

IMPACT OF CLIMATE CHANGE ON BIRDS

FFH Focus 3

Climate change¹ has multiple impacts on avifauna: changes in the distribution of species and the composition of communities, degradations of demographic parameters (survival and reproduction rates) or changes in migration periods and laying dates. Various indicators, calculated for Wallonia², make it possible to appreciate these impacts.

Migration phenology

Migratory species must adapt their seasonal movements to the availability of food resources, which vary with temperature and rainfall. At temperate and boreal latitudes, the average return dates of migratory birds (spring migration) have been advanced by an average of two days per decade over the past 30 years³. The analysis of the Walloon data confirms this phenomenon for migratory birds transiting our regions.

Climate-linked change in communities

The influence of climate change on communities of species⁴ can be analysed using the Community Temperature Index (CTI). It is the average of the mean breeding range temperatures of each species in the community, weighted by the abundance of each species in the community. In Europe, the evolution of the CTI is correlated to a return northwards by 37 km of the communities between 1990 and 2008⁵. In Wallonia, the CTI showed a slight upward trend of 0.027°C per decade over the period 1990-2014, a value very similar to the European average (0.026°C). The peaty environments of the Ardenne plateaus were characterised by a greater increase in the CTI, which could indicate a more marked influence of climate change on the avifauna of these environments.

Climate-linked change in populations

An indicator of climate impact on bird populations has recently been developed⁶. It is based on the ratio between the populations of species predicted to be favourably influenced by global warming and likely to extend their natural range,

and those predicted to be affected and for which a contraction in their range is expected⁷. At the European level, the indicator has risen sharply over the last 30 years, suggesting a growing impact of climate change on bird populations. In Wallonia⁸, the indicator shows an increase since 2001, followed by a possible stabilisation that began in 2009. Several species⁹ owe their current regression at least in part to a change in climate; the progression of other species¹⁰ is probably also linked to this.

International objectives

Monitoring the effects of climate change on biodiversity is one of the objectives that Belgium has set itself as part of the implementation of the Strategic Plan 2011-2020, and the Aichi biodiversity targets¹¹. Moreover, in its Air Climate Energy Plan 2016-2022 (*Plan air climat énergie 2016-2022*)¹², Wallonia intends *inter alia* to support and perpetuate the financing of biodiversity monitoring networks.

[1] → AIR Focus 1 | [2] Aves, 2014c | [3] Lehtikoinen *et al.*, 2004 | [4] Species assemblages within a geographical unit | [5] Devictor *et al.*, 2012 | [6] Stephens *et al.*, 2016 | [7] This indicator does not take into account the effects of other factors (e.g. changes in land use), it only measures the effect of climate change. | [8] In Wallonia, among the species studied, 70 species are predicted to be negatively affected by global warming compared to 10 who it is believed will benefit from it. | [9] Meadow pipit, fieldfare, even great grey shrike | [10] European stonechat or melodious warbler | [11] <https://www.cbd.int> | [12] → AIR Focus 3

Fig. FFH Focus 3-1 Impact of climate change on communities of bird species in Wallonia

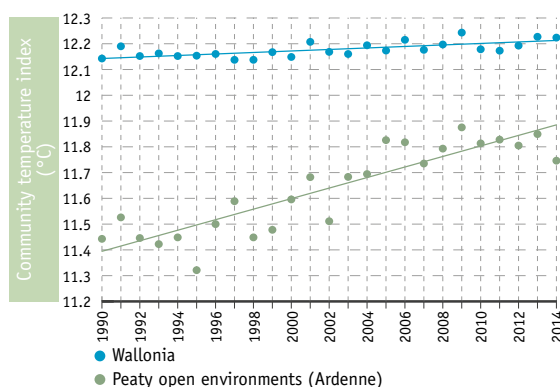


Fig. FFH Focus 3-2 Impact of climate change on populations of bird populations in Wallonia

