

Index of Abundance for Scottish Terrestrial Breeding Birds, 1994 to 2010

An Official Statistics Publication for Scotland

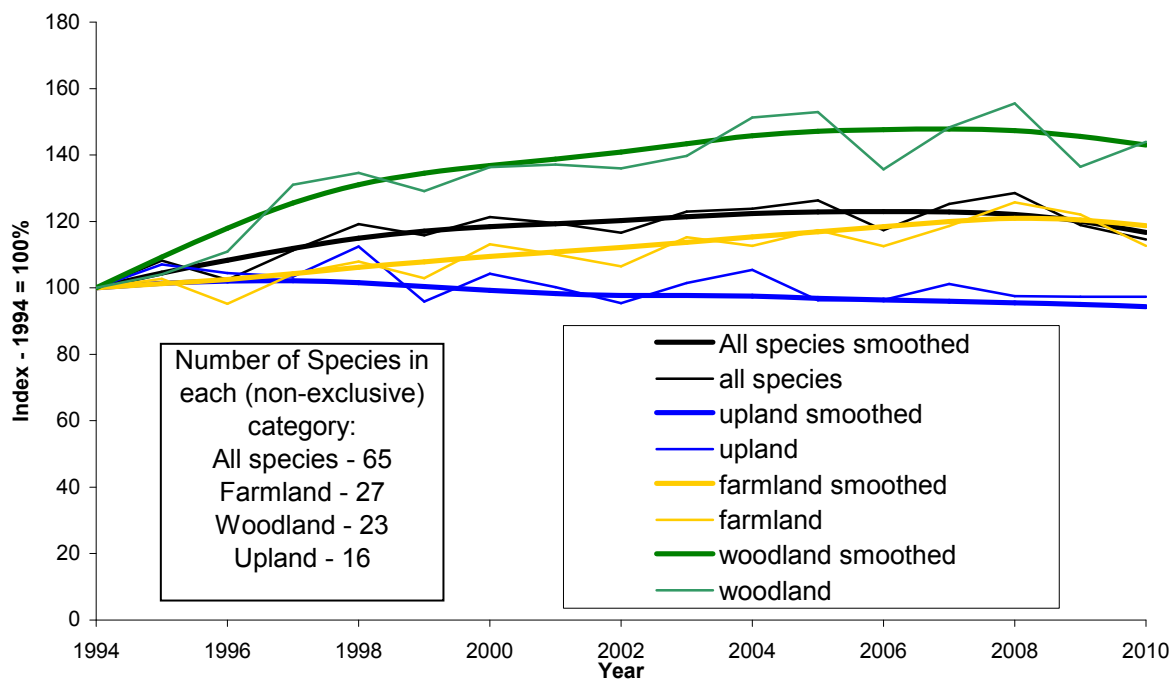
Scotland's terrestrial breeding birds are commonly associated with woodland, for example willow warbler and siskin; farmland, such as yellowhammer and goldfinch; and upland, such as raven and curlew. Often they occur in more than one habitat, for example great tit is present in both farmland and woodland. Changing environmental conditions may affect bird distribution, the timing and success of breeding attempts, survival, and productivity. These complex factors translate into abundance.

Evidence

In Scotland, terrestrial breeding birds are monitored primarily through the Breeding Bird Survey (BBS). Randomly located 1km survey squares which are representative of the three main terrestrial habitats throughout Scotland (farmland, woodland and upland) are visited twice in the breeding season. Nine of the 65 species included here are too scarce for reliable abundance estimation by BBS and are assessed by targeted surveys.

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Breeding Bird Survey and targeted survey scheme data for 65 breeding bird species



Assessment

Since the start of the time series in 1994 to the most recent estimate in 2010:

- 38 of the 65 bird species increased in abundance; the all-species (smoothed) index increased by 17%;
- The smoothed woodland bird index increased, by 43% overall;
- The smoothed farmland bird index increased, by 19% overall;
- The smoothed upland bird index showed no change;
- The unsmoothed trends show that, between 2009 and 2010, the farmland bird index decreased significantly by 8%. Woodland, upland and all-species indices showed no change over this latest period.

All species change (2009-10)	No change
All species long-term trend	Increased



Commentary

Since 1994 the smoothed all-species index increased, peaking in 2005. In 2010 it stood at 17% above the baseline. There were no significant changes in the upland and all species unsmoothed indices between 2009 and 2010. The unsmoothed farmland index showed a large decrease between 2009 and 2010.

From 2009 to 2010, farmland birds showing the most marked decreases were lapwing, rook and linnet. A decrease in greenfinches (2008 to 2009) thought to be attributable to trichomoniasis (Robinson *et al.*, 2010), was followed by a 5% increase from 2009 to 2010.

Notable increases for woodland birds from 2009 to 2010, were seen in blackcap, treecreeper, siskin and cuckoo. Despite the overall increase, large decreases among some resident woodland birds included wren and robin, as well as chiffchaff, mistle thrush and song thrush.

In the uplands there have been long-term declines in breeding waders such as golden plover and snipe. These may be linked to land management, such as commercial forestry and increased abundance of corvids (Amar *et al.*, 2011).

The harsh winter of 2009/10 is the likely explanation for decreases among some residents such as stonechat, grey wagtail and wren. Increased or stable numbers among most long distance migrants suggest better conditions on wintering grounds further south; nevertheless, swallow and swift declined.

