Data Article

Community weighted mean trait data of Italian forest understories

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\begin{abstract}
Plant functional trait data aggregated at the community level (i.e., community weighted mean, CWM) are fundamental to study plant-environment relationships. Here, we provide a large database of CWM values of twelve traits reflecting several plant functions, including leaf, seed, whole-plant, clonal and bud bank traits. The CWMs were calculated in 201 forest stands (a statistically representative sample of all the Italian forests) across three biogeographic regions: Alpine, Continental, and Mediterranean.
\end{abstract}

\section{Data}

In this article we provide a large database (Appendix A) of community weighted mean (CWM) values of twelve traits reflecting several plant functions (Table 1), calculated in the understory of 201 forest stands that constitute a representative sample of all the Italian forests across the Alpine,
Continental, and Mediterranean biogeographic regions. For each data we provide additional information, including plot coordinates, biogeographic region and forest type (according to European Forest Type Classification, Appendix A).

The following twelve traits have been considered [1,2]: 1) specific leaf area, a proxy of plant growth and a good surrogate for ability to use light efficiently; 2) leaf dry matter content, related to the resource use and determining the rate of leaf turnover and litter decomposability; 3) seed mass, having implications for the space/time dispersal ability and indicative of seedling establishment; 4) seed releasing height, informative on seed dispersal capacity; 5) canopy height, related to competitive ability and access to vertical light gradient; 6) clonality, that is the ability to reproduce vegetatively by means of clonal growth organs; 7) belowground clonal growth organ, informative on the ability to store and share resources among ramets, and potential to recover after disturbance (if carrying buds); 8) length of connections between ramets, related to the capacity to share resources among ramets; 9) lateral spread, having implications on space occupancy; 10) bud protection, 11) large bud bank, and 12) belowground perennial bud bank, all related to plant resprouting capacity after biomass removal.

2. Experimental design, materials, and methods

The data were collected in the Italian forests, estimated to be around 9 million hectares, mainly concentrated along the Apennines and Alps mountain chains. Annual mean temperature ranges from −1.2 °C to 17.5 °C; annual average rainfall varies between 458 mm and 1437 mm. Latitude is comprised between 37.1°N and 46.9°N, including Mediterranean, Continental and Alpine biogeographic regions.

The sampling design was systematic and probabilistic and was based on a grid superimposed onto the whole Italian country (16 km × 16 km cells), with each corner of the grid being included as a sample area if a forest larger than 1 ha was found there after a field assessment [3]. The sampling design is part of the ICP Forests Level I network having as the main objective to monitor the health status of the European forests (http://icp-forests.net/). For the entire country, it resulted in a dataset of 201 sampling areas, 45% of which belonging to termophilous deciduous forests, 24% to alpine coniferous forests, 17%
to beech forests, 5% to broadleaved evergreen forests, 4% to native and exotic plantations, 5% to other
type of forests. In each sampling area, we sampled a 400 m² area within which we recorded the
presence and abundance (%) of all understory vascular plants. The sampling was performed during
the 2007 growing season, following standard protocols, with ten surveyor teams which have been
previously trained and intercalibrated according to Quality Assurance guidelines [4]. In each sam-
pling area we selected the species contributing to reach a relative cumulative coverage of 80% [5].
Seedlings of tree species were excluded from the selection. We attributed to these species trait values
obtained from available databases and literature (see Refs. [6,7]). Trait values were available for ~75% of
the species [6]. We weighted trait values according to species coverage (in each of the 400 m² sampling
areas) in order to obtain community weighted mean (CWM) values for each trait [5].

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Conflict of Interest

The authors declare that they have no known competing financial interests or personal relation-
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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.dib.2019.104947.

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