

Index of Abundance for Scottish Terrestrial Breeding Birds, 1994 to 2009

An Official Statistics Publication for Scotland

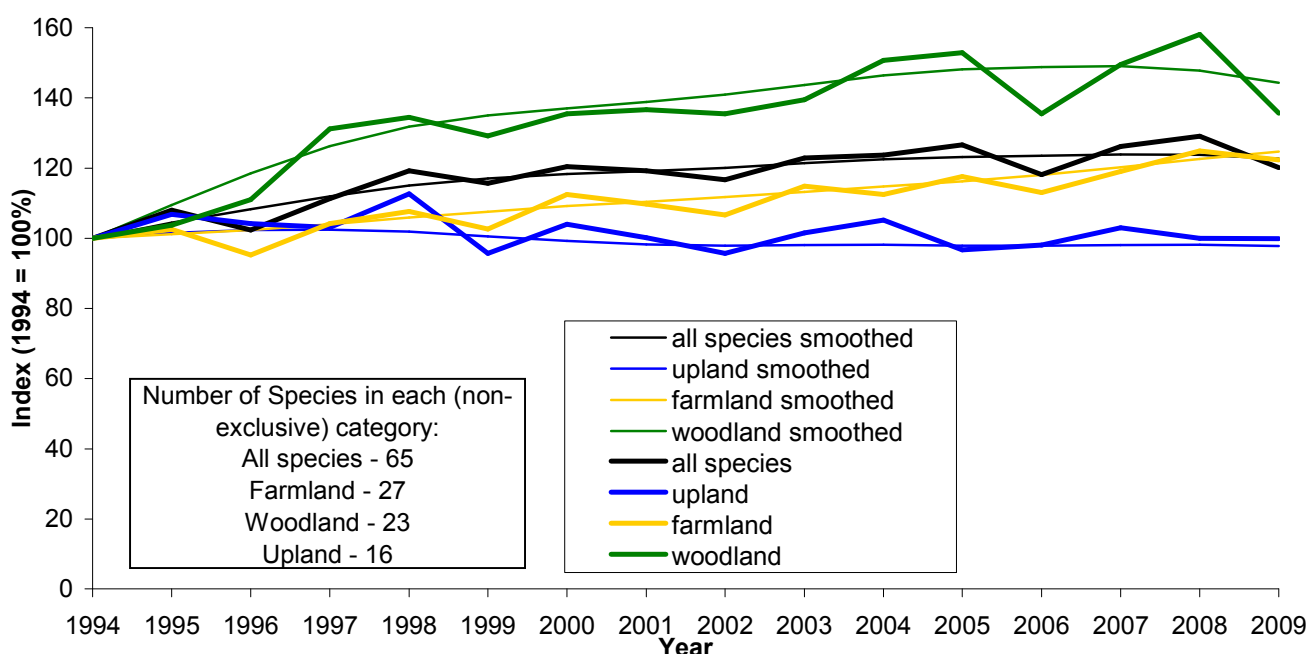
Scotland's terrestrial breeding birds are commonly associated with woodland, such as willow warbler and siskin; farmland, such as yellowhammer and goldfinch; and upland, such as raven and curlew. Often they occur in more than one habitat, such as great tit in farmland and woodland. Changing environmental 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 BTO/JNCC/RSPB 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 2009:

- 43 of the 65 bird species increased in abundance, the all-species (smoothed) index increased significantly by 23%;
- The smoothed woodland bird index increased significantly, by 44% overall;
- The smoothed farmland bird index increased significantly, by 25% overall;
- The smoothed upland bird index showed no overall change;
- The unsmoothed data show that the all species index decreased significantly by 7% between 2008 and 2009, with woodland birds decreasing significantly by 14%. Farmland and upland birds showed no significant inter-annual change.

Change (2008 – 09)	Decreased
Long term trend	Increased



Commentary

The significant decrease in the unsmoothed index between 2008 and 2009, most evident and significant for woodland birds, is largely attributed to the cold winter of 2008-09 (Risely *et al.*, 2010). Small-bodied resident species such as goldcrest, treecreeper and wren are known to be susceptible to cold winters and declined by more than 25% that year; goldcrests declined by 60%. Marked declines were also seen among stonechat, grey wagtail, kestrel, starling, cuckoo and greenfinch. A contributing factor for greenfinch may be the disease trichomoniasis (Robinson *et al.*, 2010).