Source data and updates

Data for 56 of the 65 species come from the British Trust for Ornithology (BTO), Joint Nature Conservation Committee (JNCC) and Royal Society for the Protection of Birds (RSPB) Breeding Bird Survey (BBS) (View map of BBS sites at http://blx1.bto.org/bbs-results/results/cov_maps/bbscoverage-9999.html). The data for BBS consist of annual counts made by experienced volunteer bird surveyors over a period of years at a series of sites. Generalised Linear Models were used to generate trends. To prevent short-term population variability and statistical error having an undue influence, trends were also smoothed and long term trends assessed for the statistical significance of the estimated change using techniques recommended by Fewster *et al.*, (2000). The unsmoothed indices were used to assess the significance of the most recent change (2009 to 2010). All changes reported for the aggregated indices (All species; woodland; farmland; upland), as increasing or decreasing are statistically significant to the 95% confidence level. Details of the methods used to calculate the indices are available from <http://www.bto.org/birdtrends2010/methodology.htm>.

Trends for common sandpiper and dipper are derived from the BTO Waterways Bird Survey and the Waterways Breeding Bird Survey. Grey heron trends are derived from the Heronries Census. Trends for six species (golden eagle, hen harrier, peregrine, corncrake, black grouse and capercaillie) are estimated from single-species surveys carried out periodically, since the 1980s, as part of the SCARABBS (Statutory Conservation Agency/RSPB Annual Breeding Bird Scheme) programme.

The index will be next updated in March 2013.

Official Statistics are produced in accordance with the Code of Practice for Official Statistics.

References

- Amar, A., Grant, M., Buchanan, G., Sim, I., Wilson, J., Pearce-Higgins, J. & Redpath, S. 2011. Exploring the relationships between wader declines and current land-use in the British uplands. *Bird Study*, **58**, 13-26.
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- Robinson, R.A., Lawson, B., Toms, M.P. *et al.* 2010. Emerging infectious disease leads to rapid population declines of common British birds. *PLoS ONE*, **5**, e12215.
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Table 1. Percentage changes in abundance for the Scottish Terrestrial Breeding Birds, 1994-2010 and 2009-2010, species listed in order of overall change 1994 to 2010.

Summarised trends for individual species and their habitat associations from 1994 to 2010, and the most recent year of change. A blank entry denotes that the species did not show a strong association to that habitat, or that insufficient data were available to calculate a habitat-specific trend.

Species name	All species		Woodland		Farmland		Upland	
	94-10	09-10	94-10	09-10	94-10	09-10	94-10	09-10
Great Spotted Woodpecker	453	19	453	19				
Chiffchaff	273	-19	273	-19				
Blackcap	206	32	206	48				
House Martin	200	12						
Goldfinch	187	18			261	22		
Corncrake	158	6			158	6		
Raven	123	37					123	37
Whitethroat	107	5			107	5		
Grey Heron	105	-11						
Bullfinch	104	12	104	12				
Siskin	64	44	64	44				
Tree Pipit	64	24	64	24				
Great Tit	61	-4	86	6	116	-3		
Treecreeper	59	47	59	47				
Snipe	58	-17					58	-17
Willow Warbler	51	2	51	2				
House Sparrow	51	2						
Dunnock	47	2	71	12	-6	-15		
Buzzard	47	-10	18	-16	66	-6		
Reed Bunting	40	-2			40	-2		
Blue Tit	39	27	18	18	39	2		
Sedge Warbler	31	-1			31	-1		
Jackdaw	29	-4			26	-14		
Lesser Redpoll	28	31	28	31				
Wheatear	28	-14					28	-14
Blackbird	26	8	9	-3	40	7		
Willow/Red Grouse	21	1					21	1
Swallow	21	-17			21	-17		
Chaffinch	17	5	21	8	22	2		
Magpie	16	-7			5	-9		
Coal Tit	15	20	15	20				
Cuckoo	15	3	13	35			68	19
Mistle Thrush	11	-18	11	-18				
Hen Harrier	9	-4					9	-4
Yellowhammer	9	-4			9	-4		
Song Thrush	3	-19	1	-17	32	-17		
Golden Eagle	3	0					3	0
Mallard	1	21						
Woodpigeon	0	6			-7	0		
Linnet	-1	-30			-1	-30		
Goldcrest	-1	13	-1	13				
Carrion Crow	-1	20			-4	11		
Collared Dove	-6	-2						
Skylark	-6	-14			-14	-18	15	-10



Species name	All species		Woodland		Farmland		Upland	
	94-10	09-10	94-10	09-10	94-10	09-10	94-10	09-10
Pied Wagtail	-9	-17			-9	-17		
Robin	-9	-17	-10	-26				
Greenfinch	-10	5			-14	-5		
Hooded Crow	-13	47					-13	47
Wren	-14	-43	-14	-43				
Peregrine	-17	-1					-17	-1
Oystercatcher	-22	-8			-22	-8		
Common Sandpiper	-25	1					-25	1
Starling	-29	-16			-21	-12		
Grey Wagtail	-29	-33						
Meadow Pipit	-31	-8					-31	-8
Golden Plover	-32	-23					-32	-23
Rook	-34	-35			-34	-35		
Dipper	-34	-16					-34	-16
Capercaillie	-37	-6	-37	-6				
Black Grouse	-40	-3					-40	-3
Curlew	-46	13					-46	13
Swift	-47	-19						
Lapwing	-52	-39			-52	-39		
Stonechat	-54	-73						
Kestrel	-67	15			-67	15		

