Countryside Bird Survey Report

1998-2013

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 1 km transects in each square.

This report summarises the results for the 16-year period between 1998 and 2013.

A total of 401 squares has been surveyed, with between 259 and 325 squares covered in any one season. Coverage was greatest in the east and southeast regions, and poorest in the northwest and south. Nonetheless, the number of squares covered regularly in each region was deemed adequate for meaningful analyses of the population trends of several species, including trends at a regional level.

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, 20 species showed increasing trends, 16 species declined, while the remaining 17 species remained relatively stable. Greatest increases were seen in Blackcap *Sylvia atricapilla* and Goldfinch *Carduelis carduelis*. Greatest declines were in Grey Wagtail *Motacilla cinerea*, Stonechat *Saxicola torquata*, Meadow Pipit *Anthus pratensis* and Greenfinch *Carduelis chloris*.

The trends have shown that species affected by the three cold winters between 2009/10 and 2011/12 inclusive have all shown some indication of recovery. Index values for Skylark *Alauda arvensis*, Meadow Pipit, Grey Wagtail and Stonechat were lowest in 2011 and have increase in 2012 and further in 2013.

The value of the CBS is highlighted on the basis of its importance in delivering on the status of a large proportion of Ireland's birds nationally (as part of the Birds of Conservation Concern in Ireland) and in Europe (as part of Article 12 reporting on the European Union Birds Directive). It is also highlighted in the context of a recent significant publication *Bird Atlas 2007-2011*, where there has been a high level of consistency in the results shown. There exists significant potential to use both surveys to further our understanding of the patterns of change in Ireland's common birds.

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An Roinn
Ealaíon, Oidhreachta agus Gaeltachta
Department of
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Introduction

The status of Ireland's terrestrial breeding bird populations prior to 1998 is not 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 alarming 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. Similar declines 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).

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 (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. This report presents a summary of the results of the CBS over the 16 year period from 1998 to 2013 inclusive.

Although affected by the cold winters between 2009 and 2011, Grey Wagtail numbers are now showing slight recovery

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 Appendix 1.

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 *Numenius arquatus* and Snipe *Gallinago gallinago* 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 530 observers took part in the CBS between 1998 and 2013.

In total, 401 squares have been surveyed between 1998 and 2013 (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, 20% of squares were covered in all 15 years, and 72% of squares in 10 years or more.

In terms of total numbers of squares covered, highest coverage has been in the southwest and western regions and lowest in the northeast and midlands regions (Fig. 2). However, in relative terms, coverage continues to be highest in the eastern regions, with an average 76% and 83% of available squares covered in the east and south-east regions respectively. Relative coverage has been poorest in the southern region (29% of total covered) and in all three western regions.

