in a selection of species groups (or species with similar ecological requirements) between 1998 and 2016. Note that the index scales (y-axis) differ between figures.

Dick Coombes

Reed Bunting. Showing a moderate increase.

John Fox

Goldfinch.
Increasing throughout most of survey period, with signs of stabilising from 2012 onwards.

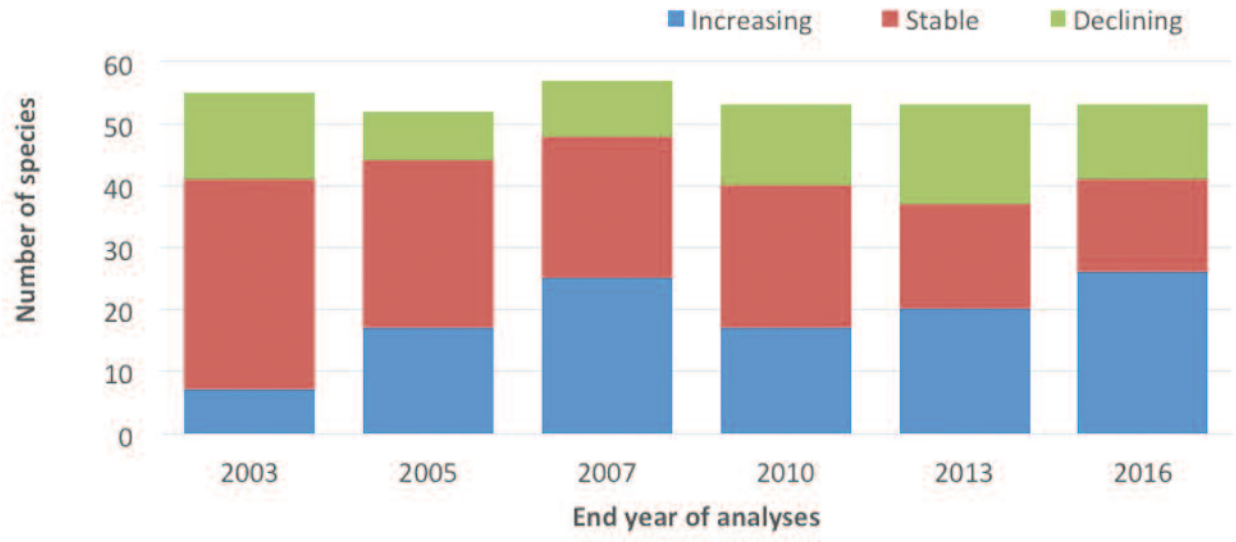

Figure 7. Histogram demonstrating change in trend patterns during the course of the CBS, illustrating the number of species showing increasing, declining and stable trends in each year where detailed analyses were undertaken.

Discussion

Now, 19 years on, the CBS continues to deliver meaningful assessments of the status of birds in Ireland. The results for the 1998 to 2016 period demonstrate that the status of bird populations on balance has improved since the late 1990s, with the greatest number of increasing populations relative to previous reports. It must be highlighted that this follows on from significant declines in range and abundance of common and widespread birds during the 1970s and 1980s across Britain and Ireland (Donald *et al.* 2001, Balmer *et al.* 2013).

This report highlights the ongoing increase in Blackcap and Goldfinch, although the rate of increase has certainly declined in recent years with a levelling off in relative abundance. There have been consistently reported increases in trends shown in several other species in the past three reporting periods including the present period (1998–2010, 2013, 2016), namely in Pheasant, Woodpigeon, Blackbird, Willow Warbler, Coal Tit, Great Tit, Hooded Crow, House Sparrow, Redpoll and Bullfinch.

However, there were also many significant declines, which are ongoing in Grey Heron, Swift, Meadow Pipit, Robin and Greenfinch, all of which have showed declines in the last three reports (1998–2010, 2013, 2016). Kestrel, Stock Dove, Skylark, Grey Wagtail and Stonechat have shown declines in the more recent two of these three reporting periods. Of these significantly declining species, the following observations are noted:

- The decline in Kestrel, Swift and Stock Dove are ongoing.

- The decline in Greenfinch seems to have halted and numbers have been stable in recent years.

- The species that were affected by the cold winters, namely Meadow Pipit, Skylark, Grey Wagtail and Stonechat are clearly showing recovery.

- Numbers of Robin have shown ongoing decline. However, it seems that they, along with some other songbirds, have also been affected by the cold winters. Perhaps soil invertebrates (in particular earthworms) were also affected by the cold spell, thereby causing a knock-on impact on the bird species which forage on them. It will be important to monitor its recovery in the coming years.

