

EEA Core Set of Indicators - CSI 009

Species diversity

May 2005 assessment

working draft

About this document

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Key policy question: What is the state and trend of biodiversity?

Key message: An assessment based on 295 butterfly species and 47 birds species linked to different habitat types show declines between 2 and 37% since early 70'ties. Especially wetland habitats have diminished, both in quantity and in quality. Butterfly species dependent on wetland habitats have declined by 37% since 1980. Wetland areas themselves have decreased by almost 5% from 1990 to 2000.

Collectively all the species groups assessed are declining! Results vary among species/habitats groups but it is striking that all of them decline, especially as they are based on more than 300 distinct species.

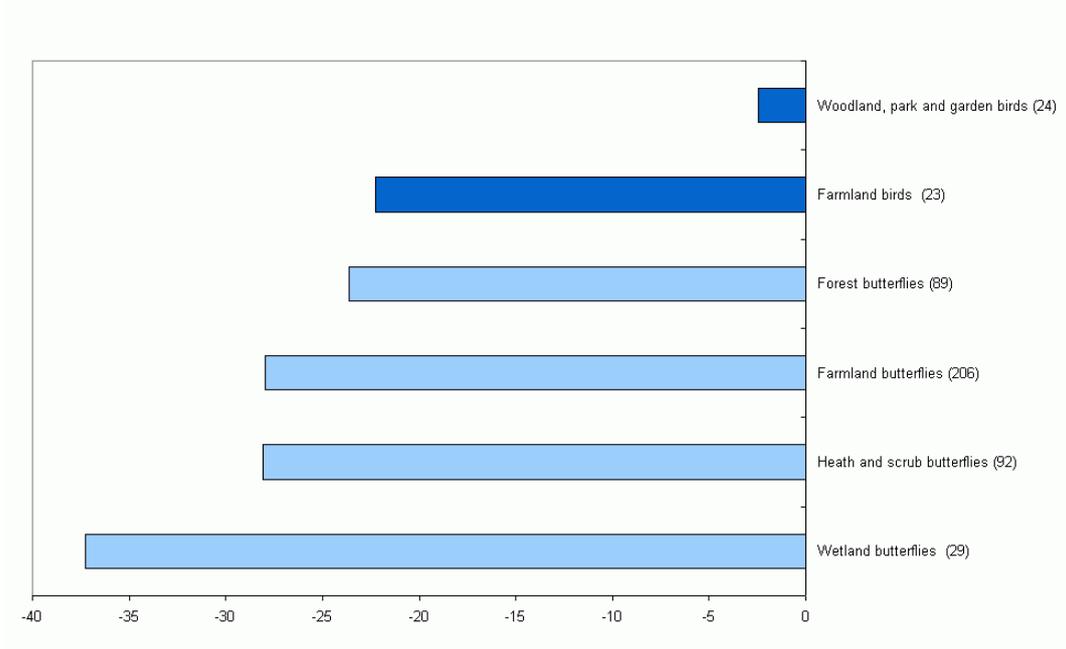
Wetland habitats are subject to the strongest decline across EU-25. The area of wetlands itself has decreased by almost 5% since 1990 and the 29 species of butterflies linked to this habitat across EU-25 collectively present the strongest decline (37%) among all the species assessed. Unfortunately no data are yet available on the trends in other species groups dependent on the quality of the inland wetland habitat. Habitat loss and pressures such as for example aerial deposition of nutrients that by eutrophication alter the vegetation composition in and around mires, bogs and fens may play a role on the decline of species. Eutrophication can be detrimental to butterflies that depend on certain host plants on which their larvae feed and develop. Not only habitat loss but also habitat isolation poses a threat to the butterfly populations. In relation to this it should also be noted that the Corine Land Cover analysis on which the habitat trend data is based, only detects changes in wetland areas bigger than 25 hectares.

The same habitat pressures may play a role in the heath and scrub habitat, where butterflies also show a strong decline. Two percent of the habitat was lost since 1990 and the butterfly species declined by 28%. This habitat has a particular high diversity of butterfly species with 92 species identified as linked to the heath and scrub habitat.

The state of biodiversity in the farmland habitat is based on the highest number of species assessed namely 206 butterfly species and 23 birds species. The two species groups show very similar trends -28% and -22% respectively. These species are typical of open grassy areas such as extensively farmed areas, grasslands, meadows and pastures. The main pressures at play here are loss of extensive farmland with a low or no input of nutrients, herbicides and pesticides, and an increase in agricultural intensification, which leads among other factors to loss of marginal habitats and hedgerows and a high input of fertiliser, herbicides and insecticides.

The area of woodland and forest habitats have increased by 1% which in absolute terms is about 500 000 hectares. The species however, linked to the forest and woodland habitats have declined. Worst for the 89 butterfly species that have declined by 24% compared to a 2% decline of woodland, park and garden birds. Nearly all forests in Europe are managed to some extent and the various management schemes surely have an impact on species diversity. The presence of dead wood and old growth trees are of importance to birds for nesting and feeding and forest clearings are an important factor for the forest butterflies just to mention a few.

