

## BIOCLIMATIC ZONES

The climate influences the functioning of ecosystems through the direct and indirect effects of solar radiation, wind, temperature and rainfall. Bioclimatic zones have been defined at the Walloon level.

### The climate as a factor in the distribution of woody species

As part of the revision of the ecological file of tree species and the afforestation guide<sup>1</sup>, a new division of the territory has been established, based on climatic criteria linked to the behaviour of woody species. This zoning now serves as an entry point for assessing the compatibility of a species with the macroclimate, as a replacement for ecological territories. These were demarcated not only using climatic criteria, but also by geomorphological or lithological features.

### The map of bioclimatic zones in three stages

A first stage consisted of dividing the regional territory on a purely climatic basis, based on a series of spatialised indicators on a grid measuring 500 m (e.g. average temperatures and rainfall - annual, monthly and rainfall linked to the vegetation period; the summertime climatic water balance). These indicators are calculated on the basis of data from the climate stations of the RMI over a 20-year period from January 1986 to December 2005.

In a second stage, the division was refined by identifying areas of climate sensitivity for a set of key woody species. This demarcation was done using distribution models for species from the literature, or autecological data<sup>2</sup> from different sources - including the ecological file of species from 1991.

Finally, the resulting rough zoning was adjusted for operational purposes, avoiding the inclusion of micro-zones and facilitating demarcations; as such, if bioclimatic limits were closely associated with elevation, values linked to elevation thresholds were defined.

### Ten forest suitability zones

Ten zones were consequently delineated, within which the suitability for forest species is homogeneous overall in terms of macroclimate: The Scaldisian Lowlands and Valleys; Hesbaye-Brabant; Sambre-et-Meuse and Condroz; Fagne, Famenne and Caletienne; Thiérache; Low and Mid-Ardenne; Central and Eastern Ardenne; High Ardenne; High Lorraine; Low Lorraine.

In the context of using the data to define the suitability of species per station, climatic compatibility is assessed according to four levels: optimal, tolerance, extended tolerance and exclusion. If the species is not optimal, the risk factors are specified as well as possible offsetting.

<sup>[1]</sup> Forest Research and Extension Framework Agreement 2014-2019 (ACRVF) (Ministerial Decree (AM) of 30/11/2016) | <sup>[2]</sup> Autecology concerns the study of individual species in relation to the environment (biotope). It focuses on the requirements of a species with respect to environmental factors.

Map 6 Bioclimatic zones

