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):
  Podyjí Forest Experiment

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

- REFERENCE (publication or URL or DOI of the dataset if published online):
  Doi: 10.1016/j.foreco.2019.05.073

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

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- METHODS (description of sampling design and methods):

  The experiment was established in the canyon of Dyje river in Podyjí National Park (South Moravia, Czech Republic; 300 m a.s.l., 48°50'56"N, 15°53'13"E), which covers an area of 63 km2. The canyon has nutrient-poor bedrock with shallow soils. Until mid 20th century, a large part of the area was managed as wood-pastures or coppice-with-standards forests, which maintained the landscape open. These practices were abandoned in the 1950s and the forest canopy gradually became more closed and structurally homogenized (hereafter called 'closed forest'). Though the area is nowadays covered mostly by closed-canopy forest, yet, it comprises a unique mosaic of diverse habitats. Namely, the upper slopes of the canyon with shallow soils are often covered with thermophilous oak forests with open canopies (referred to as 'open forest') which is the most appreciated area for its high biodiversity.

  Closed forests in the lower part of the river valley belong to Hercynian oak-hornbeam forests (classified as the phytocoenological unit Melampyro nemorosi-Carpinetum betuli; Chytrý et al., 2008). Average basal area of the closed forests [composed of Quercus petraea (41%), Carpinus betulus (37%), Tilia cordata (18%) and other tree species (1%)] is 35.4 m2/ha with canopy openness of 5% (Sebek et al., 2015). Open forest formation belongs to the Sorbo torminalis-Quercetum and Genisto pilosae-Quercetum petraeae units, and comprise Q. petraea (90%), T. cordata (5%), C. betulus (4%) and other tree species (1%) and are characteristic of lower mean basal area (25.5 m2/ha) with higher mean canopy openness (15%) than closed forests. Alluvial meadows at the bottom of the river valley belong to the

alliance Arrhenatherion and comprise mesic graminoids and forbs such as Festuca rubra (coverage 15%), Dactylis glomerata (10%), Achillea millefolium (4%), Taraxacum sect. Ruderalia (3%), and others.

Experimental design and data collection
The experiment was carried out in six sites in the core zone of the national park, each containing six 40 × 40 m plots of the following habitats: connected clearing, isolated clearing, closed forest, open forest, forest edge (at the border with the meadow), and alluvial meadow. In total, there were 12 experimental clearings (6 connected, 6 isolated) and 24 reference plots established across the six sites. In February 2011 (in four sites) and February 2012 (in two additional sites), a pair of forest clearings (40 × 40 m in size) was created next to each other near the bottom of the river canyon (in close vicinity of the alluvial meadow) to guarantee minimal sloppiness and minimal differences in soil properties. A few trees were left standing in the clearings in order to set up conditions resembling environment of the open forest or coppice-with-standards woods. The motivation for creation of the openings in the closed forest was to support populations of endangered fauna and flora (e.g., the critically endangered butterfly, the clouded apollo Parnassius mnemosyne), whose distribution is tightly connected with distribution of the open forest (Sebek et al., 2015). The first plot (40 × 40 m, i.e. 1600 m2) of clearing pair, called here 'connected clearing', was situated directly next to the alluvial meadow, while the second plot of the pair, here called 'isolated clearing', was situated inside the closed forest so that it was isolated by at least 40 m wide matrix of dense forest from connected clearing and other biotopes. After cutting the trees, mean canopy openness in the clearings increased up to 22 %.

Vegetation data were collected every year from 2011 to 2016 at the peak of vegetation season in June. In each 40 × 40 m plot (further called larger scale) species presence/absence was recorded. Cover of each species was visually estimated in 4 permanent 2 × 2 m subplots (i.e., 4 m2, further called fine scale of 4 m2) randomly distributed within each 40 × 40 m plots. Although dozens of people participated in vegetation sampling, JD, MD and MB were present in all the years assuring consistency of estimates.

- ENVIRONMENTAL DATA (list of environmental data measured):

  Soil physicochemical properties (Temperature, soil moisture measured by TMS loggers with 15 min intervals)

- 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, 26.1.2021

Jiri Dolezal