

# Applied ecological models based on ecotope database.

Axel Bourdouxhe<sup>1</sup>, Thomas Coppée<sup>1</sup>, Julien Radoux<sup>2</sup> and Marc Dufrêne<sup>1</sup>

1. University of Liège, Gembloux Agro-Bio Tech, Biodiversity and Landscape team

2. University of Louvain, Earth and Life Institute

Ecotope data-base has a wide range of possibilities thanks to an **important environmental data-set** and a **segmentation** that allow the use of coherent and homogenous landscape units. Here are some **examples of the applications allowed by ecotope data-base** that are performed by LifeWatch-WB team.

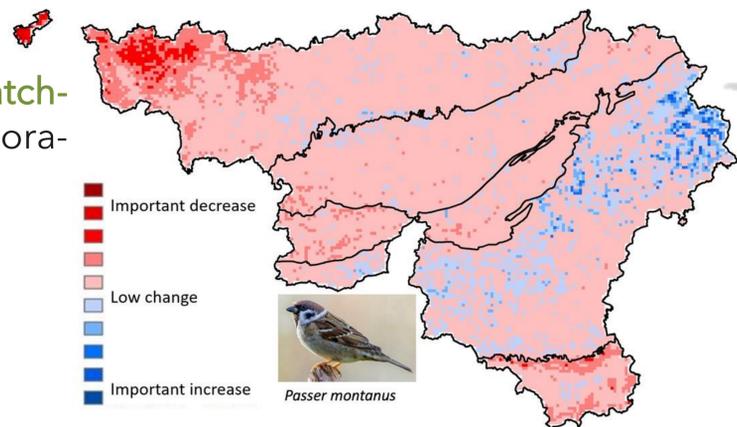
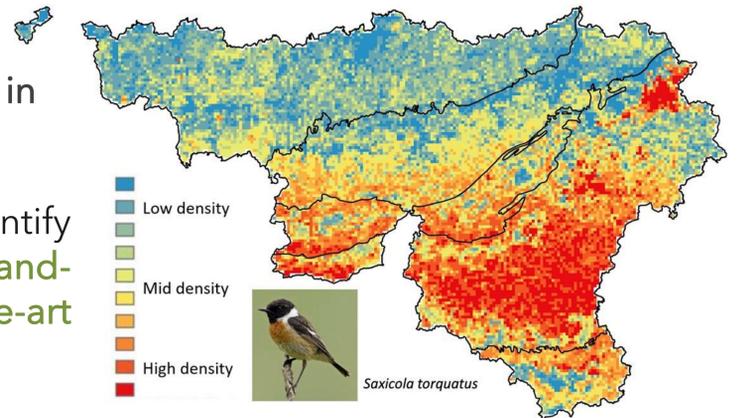
## Bird dynamic models

Ecotope database is used to study the bird population trends in Wallonia.

Understanding of the dynamics of bird populations is important to identify the **driving forces** of changes. To explain the bird trends, two dates of **land-cover map** derived from ecotope database are available. A **state-of-the-art modeling** is used.

Several modelling methods are developed. An aim is to check **the efficiency of models predicting the future change in bird populations** based on change of land cover. These different models produce some estimates of bird population sizes and some density maps for Wallonia for two periods.

Some produced density maps are **available on the LifeWatch-WB website**. This work is made in collaboration with Natagora-Aves.



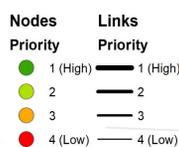
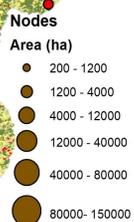
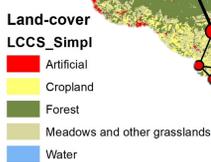
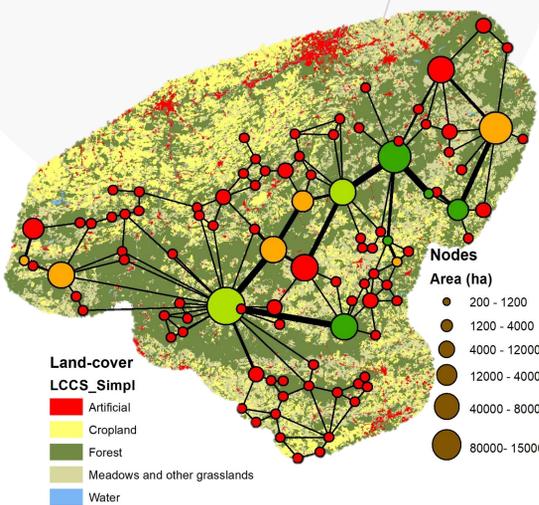
## Species connectivity analyses

Ecotope database also allows to perform state-of-the-art species connectivity analysis using spatial-graph theory.

Facing the landscape fragmentation by improving its connectivity for species is a **top priority** in nature conservation. Spatial-graph analysis allows to evaluate **the importance of corridors and habitat patches for the general connectivity**.

To do so, a **resistance map** where to each pixel correspond a cost to dispersion must be created. Environmental data-set included in ecotope data-base can be used to perform **habitat suitability models** that are derived into resistance maps. This is done by an exponential transformation that assigns an important cost to unfavorable areas.

Then, spatial graph analyses are performed to identify most important corridors and habitat patches for general connectivity. **Results of connectivity analysis are thus precise and objective**.



Thomas Coppée



Axel Bourdouxhe

Please, if you have any question, contact us :

axel.bourdouxhe@uliege.be

thomas.coppee@uliege.be

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