ReSurveyEurope

Project Metadata Form

When contributing data to ReSurveyEurope, please fill in this form for each resurvey project and send it to Ilona Knollová (ikuzel@sci.muni.cz) together with the database. A resurvey project is understood as repeated sampling of a certain type of vegetation in a certain study area using specific methods.

- PROJECT NAME (identical with the Resurvey Project name given in the database):

  Benesov Grassland Experiment

- FULL PROJECT NAME (use if the full project name is longer than used in the database):

  Benesov Grassland Experiment

- REFERENCE (publication or URL or DOI of the dataset if published online):

  doi: 10.1007/s00442-019-04415-y.
  doi: 10.1111/j.1654-109X.2007.tb00508.x

- DATA OWNER: person(s), institution(s):

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- METHODS (description of sampling design and methods):

  Originally, the same experiments were established in five different European countries as part of the CLUE project (Changing Land Usage: Enhancement of biodiversity and ecosystem development) with the aim to investigate the diversity effect on ecosystem functioning. The basic results are presented in van der Putten et al. (2000), Lepš et al. (2001), Hedlund et al. (2003) and Lepš et al. (2007). In this paper, we present the vegetation development at the Czech Republic site over the first 20 years.

  Study site
  The experiment was established in Benešov, Czech Republic (N 49°19.9', E 15° 0.3', 659 m a.s.l.) in spring 1996 on an ex-arable field where the last crop, barley Hordeum vulgare, was cultivated in 1995. It had been alternated with potatoes Solanum tuberosum and pea Pisum sativum in the past. The experimental site is surrounded by arable land and recently established species-poor grasslands. The mean annual temperature of this site is 6.4 °C and the average rainfall amounts to 680 mm per year. Both the warmest and the wettest month is July (mean temperature 16.4 °C and average precipitation 78 mm). The coldest month is January (-2.7 °C) and the driest one is February (36 mm). The bedrock is paragneiss, which is covered with brown loamy soil. Starting the experiment, the content of organic matter in soil was 4.88%, the total N in 100 g of soil was 1538 mg, available P in 100 g of soil was 24.3 mg and pH was 5.88 (van der Putten et al. 2000).

The experiment was carried out in five randomised blocks, each containing three 10 × 10 m plots with the following treatments: 1) natural colonisation without any sowing (NC), 2) low-diversity seed mixture with four species sown (LD), and 3) high-diversity seed mixture with 15 species sown (HD). The plots were located in a continuous grid with 2 m wide aisles between the plots. The area was mown annually, twice a year, in June and October (in dry summer years the autumn mowing was omitted), with the same mowing machine used over the whole experimental site (enabling seed dispersal among individual plots in the experiment). Regular mowing was introduced to direct the secondary succession toward an extensively managed meadow. Sown species were selected respecting their participation in typical extensively managed meadows in the area. The selection was further restricted by the condition of the multisite CLUE experiment that two grasses, two legumes and one other forb should be common to all five countries (van der Putten et al. 2000).

For the HD treatment, five grasses (Cynosurus cristatus, Festuca rubra, Holcus lanatus, Phleum pratense, Trisetum flavescens), five legumes (Lathyrus pratensis, Lotus corniculatus, Medicago lupulina, Trifolium dubium, Trifolium pratense) and five other forbs (Centaurea jacea, Galium verum, Lychnis flos-cuculi, Plantago lanceolata, Prunella vulgaris) were sown in each plot. The density of each sown species in HD plots was 500 seeds / m 2 for grasses and 100 seeds / m 2 for both legumes and other forbs. For the LD treatment, four species were sown (a subset of the 15 species sown in HD): two grasses in a density of 1250 seeds / m 2 for each species, the one legume and the other forb both in densities of 500 seeds /m 2 , resulting in total densities of 2500 sown grass seeds / m 2 and 500 other species seeds / m 2. Species composition of the LD plots differed between blocks (Table 1), enabling an assessment of the effect of particular sown species on the course of succession (Huston 1997). NC plots served as controls left to be colonised naturally (with time increasingly also from the sown plots of the experiment).

- ENVIRONMENTAL DATA (list of environmental data measured):

Soil physicochemical properties (N, P, cations, texture, pH, soil microbial composition, daily precipitation, temerature)

- MANIPULATED PLOTS (description of the treatment if the plots were manipulated, e.g. mowing twice a year, fertilizing by NPK once a year, post-fire succession)

See Methods for description of the experimental setting related to sowing densities and composition.

In Ceske Budejovice, 22.1.2021

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