

A BIODIVERSITY INDICATOR FOR EUROPE:

WILD BIRD INDICATOR UPDATE 2005

An updated set of wild bird indicators for Europe was released on 8 June 2005. The new results come from the Pan-European Common Bird Monitoring (PECBM) scheme. This is a partnership involving the European Bird Census Council, the Royal Society for the Protection of Birds, BirdLife International and Statistics Netherlands that aims to deliver policy relevant biodiversity indicators for Europe. These are the first genuine indicators of their kind in Europe and they paint a mixed picture of how the environment around us is changing. Over the last twenty-five years, the indicators show that on average common birds of farmland have declined sharply in number and common forest birds have declined moderately. In contrast, common generalist birds have increased. Overall, these results confirm earlier studies by showing that, while some generalist species have responded positively to human-induced change in the environment, many specialist species have responded negatively. This is a process known as 'biotic homogenisation'.

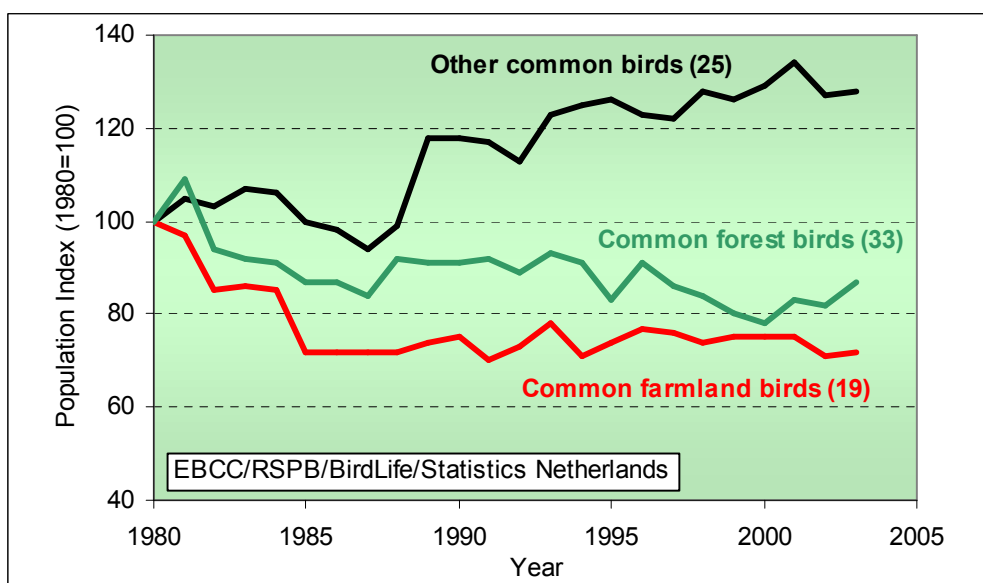
A BIODIVERSITY INDICATOR FOR EUROPE: WILD BIRD INDICATOR UPDATE 2005

An updated set of wild bird indicators for Europe was released on 8 June 2005. These are the first genuine biodiversity indicators of their kind in Europe and they paint a mixed picture of how the environment around us is changing. Over the last twenty-five years, the indicators show that on average common birds of farmland have declined sharply in number and common forest birds have declined moderately. In contrast, common generalist birds have increased. Evidence from other sources has shown that changing agricultural methods, especially increased specialisation and intensification, has driven the decline of farmland birds. The factors causing the decline of forest birds are less well known, as are the reasons for population increases in some species. Overall, these results confirm earlier studies by showing that, while some generalist species have responded positively to human-induced change in the environment, many specialist species have responded negatively. This is a process known as 'biotic homogenisation'. Our analysis suggests that projected human development across Europe would have a disproportionately negative impact upon specialist birds, and thus on other aspects of biodiversity. To avoid this, development must be carried out in a sustainable manner and incorporate the needs of nature. Our analysis also suggests that the threat to wildlife may be greater in the new EU Members States, and in East and Central Europe generally, where human impacts appear to have been less marked in the past, but where rapid development is likely in the future.

