



Letter to the editor

Real gaps in European bird monitoring: A reply to Voříšek et al.



In the Correspondence Paper “Wetzel et al. fail to identify the real gaps in European bird monitoring” Voříšek et al. appear to have misinterpreted our analysis. Firstly, we give recommendations on data accessibility, data discoverability and future directions in increasing the value of biodiversity monitoring data of any species group in Europe and world-wide. We also draw on the framework of essential biodiversity variables (Pereira et al., 2013; Schmeller et al., 2017) and criteria outlined in Kissling et al. (2018) such data need to fulfill. Secondly, our criteria outlined in the Method section remained unconsidered by the authors in their criticism. The main purpose of our analysis was not to focus on one species group, but to show the data gaps among different taxonomic groups and to show that even within a well-monitored species group such as birds, important differences between countries exist not allowing for a large scale assessment of biodiversity change across Europe.

The conclusion of our paper remains fully valid. We already acknowledged that DaEuMon only reflects data availability at a given time and we pointed out that other major data providers do exist. Further, the focus of Voříšek et al. on the aspect of bird species monitoring fails to comprehensively cover the points raised by Wetzel et al. DaEuMon is the most comprehensive database on the European Monitoring Landscape. DaEuMon has gaps, but those could easily be filled by monitoring coordinators providing their meta-data at <http://eumon.ckff.si/monitoring/>.

Furthermore, Voříšek et al. state that the International Waterbird Census (IWC) data were not fully acknowledged, covering “only 8 countries” in DaEuMon despite data being available from 39 European countries. However, the geographic scope of the DaEuMon database mainly focuses on the 28 EU-European countries (Schmeller et al., 2009) and was only recently extended to cover geographic Europe (Hoffmann et al., 2014). Therefore, our analysis did not cover non-EU countries, such as Russia, Belarus, Ukraine, Moldova, Turkey. The critiques of Voříšek et al. are therefore incorrect. We acknowledge that our database may not represent all monitoring schemes going on in the European Union, whether for birds or any other taxonomic group. However, there is no other comprehensive database that can provide sufficient and robust meta-data to evaluate the quality of biodiversity monitoring undertaken in the EU. Despite European-wide and repeated efforts to contact monitoring coordinators it was so far impossible to fill potential gaps and to comprehensively extend DaEuMon to geographic Europe. Already in Schmeller et al. (2009), the bias of DaEuMon was assessed showing that the assumed bias was much less than feared by reviewers of that manuscript. Nevertheless, species lists of monitoring schemes were and still are difficult to retrieve and we could include only those monitoring schemes in our analysis that fulfilled the criteria outlined in Wetzel et al., which focused on data accessibility. Our conclusion that there are data gaps in bird monitoring are valid for the countries covered in our analysis. We may over-estimate the gap in Greece and Sweden, but failing to provide robust meta-data on

monitoring schemes does not allow evaluating the standards, protocols, and quality of potentially available schemes. Therefore the collected monitoring data might be uninteresting for research and conservation, as any conclusions drawn from such data may be easily disputable. Also on an international scale, e.g. for the Intergovernmental Science-Policy Platform for Biodiversity and Ecosystem Services (IPBES), more meta-information on biodiversity monitoring needs to be provided, to allow withstanding the scrutiny of industry, for example.

In their criticism, Voříšek et al. also mention atlas data for birds as an additional important source for bird data and scientific analyses. We do acknowledge the possible benefit of additional data sources for evaluating species trends over time, which are derived from atlas data or other sources of observation data (see also Jetz et al., 2012). However, atlas data per se does not allow for reviewing data gaps as no information on protocols is made available and data quality cannot be assessed. Only such data have enough value for detecting robust fine-scale changes over time, representing the data most valuable for generating EBVs (see e.g. Kissling et al., 2018; Schmeller et al., 2018). Further, bird atlas data often do not fulfill some of the requirements of open data we need for research. In many cases only derived data are available where the data owner has to give his permission prior to scientific use, which makes it near to impossible to aggregate data in an EBV context over large geographic scales (Kissling et al., 2018). Further, without knowledge of the spatial, temporal, and taxonomic resolution aggregating data in EBVs is prone to fail (Schmeller et al., 2017).

Voříšek et al. also imply that we only promote common data infrastructure and tools for filling gaps in data than to fund data collection. That completely fails to capture our intent and misinterprets the conclusions we draw and the recommendations we give, which are well in line with earlier recommendations of the terrestrial species monitoring group of the Group of Earth Observation Biodiversity Observation Network (GEO BON; Schmeller et al., 2015). We are well aware of the necessity to fund data collection, but we are also aware that organizing the large amount of available data and the evaluation of the quality of the underlying monitoring schemes are a prerequisite for the use of those data in large scale assessments for scientific or for policy purposes. Such assessments need to rely on high quality data to withstand criticism. Therefore, we propose a set of measures to improve data availability and we are not arguing for a specific single measure in our discussion. We explicitly state in our discussion that, along with infrastructure development, there is a “need of efforts to improve national inventories with regards to their taxonomic, spatial and temporal coverage” and the need for “innovative, sustainable funding mechanisms (...). These funding mechanisms could support sustainable storage of data, and long-term initiatives that collect data for specific purposes, such as generating EBVs”. Hence, the points in our discussion are not in opposition to the points raised by Voříšek et al. It is imperative to account for the whole data workflow from data collection, storage, and

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assemblage as non-available, non-discoverable, non-assessable, and non-accessible biodiversity data of whatever taxonomic group will not answer any scientific or policy-relevant questions on the state of, and trends in, biodiversity.

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