

BIODIVERSITY MONITORING IN EUROPE



THE VALUE OF CITIZEN SCIENCE



What is citizen science?

The European Environment Agency (EEA) uses the following definition of citizen science: 'Organized research in which members of the public—who may or may not be trained in science — gather or analyse data' ⁽¹⁾.

A common denominator of citizen science activities is that the reporting is done on a voluntary basis.

The value of citizen science monitoring for biodiversity

Citizen science plays a critical role in advancing knowledge about biodiversity, e.g. in relation to monitoring trends in occurrence, distribution, or status of species. The vast data volume that can be collected by a large number of volunteers dwarfs any professional capacity for monitoring. This is especially true for biodiversity monitoring spanning large spatial (e.g. Europe) and temporal extents (e.g. decades).

A focus on citizen science monitoring for biodiversity is very timely for several reasons. Firstly, the acceleration of threats to biodiversity makes it critical to detect biodiversity trends quickly, which will require large volumes of data. Secondly, the advancement in technologies (e.g. recent and widespread proliferation of smart phone use by the general public) provides a huge potential for crowd-sourcing, i.e. the collection of data by a high number of volunteers.

Using citizen science for biodiversity monitoring projects in Europe

In Europe there are many different biodiversity monitoring schemes involving networks of volunteers. For example, the 'EU-wide monitoring methods and systems of surveillance for species and habitats of Community interest' project (EuMon) hosts a web portal ⁽²⁾ which covers a total of 663 monitoring schemes in Europe some of which are based on citizen science.

How is the use of citizen science for biodiversity monitoring being harnessed by the EEA?

The EEA aims to deliver timely, targeted, relevant and reliable information to policymakers and the public to provide a sound decision basis for environmental policies. Indicators are an integral part of this effort and assessments on the state of biodiversity rely on indicators. The biodiversity indicator on 'trends in abundance and distribution of selected species', taken from the Streamlining European Biodiversity Indicators (SEBI) ⁽³⁾ process, presents population trends in common birds (see Box 1) and grassland butterflies (see Box 2) ⁽⁴⁾. Monitoring of both of these species groups relies heavily on biodiversity observations by volunteers.

These indicators have played an important role in measuring progress towards the European 2010 biodiversity target of halting biodiversity loss in Europe by 2010 ⁽⁵⁾ as measured by the SEBI and will play an important role in measuring progress towards the targets in the EU 2020 Biodiversity Strategy and the Aichi Targets of the Strategic Plan for Biodiversity for the period 2011–2020 for the Convention on Biological Diversity ⁽⁶⁾.

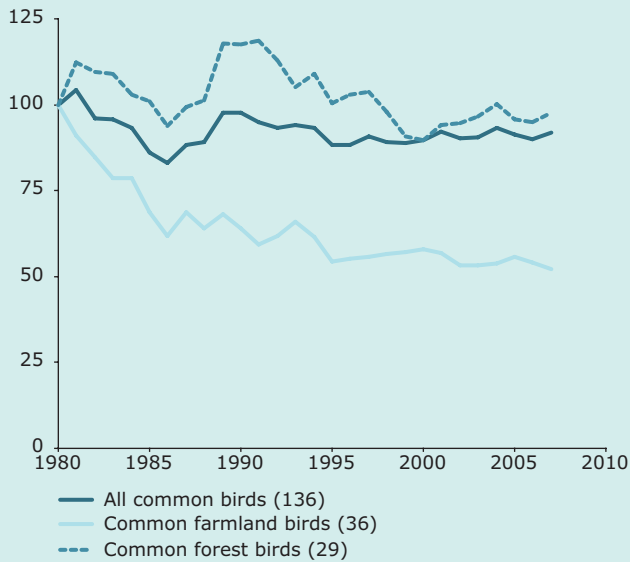
EEA support to the use of citizen science for biodiversity monitoring

The information system *Biodiversity Information System for Europe (BISE)* ⁽⁷⁾ provides a single entry point for data and information on biodiversity in the EU. Although an end user of citizen science, the EEA also supports activities related to citizen science. The global public information service system *Eye on Earth* collects and share data from diverse sources that can be visualised on a map ⁽⁸⁾. Thematic platforms such as *AirWatch*, *WaterWatch*, *NatureWatch*, are key components of *Eye on Earth*. The EEA pilot initiative, *NatureWatch* ⁽⁹⁾, aims on a pilot basis to bring together citizen science monitoring on Invasive Alien Species (IAS) in partnership with EEA member countries and cooperating countries and communities.