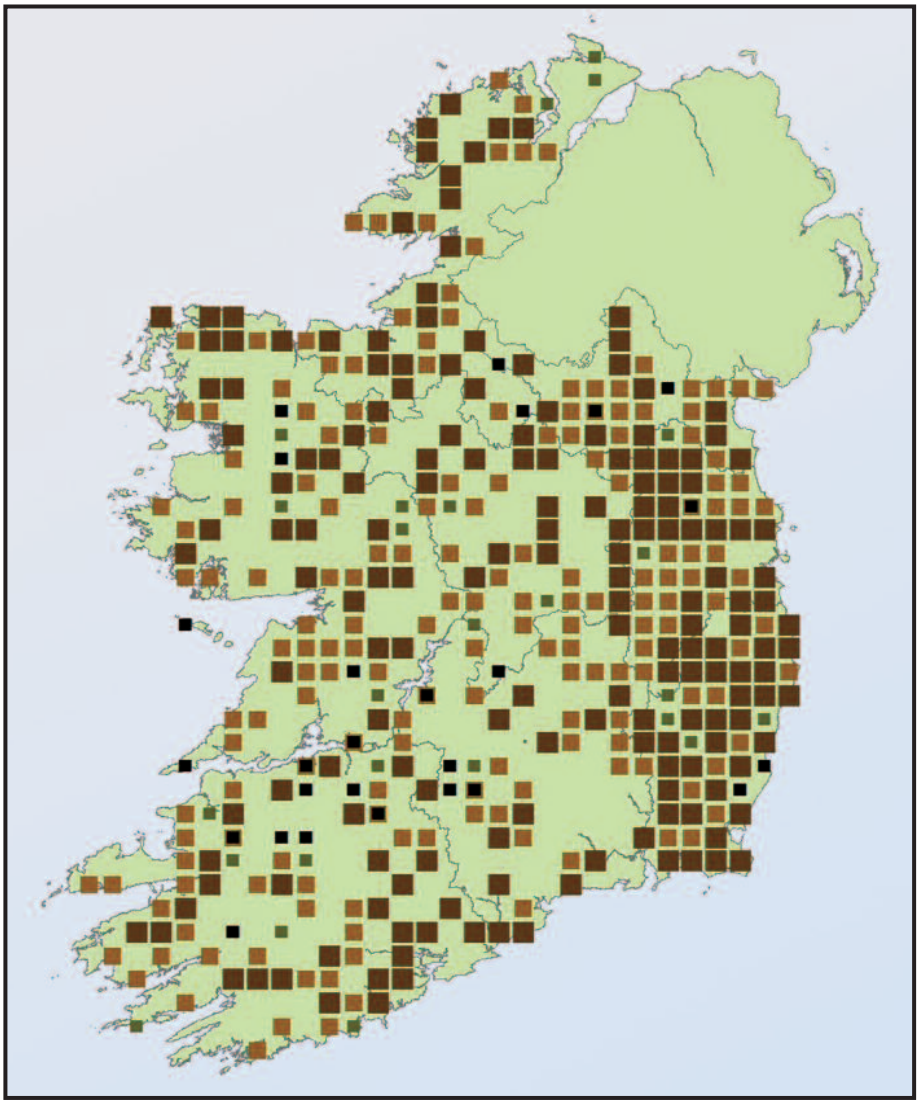

Figure 1. Map showing coverage during the CBS between 1998 and 2013, illustrating the eight sampling regions, also showing the extent of coverage within each ranging from best coverage (largest squares, 12-15 years) through to poor coverage (smallest squares, 2-6 years). Small black squares indicate those that have been consistently poorly covered.

Species

A total of 158 species was recorded between 1998 and 2013. 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.

Other species recorded during CBS include 24 species that have been recorded in at least five squares (Table 2) and a further 84 species that have been recorded in fewer than five squares (listed in Appendix 2). This list includes Spotted Flycatcher, Treecreeper and Siskin, occurring in 29, 23 and 21 squares respectively, all representing increased numbers of squares when compared with the last publication (Crowe *et al.* 2011). One further particularly notable increase was Buzzard (from 10 to 15 squares).

Of the monitored species (Table 1), Wren was the most widespread occurring in 96% of squares, followed by Robin, Blackbird, Chaffinch,

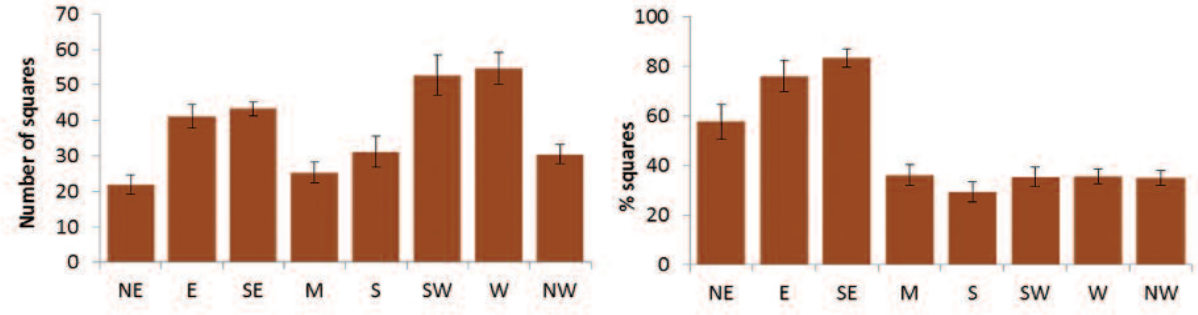

Figure 2. Regional coverage of available 1-km squares between 1998 and 2013, indicating the average number of squares covered (left) and proportion covered (right). The error bars show the variation between years (standard deviations).