- Our ability to accurately monitor the status of colonial nesting Grey Heron through the CBS is not possible.

There has been a remarkable recovery in numbers of almost all of the species which were affected by the cold winters (2009-2011).

Dick Coombes

Blackcap. Showing ongoing increase throughout the CBS, although numbers have broadly stabilised since 2012

Relative abundance of Stonechat has returned to similar levels recorded between 1999 and 2001. Skylark and Meadow Pipit have returned to former peak levels, and it will be interesting to track patterns of change of both of these species in the near future to assess whether or not the direct impact of this cold weather period has affected their respective populations overall. For example, while Stonechat and Meadow Pipit range appears to have recovered and exceeds that recorded during the first years of the survey, Skylark is present in proportionally fewer squares, just 82% of the total reported in 1998.

Stonechat. Their numbers are once again back on track, showing ongoing increase since 2012

Interestingly, the overall trend results shown for the CBS are consistent with those at a wider European scale when compared with the overall Pan European Bird Monitoring Scheme trends for Europe , although the patterns of change over time are markedly different. This is perhaps not unexpected given that Ireland supports a relatively small proportion of the European total overall of common and widespread breeding bird populations. Therefore it would not be expected that the specific patterns of change identified above would significantly influence their trends at the wider scale.

The CBS continues to deliver on the status of Ireland's common and widespread breeding birds, and with the increasing time-series is continually proving to be of value in a broad variety of ways. Not only does it successfully deliver on the status and trends, but the information gathered is also contributing towards the development of population estimates (Crowe *et al.* 2014), it continues to be used in ongoing updates to the status assessments at European scale (http://www.ebcc.info/index.php?ID=612) and in the development of indicators (Gregory *et al.* 2005, Crowe *et al.* 2012). Furthermore, the data are being increasingly used in a range of wider research assessments, especially those related to shifting distribution patterns that are possibly influenced by climate factors (Gregory *et al.* 2009, Stephens *et al.* 2016).

Acknowledgements

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Appendix 1

Survey design, field methods & analyses

The CBS is based on a random stratified approach. The Republic was divided into eight regions, and 10 km squares (based on the Irish National Grid) were randomly selected within each, and allocated in sequence. For each 10 km square selected, the 1 km square at the extreme southwest corner is surveyed. Those with less than 50% land, e.g. coastal areas or lake shores, have been excluded, leaving some 700 possible survey squares.

The survey aims to achieve coverage of the same 1 km squares each year, ideally by the same observer, although there is likely to be some changeover of survey participants. The ideal survey route within each 1 km square comprises two parallel lines, each 1 km in length about 500 m apart and about 250 m from the edge of the square. For practical reasons there is often deviation from the ideal route. Each 1 km transect is divided into five 200 m sections, at which level all information is collected.

Three visits to each survey square per year are undertaken. During a reconnaissance visit, the transect routes are planned and habitat information recorded. Habitat data are recorded using codes from an established hierarchical system common to a range of bird surveys in the UK (Crick 1992). Bird counts are undertaken on the second and third visits.

The total numbers of adult birds of each species detected in each 1 km square were calculated for each year. The maximum of the two counts (from early and late visits) was used as the annual measure of relative abundance for each species. Annual population indices were calculated using TRIM (Trends & Indices for Monitoring Data), a program used for the analysis of time series of counts with missing observations (Pannekoek and van Strien 1996). Counts are modelled as a function of square (site) and year effects, with interpolated estimates for site-year combinations with missing data. The stratified sampling design results in unequal representation of regions across Ireland, so annual counts were weighted by the inverse of the proportion of the area of each region that was surveyed that year.

Population trends for species occurring on a mean of 30 or more squares over the duration of the survey were estimated by examining the overall rate of annual change, as caution is urged because of the low precision associated with sample sizes smaller than 30 (Joys *et al.* 2003).

Population change is usually displayed in the form of indices, where the results from one season are set to some arbitrary figure, usually 1 or 100, and index values are calculated for all other seasons according to how each relates to the base season. A constant rate of decline is exponential when illustrated. For example, if a population is declining by 50% each year, then if the initial index is 1, the index at timepoint 2 is 0.5, at timepoint 3 is 0.25. If the population doubles each year, the index values for the respective timepoints are 2, 4 and 8. Index values are thus measures of relative abundance for a species, and usually the relationship between this and the absolute abundance is unknown.

The mean annual change was estimated by fitting a regression line through the data. Trends were calculated across all habitats. Trends were also produced for a number of bird groups (defined by species of similar habits and habitats) by calculating the geometric means of the annual indices of the respective species.