Fig. 1: Trends in birds and butterfly populations in EU-25 (% decline)



Data source: Pan-European Common Bird Monitoring project (EBCC, BirdLife Int, RSPB), Dutch Butterfly Conservation

Note: The number in brackets show the number of species taken into account for each habitat type. The bird trends reflect the period 1980-2002. The butterfly trends reflect the period 1972/73-1997/98.



Specific policy question: What is the state and trend of birds and butterflies related to certain ecosystem types?

This indicator summarises species' trends across the EU-11 and shows a significant decline in farmland bird populations. Where data are available, the populations have declined on average by over a third between 1980 and 2002 with the steepest phase in the early 1980s, a relative stability from the mid-1980s to 2000, and then a subsequent downturn.

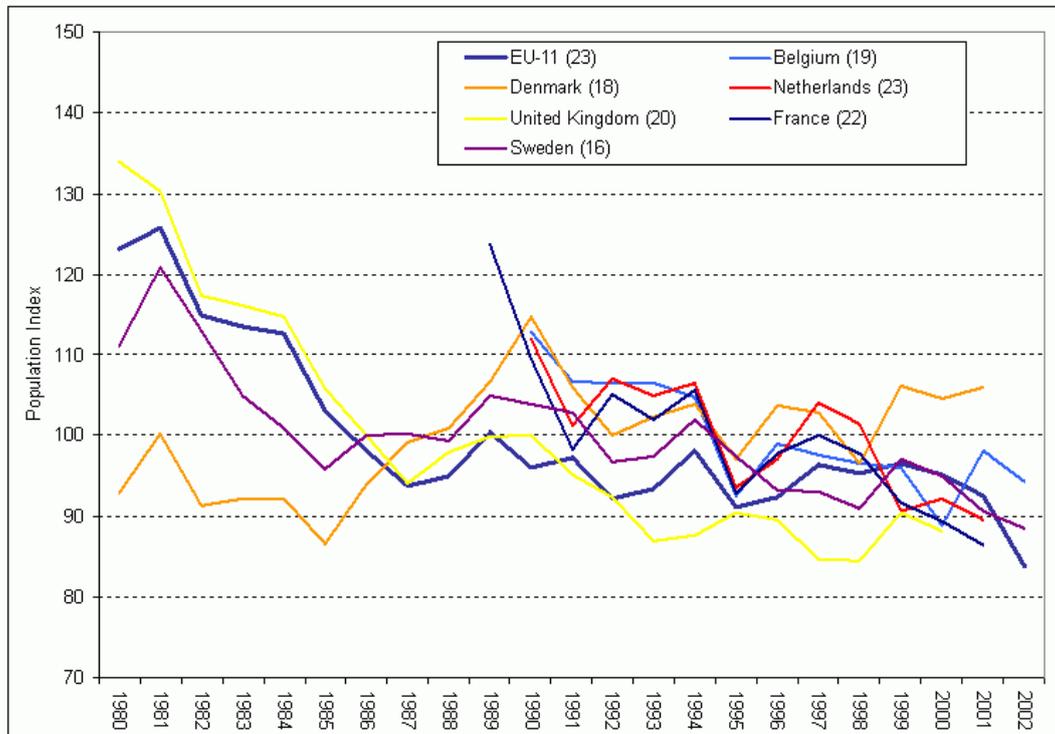
The countries most affected by this decline are Belgium, France, Netherlands, Sweden and United-Kingdom. There is big variation however, within countries and among countries.

The dataset on butterflies allow for aggregation across species and habitats in order to show species trends per country. Figure shows that in Austria, Belgium, The Netherlands, and Germany there has been an overall decline in species of more than 50% between 1970/75 and 2000. No data at all were available for Portugal, Italy and Cyprus. Many Member States had data only for three of the four habitat types and often it was a lack in data on heath and scrub butterflies. Spain as the only country shows a positive species trend, but Spain has not reported any data on wetland butterflies.

Aggregation of the data across habitats and countries on butterflies on a sub regional level shows strong differences between the 15 old EU Member States and the 10 new EU Member States. During the period of early 70'ties to late 90'ties the average decline in EU-15 is about 35%, whereas the new EU-10 has a decline of -20%.



Fig. 2: Trends in farmland bird populations in Member States with a higher share of intensive agriculture. Trends in farmland bird populations in Member States with a lower share of intensive agriculture.



Data source: Pan-European Common Bird Monitoring project (EBCC, BirdLife Int, RSPB)