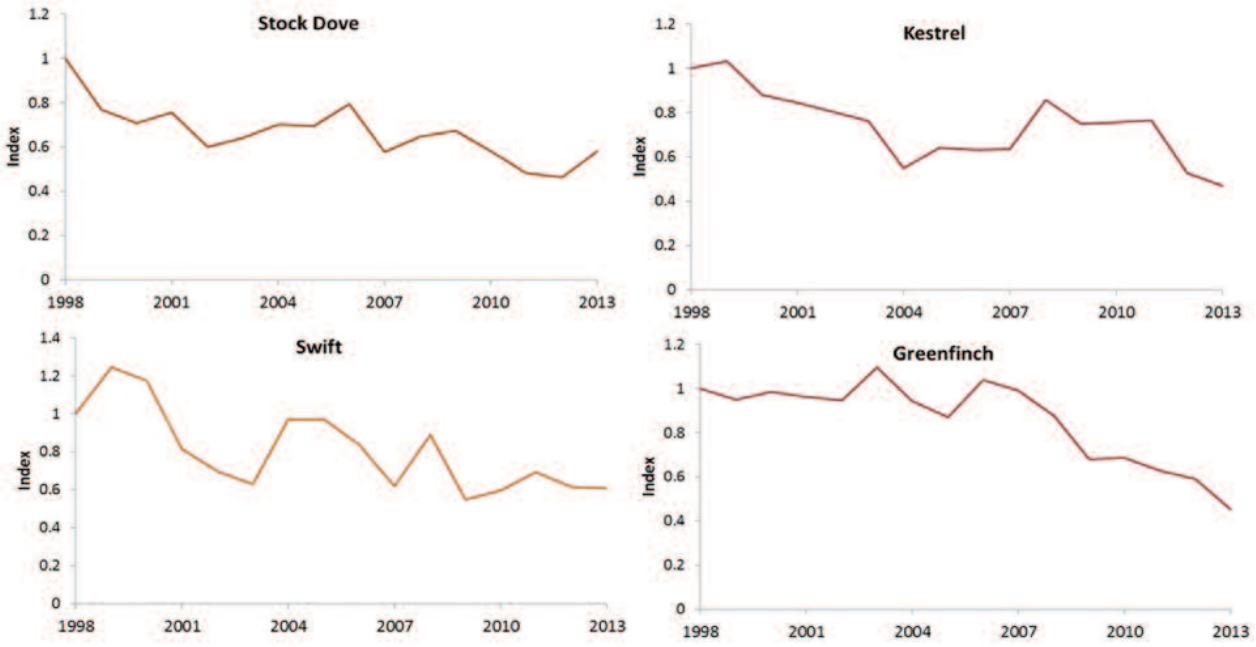

Figure 3. Trends in a selection of species that have been shown to decline. Note that the index scales (y-axis) differ between figures.

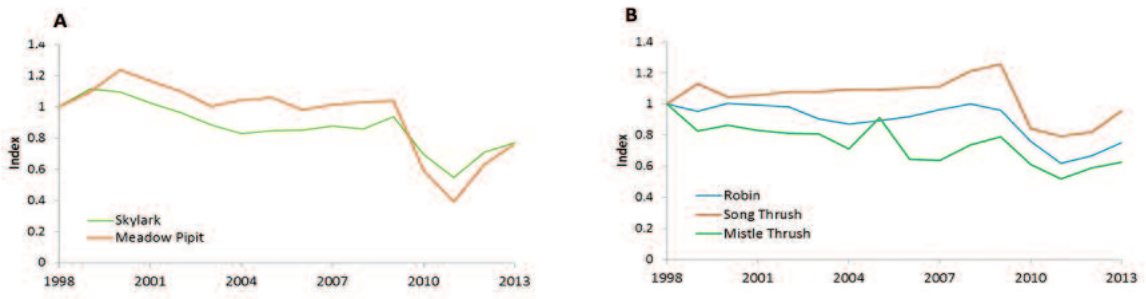

Figure 4. Trends in a selection of species that have been shown to decline, with species grouped according to habitat requirements, illustrating the trends in (a) two upland species Skylark and Meadow Pipit, (b) three generalists Robin, Song Thrush and Mistle Thrush.