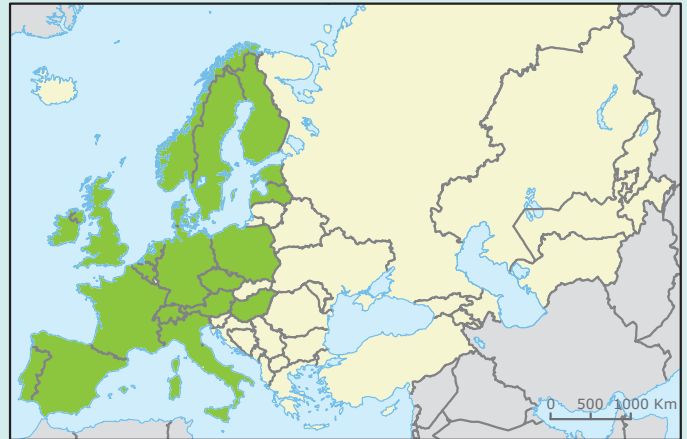
Box 1 Common birds in Europe

The data on breeding populations of common birds across Europe have been gathered through large-scale monitoring schemes based on fieldwork of volunteers, with standardised methodology and formal design, through the Pan-European Common Bird Monitoring Scheme ⁽¹⁰⁾. The project is undertaken through a joint effort from BirdLife International and the European Bird Census Council (EBCC).

SEBI indicator 01: Common birds in Europe ⁽¹¹⁾



Geographical coverage

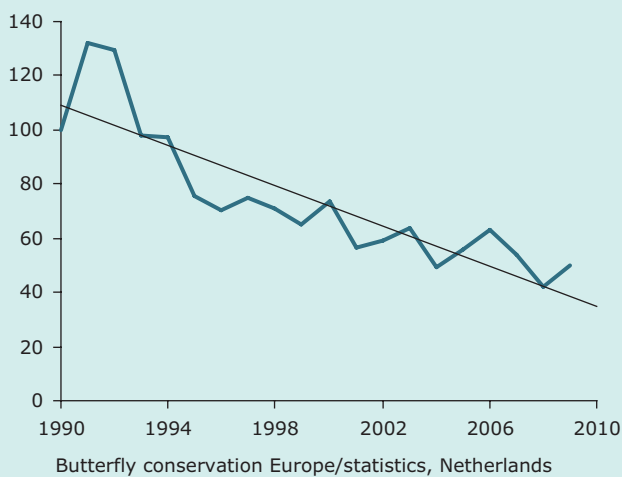


The indicator shows the trends in populations of common birds (n = 136), common farmland bird species (n = 36) and common forest bird species (n = 29) since 1980. Overall, the indicator shows that Europe's common bird populations have been reduced by around 10 % since 1980. Common farmland birds declined most severely, around 50 %, while common forest birds declined by around 10 %.

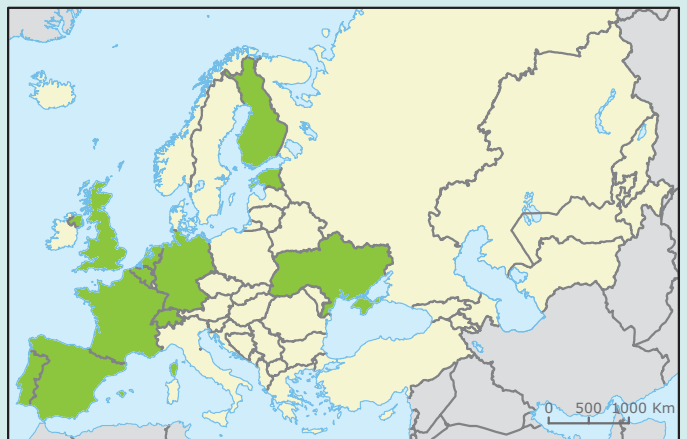
Box 2 Grassland butterflies

The indicator covers 17 species of grassland butterflies and is based on national Butterfly Monitoring Schemes in countries across Europe. The indicator is based on the fieldwork of thousands of trained professional and volunteer recorders, counting butterflies on approximately 3 500 transects scattered widely across Europe ⁽¹²⁾.

SEBI indicator 01: Grassland butterflies ⁽¹³⁾



Geographical coverage



The indicator shows that since 1990, butterfly populations have declined by more than half, indicating a dramatic loss of grassland biodiversity.

References

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- (12) <http://www.bc-europe.eu>, accessed February 2013.
- (13) <http://www.eea.europa.eu/publications/assessing-biodiversity-in-europe-84>, accessed February 2013.



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<http://www.eea.europa.eu/themes/biodiversity/biodiversity-monitoring-through-citizen-science>

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