Spatially explicit database of tree …

Occurrence dataset published by Institut National de la Recherche Agronomique (INRA)

15,191
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Summary

FULL TITLE

Spatially explicit database of tree related microhabitats (TreMs). Version 1.2. Integrate+ project

DESCRIPTION

'Tree – tree' interactions are important structuring mechanisms for forest community dynamics. Forest management takes advantage of competition effects on tree growth by removing or retaining trees to achieve management goals. Both competition and silviculture have thus a strong effect on density and distribution of Tree related Microhabitats (TreMs) which are key features for forest taxa at the stand scale (e.g. Bouget et al. 2013, 2014). In particular, spatially explicit data to understand patterns and mechanisms of TreM formation in forest stands are rare. To train and eventually improve decision making capacities related to the integration of biodiversity aspects into forest management 39 usually 1 ha (100 m x 100m) permanent plots were established in dominant forest communities of Europe. Due to their demonstration character the selection of plots was non-systematic. They do, however, cover a broad range of forest types (e.g. beech-oak, beech-fir (-spruce), oak-hornbeam, pine-spruce, etc.), altitudinal gradient (from 25 m – 1850 m) and site conditions (e.g. oligotrophic Luzulo-Fagetum or Vaccinio-Pinetum to mesotrophic Galio-Fagetum or Milio-Fagetum). For each plot the following data is collected: (1) tree location as polar coordinates (stem base map), (2) tree species, (3) forest mensuration data (dbh in [cm], tree height in [m]), (4) tree related microhabitats (TreMs) and (5) tree status (living or standing dead). In addition to the spatial dendrometric data we provide information on plot establishment, management history (year of last intervention), forest type, plot location (state, region, country), elevation, means for annual precipitation and temperature, and the natural forest community.

PURPOSE

Initially the permanent plots established within the Integrate+ project had the focus on showing good practice examples of integrative forest management concepts. The plots were designed following the Marteloscope approach to allow practitioners to perform virtual tree selection exercises in the demonstration sites based on different scenarios and forest management strategies. Immediate feedback on their decisions is given in terms of ecological and economic impacts. Particular attention was given to tree related microhabitats as these structures are home to many, also endangered species. Retaining and restoring such habitats in managed forests can be well integrated into the work portfolio of forest managers and thus be a direct contribution to biodiversity conservation in managed forests. The TreM recording and the development of the field catalogue was primarily aimed at providing individual habitat values for each tree to make harvesting impacts visible to practitioners in Marteloscope exercises. In the course of the project the plots themselves proved valuable as exploratory forests for other research questions as well. In particular, the database with the spatially explicit information on trees and TreMs looked promising to increase understanding of TreM formation and development, and also spatial distribution.

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REGISTRATION DATE

16-Jun-2017

SERVED BY

IPT Dynafor

LINKS

- Dataset homepage

ALTERNATIVE IDENTIFIERS

- UUID
  2e102194-f384-4712-89a4-5db7a...
- Source webpage
  http://dynids.toulouse.inra.f...

EXTERNAL DATA

- Darwin Core Archive

METADATA DOCUMENTS

- Original document (EML)
- Cached copy (EML)
- GBIF annotated version (EML)

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ADDITIONAL INFORMATION

In addition to the information provided in this dataset further data were collected in the plots. Crown base height (cbh) in [m] was measured for each tree > 7 cm dbh in one step when recording tree height. Cbh was used in combination with a visual assessment of timber quality classes to estimate economic values (market price) for each tree. Timber quality classes used were 'veneer' (A - quality); 'sawnwood' (B - quality), 'sawnwood' (C – quality), 'industrial timber' (IT or D - quality) and 'fuelwood' (F or energy wood). The volume of each section was calculated based on standard calculation methods differentiated by tree species (form indices or specific tapering values). Timber market prices for each quality class were provided by local forest managers at the time of data collection. As timber market prices fluctuate the value of a tree (in local currencies) represents only a rough indicator. In 6 of the permanent plots spatial information on coarse woody debris (CWD, d > 10 cm at smaller end) was collected additionally. Snags and standing deadwood are included in the main dataset but stumps and logs were measured only in the selected plots. For both stumps and logs the following information was recorded: (1) object (stump, log, root plate, crown); (2) polar coordinates plus orientation for logs (Azimuth); (3) height and diameter (for stumps) or diameters at both ends (d1, d2) and length in [m] (for logs); (4) decay class (5 classes); (5) tree species or conifer/broadleaf.