Cuckoo.
Scarce, but easily picked up at long range by its distinctive song.

Appendix 2

Other birds recorded that breed in Ireland:

- Canada Goose *Branta canadensis*
- Shelduck *Tadorna tadorna*
- Gadwall *Anas strepera*
- Teal *Anas crecca*
- Tufted Duck *Aythya fuligula*
- Common Scoter *Melanitta nigra*
- Red-breasted Merganser *Mergus serrator*
- Goosander *Mergus merganser*
- Quail *Coturnix coturnix*
- Red-legged Partridge *Alectoris rufa*
- Red Grouse *Lagopus lagopus scoticus*
- Grey Partridge *Perdix perdix*
- Little Egret *Egretta garzetta*
- Great Crested Grebe *Podiceps cristatus*
- Red Kite *Milvus milvus*
- Hen Harrier *Circus cyaneus*
- Merlin *Falco columbarius*
- Peregrine *Falco peregrinus*
- Water Rail *Rallus aquaticus*
- Corncrake *Crex crex*
- Ringed Plover *Charadrius hiaticula*
- Snipe *Gallinago gallinago*
- Redshank *Tringa totanus*
- Woodcock *Scolopax rusticola*
- Rock Dove *Columba livia*
- Barn Owl *Tyto alba*
- Long-eared Owl *Asio otus*
- Kingfisher *Alcedo atthis*
- Great Spotted Woodpecker *Dendrocopos major*
- Chough *Pyrrhocorax pyrrhocorax*
- Carrion Crow *Corvus corone*
- Wood Warbler *Phylloscopus sibilatrix*
- Garden Warbler *Sylvia borin*
- Reed Warbler *Acrocephalus scirpaceus*
- Ring Ouzel *Turdus torquatus*
- Whinchat *Saxicola rubetra*
- Rock Pipit *Anthus petrosus*
- Twite *Carduelis flavirostris*
- Crossbill *Loxia curvirostra*

Breeding colonial seabirds:

- Fulmar *Fulmarus glacialis*
- Manx Shearwater *Puffinus puffinus*
- Gannet *Morus bassanus*
- Shag *Phalacrocorax aristotelis*
- Great Skua *Stercorarius skua*
- Black Guillemot *Cepphus grylle*
- Razorbill *Alca torda*
- Guillemot *Uria aalge*
- Little Tern *Sternula albifrons*
- Sandwich Tern *Sterna sandvicensis*
- Common Tern *Sterna hirundo*
- Arctic Tern *Sterna paradisaea*
- Kittiwake *Rissa tridactyla*
- Black-headed Gull *Chroicocephalus ridibundus*
- Meditteranean Gull *Larus melanolophus*
- Common Gull *Larus canus*
- Lesser Black-backed Gull *Larus fuscus*
- Herring Gull *Larus argentatus*
- Great Black-backed Gull *Larus marinus*

Wintering waterbirds:

- Whooper Swan *Cygnus cygnus*
- Greenland White-fronted Goose *Anser albifrons flavirostris*
- Greylag Goose *Anser anser*
- Feral/ hybrid goose *Anser* sp.
- Barnacle Goose *Branta leucopsis*
- Brent Goose *Branta bernicla*
- Wigeon *Anas penelope*
- Pintail *Anas acuta*
- Shoveler *Anas clypeata*
- Pochard *Aythya ferina*
- Red-throated Diver *Gavia stellata*
- Great Northern Diver *Gavia immer*
- Black-tailed Godwit *Limosa limosa*
- Bar-tailed Godwit *Limosa lapponica*
- Turnstone *Arenaria interpres*
- Knot *Calidris canutus*
- Ruff *Calidris pugnax*
- Sanderling *Calidris alba*
- Dunlin *Calidris alpina*
- Purple Sandpiper *Calidris maritima*
- Greenshank *Tringa nebularia*
- Jack Snipe *Lymnocryptes minimus*
- Whimbrel *Numenius phaeopus*

Other birds recorded that do not breed in Ireland:

- Short-eared Owl *Asio flammeus*
- Honey Buzzard *Pernis apivorus*
- Marsh Harrier *Circus aeruginosus*
- Goshawk *Accipiter gentilis*
- Turtle Dove *Streptopelia turtur*
- Fieldfare *Turdus pilaris*
- Redwing *Turdus iliacus*
- Brambling *Fringilla montifringilla*

Appendix 3

Other CBS resources available:

CBS reports and newsletters: http://bit.ly/2n1uNjh
CBS manual: http://bit.ly/2mtxHKw
CBS online data and trends: http://bit.ly/2mKKmcH

CBS

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