The need for indicators

Composite population trend indicators, such as the wild bird index, provide a tangible basis for measuring progress towards the European Union (EU) and European targets of halting biodiversity loss by 2010, and thus towards the global target of reducing the current rate of biodiversity loss by 2010. The farmland bird index has been as a Structural and a Sustainable Development Indicator adopted by the EU. The strength of this approach is its simplicity, statistical rigour, sensitivity to change, and ease of update (which is possible annually). The purpose of the wild bird index is to enable policy makers to assess and respond to changes in the environment, and then to review the effectiveness of their actions through time. The index complements other trend information on species, sites and habitats.

Figure 1. A biodiversity indicator for Europe: wild bird indicator 2005



Birds as nature indicators

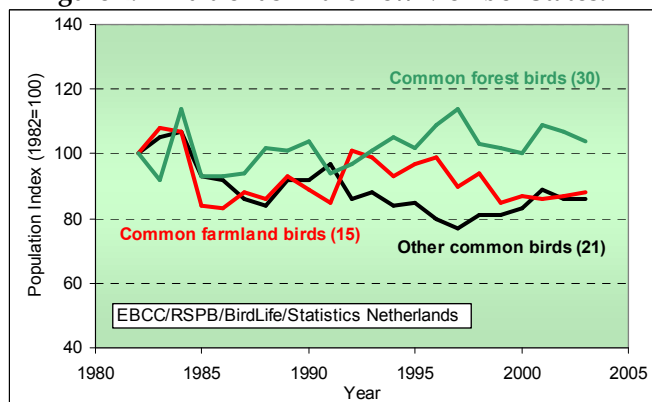
Birds can be excellent barometers of the health of the environment and of the sustainability of human progress. They occur in many habitats, can reflect changes in other animals and plants, and can be sensitive to environmental change. A great deal of high quality data already exists, and new data are realistic and relatively inexpensive to collect. In addition, birds have meaning, resonance and symbolic value for many audiences, and are extremely popular with the public.

Main findings

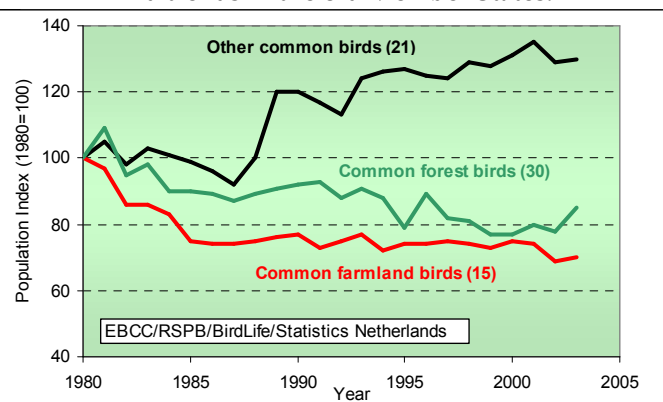
Considering Europe as a whole from 1980 to 2003, common farmland birds have on average fallen in number by 28% and common forest birds by 13%. Over the same period, other common birds have increased by 28% (Fig. 1). These patterns are the same if one considers just those countries in the EU. The decline of common farmland birds was steepest between 1980 and 1990, reflecting the deteriorating quality of Europe's largest wildlife habitat. There are, however, some interesting contrasts between average population trends in the new¹ and old Member States of the EU (Fig. 2). Whilst common farmland birds continued to decline slowly in the old Member States after 1990, those in the new Member States increased markedly before showing a slight decline more recently. Similarly, while common forest birds continued to decline in the old Member States after 1990, they increased slightly in the new Member States. However, while common farmland and forest birds have declined in the old Member States, other common (mostly generalist) birds have increased (Fig. 2). This trend is not mirrored in the new Member States, and may reflect the slower pace of human development over this period in central Europe.

This contrast is even more marked if we compare East and West Europe. On average, common farmland bird populations have declined by 57% in the West, compared with an increase of 5% in the East. Likewise, common forest bird populations have declined by 18% in the West compared with an increase of 2% in the East. Curiously, again, other common birds have increased by 12% in the West, but declined by 13% in the East.

Figure 2. Bird trends in the new Member States:



Bird trends in the old Member States:



New methods of species selection

Farmland and forest species were selected following the classification of Tucker & Evans (1997). A third group (other common species) captured those species frequently monitored but not specialists of the latter habitats. This group includes many generalist species, which occur across a range of varied habitats, but also some birds that are specialists of other habitat types.