TEMPORAL COVERAGES

Date range: 01-Mar-2014 - 30-Apr-2017

LANGUAGE OF METADATA

ENGLISH

LANGUAGE OF DATA

ENGLISH

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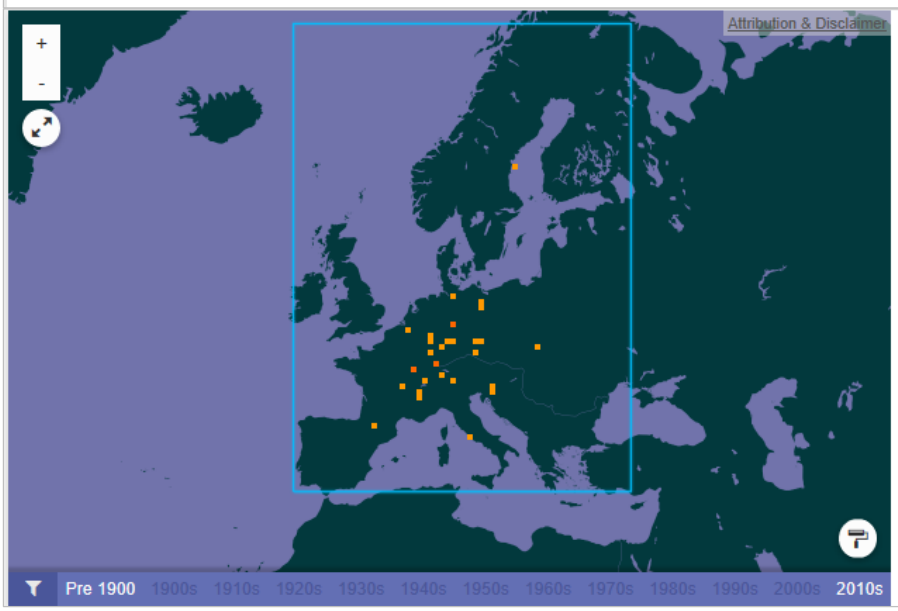

15,191
Georeferenced data

VIEW RECORDS

All records | In viewable area

DESCRIPTION

Currently Europe (Belgium, Czech Republic, France, more

ABOUT

What does this map show?

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Taxonomic Coverage

Included are all tree species that occurred at least once in any of the plots.

SPECIES

Fagus sylvatica (Common beech), Fagus orientalis (Oriental beech), Quercus robur (Pedunculate oak), Quercus petraea (Sessile oak), Quercus pubescens (Downy oak), Quercus rubra (Champion oak), Picea abies (Norway spruce), Pinus sylvatica (Scots pine), Pinus nigra (Black pine), Pinus cembra (Swiss stone pine), Pinus mugo (Swiss mountain pine), Abies alba (Silver fir), Acer platanoides (Norway maple), Acer pseudoplatanus (Sycamore maple), Acer campestre (Field maple), Fraxinus excelsior (Common ash), Carpinus betulus (Hornbeam), Tilia cordata (Small-leaved lime), Tilia platyphylla (Large-leaved lime), Ulmus glabra (Scots elm), Larix decidua (European larch), Betula pendula (Silver birch), Betula pubescens (Downy birch), Populus tremula (Common aspen), Prunus avium (Wild cherry), Prunus padus (Bird cherry), Alnus glutinosa (Common alder), Sorbus torminalis (Wild service tree), Sorbus domestica (True service tree), Sorbus aucuparia (Rowan), Sorbus aria (Common whitebeam), Taxus baccata (European yew), Salix caprea (Goat willow), Corylus avellana (Common hazel), Pseudotsuga menziesii (Douglas fir), Quercus cerris (Turkey oak), Acer opalus (Italian maple), Acer lobelii (Lobel's oak), Ulmus carpinifolia (minor) (Filed elm), Ulmus laevis (European white elm), Crateagus monogyna (Common hawthorn), Prunus serotina (Black cherry)

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Information Stats Activity

Establishing a European network of demonstration sites for the integration of biodiversity conservation into forest management (Integrate+)

show all

STUDY AREA DESCRIPTION

Study Area: European Union countries and wider Europe

DESIGN DESCRIPTION

See sampling methods

FUNDING

The project was supported by the German Federal Ministry of Food and Agriculture (BMEL).