Table 1. Species recorded in 30 squares or more during the CBS between 1998 and 2013, indicating the mean number and proportion of squares in which each species was recorded, mean abundance per square and the mean annual change (trend). 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]	Number of squares	Proportion squares	Abundance[2]	Mean annual change[3]
Mallard	*Anas platyrhynchos*		85	28	3.7	0.04
Pheasant	*Phasianus colchicus*		238	79	3.8	2.09**
Grey Heron	*Ardea cinerea*		61	20	1.7	-3.16**
Sparrowhawk	*Accipiter nisus*	A	30	10	1.1	-1.91
Kestrel	*Falco tinnunculus*	A	39	13	1.2	-3.2**
Moorhen	*Gallinula chloropus*		37	12	1.7	-0.87
Feral Pigeon	*Columba livia*		35	12	6.9	0.36
Stock Dove	*Columba oenas*	A	32	11	2.9	-3.04**
Woodpigeon	*Columba palumbus*		268	89	14.2	2.48**
Collared Dove	*Streptopelia decaocto*		62	21	2.6	3.97**
Cuckoo	*Cuculus canorus*		73	24	1.8	-0.88
Swift	*Apus apus*	A	39	13	3.8	-3.85**
Skylark	*Alauda arvensis*	A	125	42	5.5	-3.04**
Sand Martin	*Riparia riparia*	A	33	11	9.9	-1.53
Swallow	*Hirundo rustica*	A	268	89	12.0	0.01
House Martin	*Delichon urbica*	A	92	30	5.3	2.41**
Meadow Pipit	*Anthus pratensis*	R	177	59	8.6	-4.38**
Grey Wagtail	*Motacilla cinerea*	R	39	13	1.6	-8.97**
Pied Wagtail	*Motacilla alba*		149	50	2.2	0.46
Wren	*Troglodytes troglodytes*		289	96	15.2	0.06
Dunnock	*Prunella modularis*		224	75	4.3	0.40
Robin	*Erithacus rubecula*	A	281	93	10.3	-2.32**
Stonechat	*Saxicola torquata*	A	63	21	2.4	-5.62**
Wheatear	*Oenanthe oenanthe*	A	31	10	2.6	-0.72
Blackbird	*Turdus merula*		281	93	13.2	0.7**
Song Thrush	*Turdus philomelos*		255	85	5.5	-1.2**
Mistle Thrush	*Turdus viscivorus*	A	133	44	2.5	-3.04**
Grasshopper Warbler	*Locustella naevia*		38	13	1.7	2.34*
Sedge Warbler	*Acrocephalus schoenobaenus*		67	22	2.9	0.66
Blackcap	*Sylvia atricapilla*		99	33	2.6	18.23**
Whitethroat	*Sylvia communis*		65	22	2.2	3.24**
Chiffchaff	*Phylloscopus collybita*		132	44	2.9	4.04**
Willow Warbler	*Phylloscopus trochilus*		217	72	7.2	4.18**
Goldcrest	*Regulus regulus*	A	150	50	3.3	-1.26**
Long-tailed Tit	*Aegithalos caudatus*		52	17	3.3	1.45
Blue Tit	*Cyanistes caeruleus*		239	80	4.7	0.8**
Great Tit	*Parus major*		216	72	3.5	3.32**
Coal Tit	*Periparus ater*		178	59	3.2	2.58**
Magpie	*Pica pica*		252	84	5.4	0.01
Jackdaw	*Corvus monedula*		223	74	13.8	1.51**
Rook	*Corvus frugilegus*		244	81	34.2	-1.51**
Hooded Crow	*Corvus corone cornix*		238	79	4.3	1.64**
Raven	*Corvus corax*		68	23	2.1	-2.26**
Starling	*Sturnus vulgaris*	A	214	71	16.4	-1.19**
House Sparrow	*Passer domesticus*	A	145	48	7.6	3.3**
Chaffinch	*Fringilla coelebs*		275	92	9.7	1.61**
Greenfinch	*Carduelis chloris*	A	168	56	4.2	-4.19**
Goldfinch	*Carduelis carduelis*		140	47	3.5	7.72**
Linnet	*Carduelis cannabina*	A	124	41	4.8	0.67
Redpoll	*Carduelis flammea*		58	19	3.4	6.17**
Bullfinch	*Pyrrhula pyrrhula*		135	45	2.5	3.96**
Yellowhammer	*Emberiza citrinella*	R	76	25	4.6	-0.46
Reed Bunting	*Emberiza schoeniclus*		87	29	2.3	0.10