Indicator methods

Trend information was derived from annually operated national breeding bird surveys spanning different periods from 18 European countries², obtained through the *Pan-European Common Bird Monitoring* (PECBM)

¹ Member States joining the European Union in May 2004. Trends from this group of countries are available from 1982-2003.

² Contributing countries – *EU*: Austria, Belgium, Denmark, France, Germany, Ireland, Italy, Netherlands, Spain, Sweden, United Kingdom, Finland, Latvia, Poland, Czech Republic and Hungary. *Others*: Norway and Switzerland.

scheme. A software package named TRIM (which allows for missing counts in the time series and yields unbiased yearly indices and standard errors using Poisson regression) was used to calculate national species' indices and then to combine these into supranational indices for species, weighted by estimates of national population sizes. Weighting allows for the fact that different countries hold different proportions of each species' European population. Updated population size estimates were used for weighting, derived from BirdLife International (2004). Although national schemes differ in count methods in the field, these differences do not influence the supranational results because the indices are standardised before being combined. An improved hierarchical imputation procedure was used to calculate supranational indices. Supranational indices for species were then combined (on a geometric scale) to create multi-species indicators.

Harmonised data collection – the PECBM scheme

The PECBM scheme is a partnership involving the European Bird Census Council, the Royal Society for the Protection of Birds, BirdLife International and Statistics Netherlands that aims to deliver policy relevant biodiversity indicators for Europe. It collates national data in a harmonised way from a European network of expert ornithologists. It hopes to increase both the numbers of countries collecting and submitting data on trends, and the number of bird species and habitats covered. More widely, the project aims to improve the scientific standard of bird monitoring across Europe by fostering co-operation and the sharing of best practice and expertise. Project co-ordinator: Dr Petr Vorisek, CSO; Project manager: Dr Richard Gregory, RSPB; Statistical advisor: Dr Arco van Strien, Statistics Netherlands.

Special thanks - to the PECBM network & volunteer counters

The success of this project owes much to the co-operation, goodwill and expertise of the PECBM network. Special thanks go to the individuals and organisations responsible for national data collation and analysis, and to the many thousands of skilled volunteer counters responsible for data collection.

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Common farmland birds, Europe: *Alauda arvensis*, *Burhinus oedipnemus*, *Carduelis carduelis*, *Columba palumbus*, *Emberiza citrinella*, *Falco tinnunculus*, *Galerida cristata*, *Hirundo rustica*, *Lanius collurio*, *Lanius senator*, *Limosa limosa*, *Miliaria calandra*, *Motacilla flava*, *Passer montanus*, *Saxicola rubetra*, *Streptopelia turtur*, *Sturnus vulgaris*, *Sylvia communis*, *Vanellus vanellus*.

Common forest birds, Europe: *Anthus trivialis*, *Bonasa bonasia*, *Carduelis flammea*, *Carduelis spinus*, *Certhia brachydactyla*, *Certhia familiaris*, *Coccothraustes coccothraustes*, *Dendrocopos minor*, *Dryocopus martius*, *Ficedula albicollis*, *Ficedula hypoleuca*, *Fringilla montifringilla*, *Garrulus glandarius*, *Hippolais icterina*, *Jynx torquilla*, *Lullula arborea*, *Luscinia megarhynchos*, *Muscicapa striata*, *Oriolus oriolus*, *Parus ater*, *Parus caeruleus*, *Parus montanus*, *Parus palustris*, *Phoenicurus phoenicurus*, *Phylloscopus collybita*, *Phylloscopus sibilatrix*, *Picus canus*, *Picus viridis*, *Prunella modularis*, *Pyrrhula pyrrhula*, *Regulus regulus*, *Sitta europaea*, *Sylvia borin*.

Other common birds, Europe: *Accipiter nisus*, *Aegithalos caudatus*, *Buteo buteo*, *Carduelis cannabina*, *Carduelis chloris*, *Cettia cetti*, *Cisticola juncidis*, *Corvus corone corone/cornix*, *Corvus monedula*, *Cuculus canorus*, *Dendrocopos major*, *Emberiza schoeniclus*, *Erithacus rubecula*, *Fringilla coelebs*, *Motacilla alba*, *Parus major*, *Phylloscopus trochilus*, *Pica pica*, *Sylvia atricapilla*, *Sylvia melanocephala*, *Troglodytes troglodytes*, *Turdus merula*, *Turdus philomelos*, *Turdus viscivorus*, *Upupa epops*.
