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Silent Europe: The Collapse of Common Bird Species

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Abstract

In Europe, bird populations have been threatened for several decades. The authors consulted the indices available to the public from the Pan-European Common Bird Monitoring Scheme (PECBMS), a project that collects data on European common bird species from national monitoring schemes and calculates European common bird indices and indicators to help demonstrate that common birds are decreasing in Europe. According to the PECBMS, between 1980 and 2019, common bird species declined by 18%, agricultural birds by 59%, and forest birds by 7%. Although some bird species have recovered in number and even came back from the break of extinction (e.g., Red Kite, *Milvus milvus*), not the species that were considered common in the last decades. Many factors are associated with this decline as pesticides or the destruction of habitats. Measures are being taken in many countries to reduce this decline. However, information and education of the public could be crucial to saving the decline of common birds

KEYWORDS
Birds, decline, extinction, pollution

SCIENTIFIC REPORT

All over the world, animal populations are declining. Some scientists even describe the present era as the Earth's sixth mass extinction (Butchart *et al*., 2010). The factors responsible for this phenomenon are various and are largely linked to the human impact on ecosystems (Garcês *et al*., 2019; Palazón *et al*., 2012).

In Europe, it has been recognized that the bird population has been threatened for several decades. According to 2021, European Red List of Birds 71 species (13%) are Threatened (Critically Endangered, Endangered, Vulnerable), 35 species (6%) are Near Threatened and 5 species are still Regionally Extinct (BirdLife International, 2021).

For this opinion report, the authors consulted the Pan-European Common Bird Monitoring Scheme (PECBMS) and Eurostat. PECNMS is a project that collects data on European common bird species from national monitoring schemes and calculates European common bird indices and indicators to help demonstrate that common birds are decreasing in Europe. All the data is collected by trained volunteers. This project use TRIM (TRends and Indices for Monitoring Data;) software tool to analyse time series of count data obtained from monitoring schemes and to produce estimates of yearly indices and trends. The analysis is based on log-linear Poisson regression. We examined Europe-wide trends in avian abundance and biomass using a 30-year data set of 144 bird species.

Overall, it was estimated that the European bird population has declined by 4% (Eurostat, 2021). The highest peak occurred between 1980 and 1990, with 1% of birds being lost each year (Ashworth, 2021). PECNMS (Fig. 1) reported that between 1980 and 1990, common birds declined by 18%, agricultural birds by 59%, and forest birds by 7% (Gregory *et al*., 2005). Some species are being affected much harder than others. Eight species of birds account for almost 70% of the declines (Ashworth, 2021).

In 2000 the number of animals lost flattened out, but remains on a slight downward trend, with the numbers of common birds became stabilized or even increasing in some cases (Eurostat, 2021).

Some bird species have recovered in number and even came back from the brick of extinction after the application of proper conservation measures. Two examples are the Red Kite (*Milvus milvus*) and the Azores Bullfinch (*Pyrrhula murina*) (BirdLife International, 2021). Interventions such as well-designed agri-environment schemes, targeted approaches (e.g., reproduction in captivity) and the increase of protected reserves (since 1993 the EU have grown by over 1.3 million square kilometres) have helped some population to recover (Ashworth, 2021; BirdLife International, 2021).

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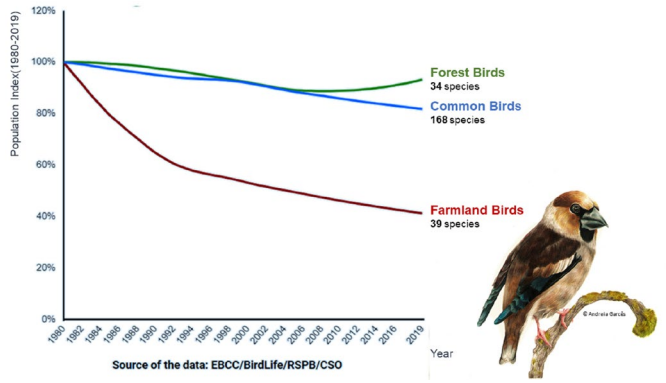

Figure 1. Historical evolution of widespread bird populations in Europe. All common species (168) appear on the blue line, common forest species (34) on the green line and common farmland species (39) on the red line.

Unfortunately, most of the conservation efforts are focused only on rare and iconic species, ignoring common species that may rapidly experience problematic declines (Lehikoinen *et al.*, 2019; BirdLife International, 2021). Consequently, common birds, which play a vital role in ecosystem functions, goods and services such as decomposition, pest management, pollination and seed dispersal, are becoming less and less common (Inger *et al.*, 2015; Ashworth, 2021).

This decline is closely related to environmental degradation. There has been a significant reduction in food availability due to the use of powerful pesticides and the compromise of bird breeding grounds related to intensive agricultural practices and infrastructure construction. These are only some examples of the impact of anthropogenic factors on the environment (Inger *et al.*, 2015).