[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

Table 2. Other species that were recorded during the CBS between 1998 and 2013 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 are not well monitored by CBS (seabirds, waterbirds and breeding waders), and those recorded in less than 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 [1]	Number of squares	Proportion squares	Abundance [2]
Mute Swan	*Cygnus olor*	A	21	7	4.0
Little Grebe	*Tachybaptus ruficollis*	A	5	2	2.0
Cormorant	*Phalacrocorax carbo*	A	23	8	2.6
Buzzard	*Buteo buteo*		15	5	1.6
Coot	*Fulica atra*	A	7	2	1.9
Oystercatcher	*Haematopus ostralegus*	A	7	2	4.5
Golden Plover	*Pluvialis apricaria*	R	5	2	48.2
Lapwing	*Vanellus vanellus*	R	14	5	4.3
Snipe	*Gallinago gallinago*	A	49	16	1.9
Whimbrel	*Numenius phaeopus*		10	3	7.8
Curlew	*Numenius arquata*	R	29	10	4.7
Common Sandpiper	*Actitis hypoleucos*	A	7	2	1.8
Black-headed Gull	*Chroicocephalus ridibundus*	R	25	8	10.7
Common Gull	*Larus canus*	A	17	6	7.5
Lesser Black-backed Gull	*Larus fuscus*	A	36	12	6.0
Herring Gull	*Larus argentatus*	R	40	13	7.8
Great Black-backed Gull	*Larus marinus*	A	21	7	4.0
Dipper	*Cinclus cinclus*		6	2	1.2
Spotted Flycatcher	*Muscicapa striata*	A	29	10	1.6
Treecreeper	*Certhia familiaris*		23	8	1.5
Jay	*Garrulus glandarius*		12	4	1.7
Chough	*Pyrrhocorax pyrrhocorax*	A	5	2	2.6
Tree Sparrow	*Passer montanus*	A	15	5	4.0
Siskin	*Carduelis spinus*		20	7	2.9

Woodpigeon and Swallow. Mean abundance was by far the highest in Rook (34 per square) followed by Starling, Wren and Woodpigeon.

Overall, a total of 16 species was shown to decline between 1998 and 2013, while 20 species increased and the remaining 17 species were stable (Table 1). Declining trends were shown in Grey Heron, Kestrel, Stock Dove, Swift, Skylark, Meadow Pipit, Grey Wagtail, Robin, Stonechat, Song Thrush, Mistle Thrush, Goldcrest, Rook, Raven, Starling and Greenfinch. The patterns of change of a selection of these species are presented in Figures 3 and 4. The decline in Grey Wagtail was classified as especially severe, with a mean annual decline of 9.0% per year. It was one of a selection of species, that includes several of the others which are also listed above as declining, that was affected by severely cold winters between 2009/10 and 2011/12. However, most of these species appear to be in recovery since 2011 (Fig. 5).

