Feasibility study for a database of ecological importance of European tree species

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Summary

Before sentinel plantings can be established it is important to prioritize which tree species/genera should be included. One way to prioritize species is to rank them on their ecological importance. This STSM aimed to scope the feasibility of developing a "Database of the ecological importance of European tree species", as intended in WG1 of the Action. A ranking of the relative ecological importance of European tree species may aid risk assessment of tree pests and diseases. Four ranking methods were trialled in this STSM.

The number of species associated with each genus, as recorded in accessible databases was used to rank species and genera. More data were available for fungi and invertebrates, in particular species thought of as pests and pathogens, than for other groups such as lichens, bryophytes, birds and mammals. The collated data were not cleaned or quality checked during this scoping study and repetition due to synonyms may have occurred. Both the number and the area of priority habitats (as defined in the EU Habitats Directive) for which each tree species/genus is characteristic were used to rank species and genera. Finally, the total area on which the species or genera occur in Europe was used as a crude estimate of the relative amount of 'ecosystem service' delivered by each species/genus. The results are summarised in Tables 1 and 2.

The study revealed difficulties in collecting and using data and made suggestions to overcome these. In particular, the majority of on-line databases did not provide information on host species and many on-line databases did not allow easy extraction of data. Much data on host use can be found in books but this is time consuming to extract. Expert knowledge on species name changes/taxonomy would be required to 'clean' the data. The data is not available to produce a database of all species across Europe. Given variation in specificity between regions and variability in data quality between regions it is suggested that data be gathered on a host by host basis for regions or countries and then combined.

Table 1. Top 10 tree species as assessed using four different methods. Tree species at the top of the list are more 'ecologically important' than those at the bottom of the list. Trees occurring on more than one list are coloured.

Quick assessment of species use	Number of priority forest habitats in which they occur	Area of priority habitat (ha)	Area in Europe (ha)
Pinus sylvestris	Betula pubescens	Pinus sylvestris	Pinus sylvestris
Fagus sylvatica	Fraxinus excelsior	Picea abies	Picea abies
Picea abies	Ilex aquifolium	Betula pubescens	Quercus spp.
Quercus robur	Pinus sylvestris	Betula carpatica	Fagus sylvatica
Salix caprea	Quercus cerris	Frangula alnus	Betula spp.
Corylus avellana	Quercus robur	Pinus mugo	Pinus spp
Populus tremula	Sorbus torminalis	Pinus rotundata	Alnus spp.
Fraxinus excelsior	Taxus baccata	Populus tremula	Picea spp
Alnus glutinosa	Tilia cordata	Betula spp.	Larix spp.
Sorbus aucuparia	*	Fraxinus excelsior	Populus spp

*16 species were ranked joint 10th by this method, all occurring in two priority habitats.

Table 2. Top 10 tree genera as assessed using four different methods. Tree genera at the top of the list are more 'ecologically important' than those at the bottom of the list. Trees occurring on more than one list are coloured.

Quick assessment of species use	Number of priority forest habitats in which they occur	Area of priority habitat (ha)	Area in Europe (ha)
Salix	Quercus	Pinus	Pinus
Quercus	Pinus	Betula	Quercus
Populus	Juniperus	Picea	Fagus sylvatica
Betula	Betula	Frangula	Betula
Prunus	Ilex	Populus	Picea
Alnus	Sorbus	Ulmus	Alnus
Pinus	Acer	Fraxinus	Abies
Acer	Alnus	Alnus	Larix
Crataegus	Fraxinus	Salix	Populus
Ulmus	Prunus	Acer	Pseudotsuga menziesii