Indeed, changes in agricultural practices induced by the policy are responsible for a precipitous decline in wildlife, with the highest total losses being recorded in farmland and grassland birds (Inger *et al.*, 2015; Lehikoinen *et al.*, 2019). Biodiversity is undergoing unprecedented global decline. Efforts to slow this rate have focused foremost on rarer species, which are at the most risk of extinction. Less interest has been paid to more common species, despite their greater importance in terms of ecosystem function and service provision. How rates of decline are partitioned between common and less abundant species remains unclear (McMahon *et al.*, 2020).

Overall, avian abundance and biomass are both declining with most of this decline being attributed to more common species, while less abundant species showed an overall increase in both abundance and biomass (Gregory *et al.*, 2005; Lehikoinen *et al.*, 2019). If overall avian declines are mainly due to reductions in a small number of common species, conservation efforts targeted at rarer species must be better matched with efforts to increase overall bird numbers, if ecological impacts of birds are to be maintained (Inger *et al.*, 2015). Mountain areas often hold special species communities, and they are high on the list of conservation concerns. Global warming and changes in human land use, such as grazing pressure and afforestation, have been suggested to be major threats to biodiversity in the mountain areas, affecting species abundance and causing distribution shifts toward mountain tops (Lehikoinen *et al.*, 2019; McMahon *et al.*, 2020). Population shifts towards poles and mountaintops have been documented in several areas, indicating that climate change is one of the key drivers of species' distribution changes. Despite the high conservation concern, relatively little is known about the population trends of species in mountain areas due to low accessibility and difficult working conditions. Thanks to the recent improvement of bird monitoring schemes around Europe, we can here report the first account of population trends of 44 bird species from four major European mountain regions: Fennoscandia, UK upland, south-western (Iberia) and south-central mountains (Alps), covering 12 countries. Overall, the mountain bird species declined significantly (−7%) during 2002–2014, which is similar to the declining rate in common birds in Europe during the same period. Mountain specialists showed a significant −10% decline in population numbers (Lehikoinen *et al.*, 2019; McMahon *et al.*, 2020). The slope for mountain generalists was also negative, but not significantly so. The slopes of specialists and generalists did not differ from each other. Fennoscandian and Iberian populations were on average declining, while in United Kingdom and Alps, trends were nonsignificant. Temperature change or migratory behaviour was not significantly associated with regional population trends of species (Howard *et al.*, 2020; Lehikoinen *et al.*, 2019; McMahon *et al.*, 2020). Alpine habitats are highly vulnerable to climate change, and this is certainly one of the main drivers of mountain bird population trends. However, observed declines can also be partly linked to local land use practices. More efforts should be undertaken to identify the causes of decline and to increase conservation efforts for these populations (Inger *et al.*, 2015; Lehikoinen *et al.*, 2019). Another factor is the action of small predators, such as cats, which have a significant effect on small bird mortality. Long-distance migrants also decreased proportionally more than other groups, due to lack of food during migration, habitat destruction, predation, and climate change (Howard *et al.*, 2020).

One of the past most abundant common birds that have suffered accentuated decline is the house sparrow (*Passer domesticus*) which lost 50% of its population since 1980, a total of 247 million birds (Lehikoinen *et al.*, 2019). Figure 2 shows the time trend of the House Sparrow (*Passer domesticus*) in Europe from 1980 to 2019, where this decrease in population can be viewed.

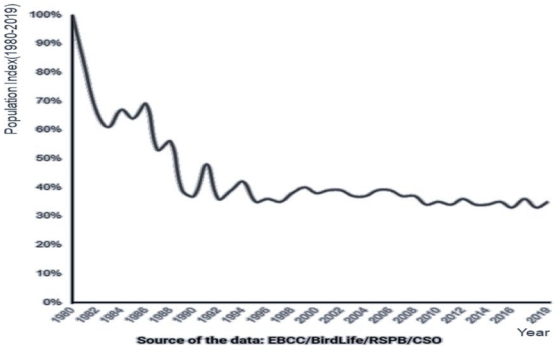

Figure 2. Temporal trend in the house sparrow (*Passer domesticus*) in Europe from 1980-2019.

Cities and agricultural areas in Europe are becoming increasingly silent. Several mitigation measures have already been introduced by the institutions and the EU to reverse this trend. The Farm to Fork Strategy that id seeking to reduce by 50% the overall use of chemical pesticides by 2030, and the EU Biodiversity Strategy aims to bring back at least 10% of agricultural area under high-diversity landscape features and enlarge the area under organic farming to 25% by 2030 (BirdLife International, 2021). However, further measures should be taken quickly to prevent the decline of common birds. The construction of green areas in the cities (e.g., parks), recovering endemic forests, installation of artificial nests, prevention of the presence of abandoned cats in the outdoors, modification of agricultural methods to prevent monoculture, reduction of pesticide application and bird feeders in gardens, are some of the measures that can be used (Howard

et al., 2020; McMahon *et al*., 2020).

However, the decline of common birds requires more than appropriate measures by competent organisations. The information and education of the common people, acting through simple and common actions, scientific research and data dissemination can provide always updated information that could be crucial to saving the decline of common birds (McMahon *et al*., 2020; BirdLife International, 2021).

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