PROJECT PERSONNEL

POINT OF CONTACT
Daniel Kraus
POINT OF CONTACT
Andreas Schuck

Methodology

STUDY EXTENT

Permanent plots were established based on interest to participate in the Integrate+ project. The 39 plots are mainly located in forests in public ownership with a few also in private forests. The plots were selected by the forest owners based on either availability or particular silviculture aims in the area (no systematic selection). Also number of plots may differ widely (and will continue to do so based on new plots added in future) e.g. from one plot in Sweden to more than 12 in Germany.

SAMPLING DESCRIPTION

Tree location: polar coordinates Tree species: scientific name (tree species was also recorded for dead trees; in the case of late decay stages or stands with a wide variety of trees species this was not done. Tree species was then recorded as N/A) Diameter breast height: in [cm] at 1.3 meters height Tree height: in [m] Tree related microhabitats: 64 saproxylic and epixylic tree related microhabitat types are defined and described in detail within a hierarchical structure (published as a field guide; see: quality control for reference)

QUALITY CONTROL

Set-up of Marteloscope and data collection: Schuck, A., Krumm, F., Kraus, D., 2015. Integrate+ Marteloscopes - Description of parameters and assessment procedures. Integrate+ Technical Paper No. 18. 16 p. Tree related microhabitat assessment field guide: Kraus, D., Bütler, R., Krumm, F., Lachat, T., Larrieu, L., Mergner, U., Paillet, Y., Rydkvist, T., Schuck, A., and Winter, S., 2016. Catalogue of tree microhabitats – Reference field list. Integrate+ Technical Paper 13. 16 p. (note that the field guide is available in seven languages: English, Czech, Danish, French, German, Slovenian and Spanish)

Collections

COLLECTION NAME

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METHOD STEPS

1. Plot selection: The permanent plots were selected non-systematically based on demonstration criteria, e.g. representative silvicultural systems for a region, high abundance of TreMs etc. Further plot selection was limited also by availability of forest stands which could ensure that tree removals would not take place within the next 5 to 10 years and that they are easily accessible. Plots are both available in public and private forest ownership. Plot establishment: The standard for the permanent plots was usually 1 hectare in size (100 m x 100 m) with rectangular shape. Some of the plots, however, deviated from size and outline due to local conditions. The plots were divided into 4 quadrants to facilitate orientation and the use of data subsets. All corners and centre points (incl. the centre points of each quadrant) were permanently marked. All trees within the plot with dbh > 7 cm were numbered and marked. Data collection: We recorded for all living and dead trees with a dbh > 7 cm (stem diameter at 1.30 m), species, spatial position, tree height and crown base height, and abundance of TreMs. Height measurements were conducted with a digital hypsometer (VERTEX IV, Haglöf, Sweden), dbh with a measuring tape. Tree locations were determined by using a compass (Suunto, Finland) and the distance function of the Vertex digital hypsometer as a standard. In some plots the measurements were carried out using a specialized inventory software (Fieldmap, Czech Republic). At the plot 'Heches' in France tree coordinates were recorded using a GPS Trimble Geo7x. Note that a few trees with a dbh > 7 cm are missing coordinates. They are still made available in the Integrate+ TreMs dataset to ensure completeness of all tree in the plots. The coordinates for those trees are labelled as N/A. TreM recording was based on a specially developed catalogue for field data collection (see quality control).

References

Kraus, D., Bütler, R., Krumm, F., Lachat, T., Larrieu, L., Mergner, U., Paillet, Y., Rydkvist, T., Schuck, A., and Winter, S., 2016. Catalogue of tree microhabitats – Reference field list. Integrate+ Technical Paper 13. 16 p. http://www.integrateplus.org/media-center/project-documents.html(currently available in eight languages: EN, CZ, DE, DK, ES, FR, IT, SI) Bouget, C., L. Larrieu, and A. Brin. 2014. Key features for saproxylic beetle diversity derived from rapid habitat assessment in temperate forests. Ecological Indicators 36:656-664. Bouget, C., L. Larrieu, B. Nusillard, and G. Parmain. 2013. In search of the best local habitat drivers for saproxylic beetle diversity in temperate deciduous forests. Biodivers Conserv 22:2111-2130.

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