Among long distance migrants only cuckoo declined markedly between 2008 and 2009. However other long distance migrants such as swift, meadow pipit, common sandpiper declined in abundance by more than 20% since 1994. Conversely, chiffchaff, whitethroat, wheatear, swallow and willow warbler increased. Spotted flycatcher and wood warbler, which are known to have declined severely across the UK (Freeman & Crick, 2003; Eaton *et al.*, 2009), are not included in the indicator because they occur in fewer than 30 Scottish BBS squares.

Modest increases in woodland and farmland bird abundance since 1984 contrast with range declines observed between 1970 and 1990: farmland birds declined in range in Scotland by 8%, woodland birds declined by 5% and upland birds remained largely unchanged (Noble *et al.*, 2007). Range declines were similar to those observed throughout the UK since 1970 and across Europe since 1980.

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 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 smoothed and long term trends assessed using techniques recommended by Fewster *et al.* (2000). The unsmoothed indices were used to assess the significance of recent changes. 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, during the period 1994 to 2009 as part of the SCARABBS (Statutory Conservation Agency/RSPB Annual Breeding Bird Scheme) programme.

The index will be next updated in March 2012.

Official Statistics are produced by professionally independent statistical staff in accordance with the Code of Practice for Official Statistics.

References

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Table 1. Percentage changes in abundance for the Scottish Terrestrial Breeding Birds, 1994-2009 and 2008-2009, species listed in order of overall change 1994 to 2009.

Summarised trends for individual species and their habitat associations from 1994 to 2009, and the most recent year of change. A blank entry means the species did not show a strong association to that habitat or insufficient data were available to calculate a habitat-specific trend.

Species name	All species		Woodland		Farmland		Upland	
	94-09	08-09	94-09	08-09	94-09	08-09	94-09	08-09
Great Spotted Woodpecker	378	-17	378	-17				
Chiffchaff	365	-11	365	-11				
House Martin	168	10						
Corncrake	143	-1			143	-1		
Goldfinch	136	3			182	-3		
Grey Heron	129	-5						
Blackcap	127	-2	107	-8				
Snipe	99	4					99	4
Whitethroat	95	8			95	8		
Hen Harrier	86	6					86	6
Bullfinch	82	-9	82	-9				
Great Tit	67	-12	68	-9	118	1		
Stonechat	67	-46						
Buzzard	65	5	37	-5	71	0		
Mistle Thrush	51	25	51	25				
Wren	51	-27	51	-27				
Wheatear	50	49					50	49
House Sparrow	49	5						
Swallow	47	18			47	18		
Willow Warbler	47	5	47	5				
Raven	46	-16					46	-16
Linnet	45	32			45	32		
Duncock	44	-8	48	-9	11	-10		
Reed Bunting	43	-18			43	-18		
Tree Pipit	37	-2	37	-2				
Sedge Warbler	36	-7			36	-7		
Jackdaw	35	6			45	36		
Song Thrush	31	-2	17	-7	61	-9		
Magpie	26	-2			15	-11		
Willow/Red Grouse	18	1					18	1
Siskin	18	-28	18	-28				
Blackbird	17	-3	10	-1	34	4		
Cuckoo	14	-16	-19	-13			41	-34
Yellowhammer	13	12			13	12		
Chaffinch	13	8	11	0	20	16		
Skylark	11	6			5	3	31	8
Pied Wagtail	10	5			10	5		
Blue Tit	9	-5	-5	-13	33	12		
Robin	8	-8	14	-12				
Grey Wagtail	8	-48						
Coal Tit	4	-24	4	-24				
Golden Eagle	3	0					3	0
Treecreeper	2	-43	2	-43				
Rook	1	27			1	27		
Lesser Redpoll	-1	-8	-1	-8				
Woodpigeon	-4	-1			-6	11		
Collared Dove	-6	22						
Oystercatcher	-10	15			-10	15		
Starling	-13	-26			-8	-25		
Golden Plover	-14	39					-14	39
Greenfinch	-14	-35			-9	-27		
Goldcrest	-14	-60	-14	-60				



Species name	All species		Woodland		Farmland		Upland	
	94-09	08-09	94-09	08-09	94-09	08-09	94-09	08-09
Peregrine	-16	-1					-16	-1
Carrion Crow	-18	-12			-15	-14		
Mallard	-18	-16						
Dipper	-21	25					-21	25
Common Sandpiper	-22	5					-22	5
Lapwing	-23	-9			-23	-9		
Meadow Pipit	-25	-13					-25	-13
Swift	-33	40						
Capercaillie	-33	-7	-33	-7				
Black Grouse	-38	-3					-38	-3
Hooded Crow	-44	-20					-44	-20
Curlew	-54	-19					-54	-19
Kestrel	-71	-59			-71	-59		