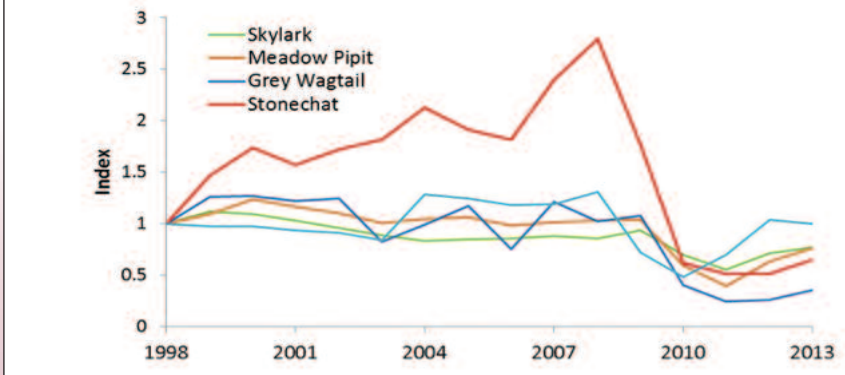

Figure 5. Trends in species previously reported as affected by severely cold winters 2009/10 to 2011/12, showing apparent recovery.

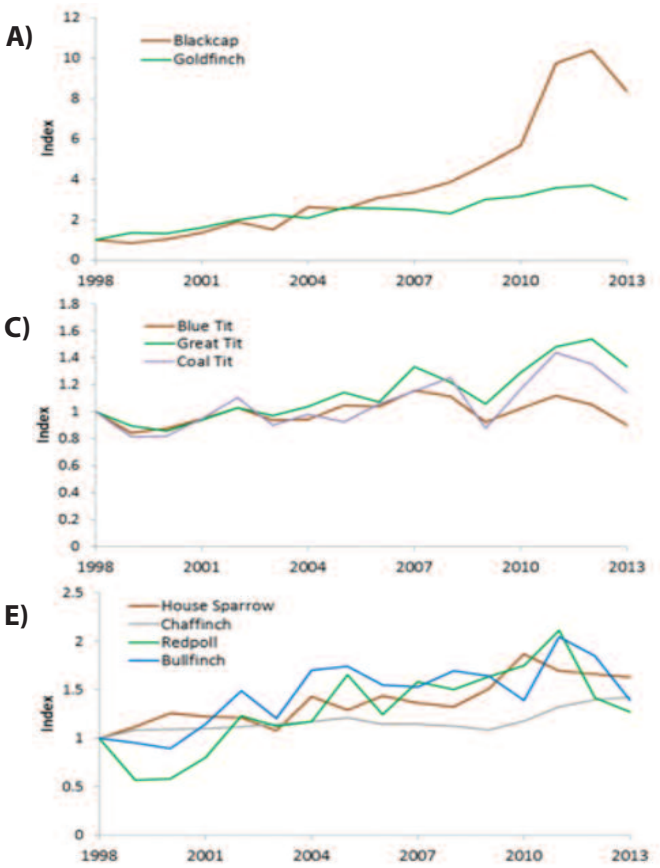

Figure 6. Selection of increasing trends shown between 1998 and 2013, illustrating patterns of change in (a) Blackcap and Goldfinch whose trends were highly significant, (b) migrant warblers (c) tits, (d) corvids, and (e) sparrows and finches. Note that the index scales (y-axis) differ between figures.

Discussion

The CBS continues to inform on significant changes taking place in many of our common and widespread birds. With the time series now at 16 years, we are now able to tease out some of the striking changes that have taken place, and in some cases we have been able to identify probable causes for some of the changes that have taken place.

When compared with the last report (Crowe *et al.* 2011), the number of species showing statistically significant increasing and declining trends has increased, with a consequent decline in the number of species showing stable trends. This has largely been because of trends moving from stable to declining in Stock Dove, Stonechat and Song Thrush, and from stable to increase in House Martin, Whitethroat and Hooded Crow.
It is interesting to note the similarities within species groups, and/or in species with similar habitat requirements. In particular, the patterns of change that have taken place in Meadow Pipit have closely tracked that shown by Skylark throughout the CBS, perhaps illustrating that they are both sensitive to similar factors potentially driving their trends in the uplands. Similarly there has been considerable consistency in patterns of change among the three tit species Great Tit, Coal Tit and Blue Tit, so perhaps the factors driving the trends of all three species are similar, and related to the conditions within their preferred habitats, especially plantation forests, woodland margins, hedgerows, and possibly even the availability of provisional food supplies in gardens.