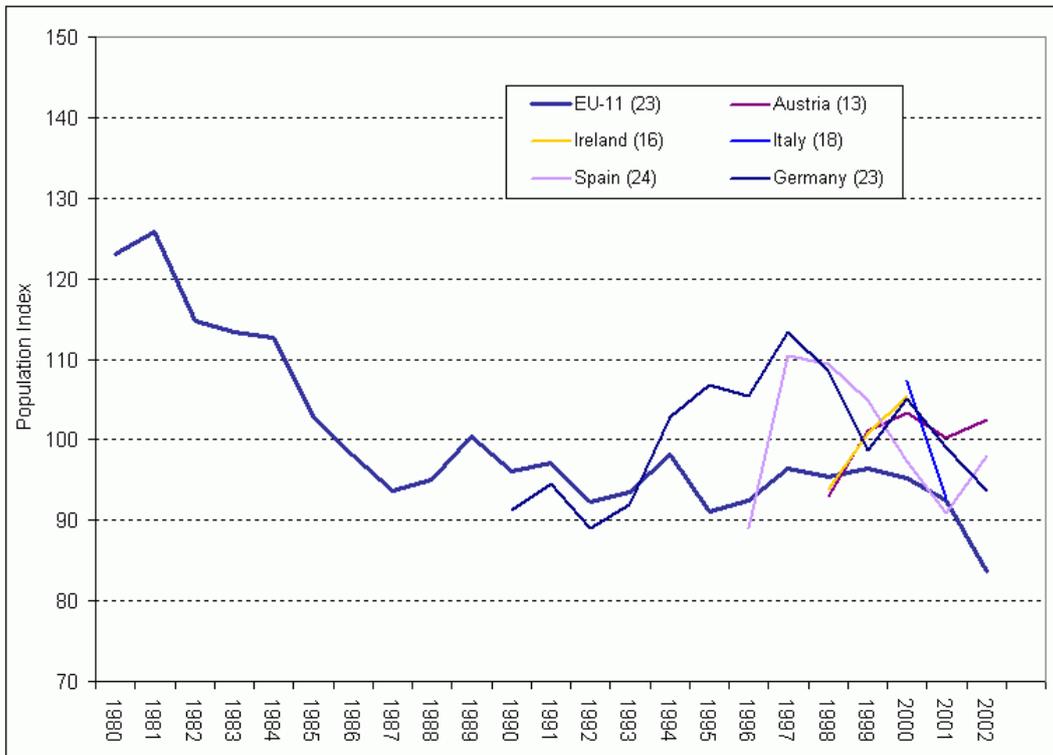
Note: The number of bird species taken into account for each country is given in the legend. The curves should not be compared by index value, but by the slope of the curve in year intervals. The population index value is centred on the average (i.e. the index values are lying close to 100).

Source for country agricultural intensification ranking

Donald P.F., Green R. E. and Heath M. F. 2001. Agricultural intensification and the collapse of Europe's farmland bird populations. Proc. R. Soc. Lond. 268, 25-29.



Fig. 3: Trends in farmland bird populations in Member States with a higher share of intensive agriculture. Trends in farmland bird populations in Member States with a lower share of intensive agriculture.



Data source: Pan-European Common Bird Monitoring project (EBCC, BirdLife Int, RSPB)

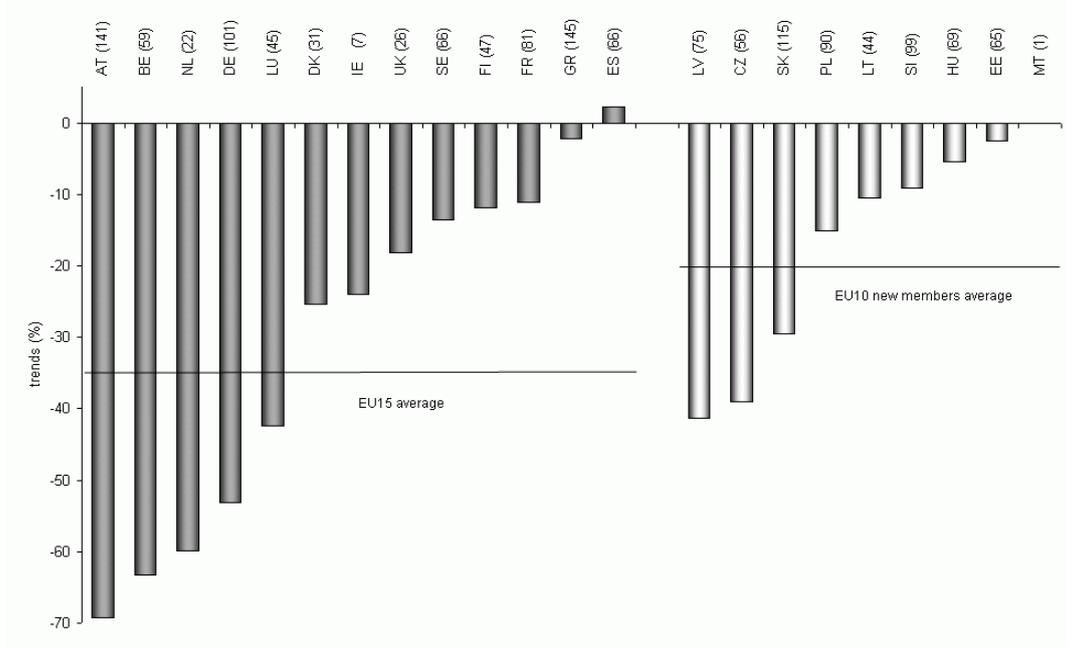
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Fig. 4: Butterflies species trends per EU Member State from 1972/73 - 1997/98



Data source: Dutch Butterfly Conservation

Note: Number of species taken into account for each MS is given in the brackets after the MS name