It is encouraging to see that numbers of the species that were most impacted upon by the three cold winters between 2009/10 and 2011/12 inclusive, especially Stonechat, Skylark, Meadow Pipit, Grey Wagtail and Goldcrest, appear to be in recovery. The annual indices for these species showed that there were increases in 2012 and 2013 relative to 2011 when relative abundance was at its lowest. In hindsight, it would appear that most of the small-bodied resident species were to some extent affected by these cold winters, as the majority of resident species (12 out of 23 species) showed increases in 2012 relative to 2011, and further into 2013.

The Birds of Conservation Concern in Ireland (BoCCI) has been recently updated (Colhoun and Cummins 2013), with the CBS feeding into the process. The Red and Amber lists now include a number of new species identified on the basis of combined trends across Northern Ireland (from the Northern Ireland Breeding Bird Survey, BBS) and the Republic of Ireland (CBS). They include Meadow Pipit and Grey Wagtail, both of which exhibited declines that qualified them for red-listing. Similarly, additions to

the amber list based on CBS and BBS trends combined included Sparrowhawk, Stonechat, Mistle Thrush, Goldcrest and Greenfinch.

Population data derived from the CBS formed an integral part of Ireland's recent report for Article 12 of the EU Birds Directive for the period 2008 – 2012. This reporting requires Member States to report on populations and trends of all regularly occurring bird species as part of their national reports about the progress made with the implementation of the Birds Directive. Accordingly the CBS delivered on the status of common bird species. CBS data were also used recently in combination from the recently completed *Bird Atlas 2007-2011* (Balmer *et al.* 2013) to generate national population estimates for 51 species (Crowe *et al.* 2014).

The recent bird atlas (Balmer *et al.* 2013) has further highlighted the value of the CBS, which on balance has served to identify and support some of the striking patterns of change that have emerged for several species. There were several especially notable consistencies, especially relating to increasing trends:

- *The atlas showed that there has been a remarkable increase in the breeding range of Blackcap since the early 1970s and an increase in relative abundance since the 1990s, most notable in Ireland. The CBS has continually highlighted the dramatic increase in numbers and the current levels show that there has been a staggering 736% increase in numbers since 1998.*


Long-tailed Tit was affected by the cold winters but is once again stable

Dick Coombes

- *Similarly the atlas has shown an increase in range and abundance in Goldfinch in Ireland. This species has increased by 200% between 1998 and 2013.*

- *The atlas has shown that relative abundance of House Sparrow has increased across most of Ireland. This is consistent with the increases in numbers shown by the CBS but contradicts the worrisome declines reported in England and across much of Northwest Europe in recent decades. The BBS showed significant declines in England by 12% between 1995 and 2011 (Risely* et al. *2013).*

- *The atlas has shown a substantial increase in range of some species that are not yet sufficiently widespread for meaningful analysis, particularly in Buzzard and Tree Sparrow. Buzzard in particular has been showing increased prevalence in CBS squares, and has been recorded in more than 30 squares since 2011 inclusive. It will likely be included in trend analyses before too long.*


Mistle Thrush is one of 20 species with a continuing decline

Dick Coombes

Consistencies between the atlas and CBS for declining species have been much less noteworthy, probably because in most cases the changes identified by the CBS have been short-term. Such examples include the declines driven by cold winters between 2009/10 and 2011/12 inclusive or those caused by other recent factors such as Trichomoniasis which is thought to be the cause of the decline shown in Greenfinch. Worryingly however, the declines shown in Stock Dove, Swift and Skylark since the 1970s have continued into the CBS period. In contrast, the range and/or relative abundance declines shown by the atlas for species such as Cuckoo and Yellowhammer are not reflected by stable trends, inferring that the large-scale declines in these species, that have been in evidence since the early 1970s, has possibly come to an end.

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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). It was expected that there would be greater consistency in trends within regions when compared to overall national level given the narrower range of factors impacting on bird populations at a finer regional level. Therefore, and as in the UK (Risely *et al.* 2009), the minimum sample size was reduced from 30 to 20 squares for regional analyses. 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.

Appendix 2

Other species recorded during CBS

Mute Swan *Cygnus olor*
Whooper Swan *Cygnus cygnus*
Greenland White-fronted Goose *Anser albifrons flavirostris*
Greylag Goose *Anser anser*
Canada Goose *Branta canadensis*
Brent Goose *Branta bernicla hrota*
Shelduck *Tadorna tadorna*
Wigeon *Anas penelope*
Gadwall *Anas strepera*
Teal *Anas crecca*
Pintail *Anas acuta*
Shoveler *Anas clypeata*
Tufted Duck *Aythya fuligula*
Pochard *Aythya ferina*
Common Scoter *Melanitta nigra*
Red-breasted Merganser *Mergus serrator*
Goosander *Mergus merganser*
Red Grouse *Lagopus lagopus scoticus*
Red-legged Partridge *Alectoris rufa*
Grey Partridge *Perdix perdix*
Quail *Coturnix coturnix*
Red-throated Diver *Gavia stellata*
Great Northern Diver *Gavia immer*
Great Crested Grebe *Podiceps cristatus*
Fulmar *Fulmarus glacialis*
Manx Shearwater *Puffinus puffinus*
Gannet *Sula bassana*
Shag *Phalacrocorax aristotelis*
Little Egret *Egretta garzetta*
Red Kite *Milvus milvus*
Honey Buzzard *Pernis apivorus*
Marsh Harrier *Circus aeruginosus*
Hen Harrier *Circus cyaneus*
Goshawk *Accipiter gentilis*
Merlin *Falco columbarius*
Peregrine *Falco peregrinus*
Water Rail *Rallus aquaticus*
Corncrake *Crex crex*
Ringed Plover *Charadrius hiaticula*
Sanderling *Calidris alba*
Knot *Calidris canutus*
Dunlin *Calidris alpina*
Purple Sandpiper *Calidris maritima*
Ruff *Philomachus pugnax*
Jack Snipe *Lymnocryptes minimus*
Woodcock *Scolopax rusticola*
Black-tailed Godwit *Limosa limosa*
Bar-tailed Godwit *Limosa lapponica*
Redshank *Tringa totanus*
Greenshank *Tringa nebularia*
Turnstone *Arenaria interpres*
Great Skua *Stercorarius skua*
Mediterranean Gull *Larus melanocephalus*
Kittiwake *Rissa tridactyla*
Sandwich Tern *Sterna sandvicensis*
Common Tern *Sterna hirundo*
Arctic Tern *Sterna paradisaea*
Little Tern *Sternula albifrons*
Guillemot *Uria aalge*
Razorbill *Alca torda*
Black Guillemot *Cepphus grylle*
Rock Dove *Columba livia*
Turtle Dove *Streptopelia turtur*
Barn Owl *Tyto alba*
Long-eared Owl *Asio otus*
Short-eared Owl *Asio flammeus*
Great Spotted Woodpecker *Dendrocopos major*
Kingfisher *Alcedo atthis*
Rock Pipit *Anthus spinoletta littoralis*
Whinchat *Saxicola rubetra*
Ring Ouzel *Turdus torquatus*
Fieldfare *Turdus pilaris*
Redwing *Turdus iliacus*
Reed Warbler *Acrocephalus scirpaceus*
Garden Warbler *Sylvia borin*
Wood Warbler *Phylloscopus sibilatrix*
Pied Flycatcher *Ficedula hypoleuca*
Carrion Crow *Corvus corone*
Brambling *Fringilla montifringilla*
Twite *Carduelis flavirostris*
Crossbill *Loxia curvirostra*


Sinead Cummins


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