Table S1. Taxa available in the ModERFoRest database and number or records. Those are the main species in terms of area of occupation in Spain, or their interest in reforestation. The number of records corresponds to the number of plots sampled in the autecology projects on which the application is based. Right column: type of variable provided by the site quality predictive equations.

Taxon	No. of records	Output variable in site quality equations
*Abies alba**	43	-
Castanea sativa	182	-
*Fagus sylvatica**	235	Dominant height (m) at 100 years
Juniperus thurifera	120	Dominant height (m) at 100 years
*Laurisilva***	44	-
Pinus canariensis	61	Dominant height (m) at 100 years
Pinus halepensis	135	Quality class
Pinus nigra	123	Mean height (m) at 100 years
Pinus pinaster ssp. *atlantica*	20	Quality class
Pinus pinaster ssp. *mesogeensis*	115	Quality class
Pinus pinea	205	Mean height (m) at 100 years
Pinus radiata	174	Quality class
*Pinus sylvestris**	127	Quality class
*Pinus uncinata**	48	-
Prunus avium	50	-
Quercus faginea	117	-
Quercus ilex ssp. *ballota*	336	-
Quercus ilex ssp. *ilex*	64	-
Quercus petraea	69	-
Quercus pyrenaica	340	-
Quercus robur	94	-
Quercus suber	173	-

* Taxa with selected seed sources information available in the database. ** *Laurisilva* is actually a syntaxon in the broad sense.

Table S2. Literature produced throughout the research line which ModERFoRest data and algorithms are based on. See López-Senespleda et al. (2018) for a comprehensive list of references.

Species or Communities	Year	Reference
Pinus pinaster (2 ssp.)	1967	Nicolás A & Gandullo JM. Ecología de los pinares españoles I. *Pinus pinaster* Ait. I.F.I.E, Madrid.
Pinus sylvestris	1969	Nicolás A et al. Ecología de los pinares españoles II. *Pinus sylvestris* L. I.F.I.E, Madrid.
Pinus halepensis	1972	Gandullo JM et al. Ecología de los pinares españoles III. Pinus halepensis Mill. I.F.I.E, Madrid.
Pinus radiata	1974	Gandullo JM et al. Ecología de los pinares españoles IV. *Pinus radiata* D. Don. INIA, Madrid.
Pinus canariensis	1989	Blanco A et al. Estudio ecológico del pino canario. ICONA-MAPA, Madrid.
Pinus nigra	1991	Elena-Rosselló R et al. Los pinares españoles de *Pinus nigra* Arn.: Síntesis ecológica. MAPA, Madrid.
Laurisilva canaria	1991	Gandullo JM et al. Estudio ecológico de la laurisilva canaria. ICONA-MAPA. Madrid.
Castanea sativa	2004	Gandullo JM et al. Las estaciones ecológicas de los castañares españoles. Monografías INIA. Serie Forestal nº7, Madrid.
Fagus sylvatica	2004	Gandullo JM et al. Las estaciones ecológicas de los hayedos españoles. Monografías INIA. Serie Forestal nº8, Madrid.
Prunus avium	2004	Cisneros O. Autoecología del cerezo de monte (*Prunus avium* L.) en Castilla y León. Tesis Doctoral. Universidad Politécnica de Madrid, Madrid.
Quercus suber	2007	Sánchez-Palomares O et al. Las estaciones ecológicas de los alcornocales españoles. Monografías INIA: Serie Forestal, nº 14. Madrid.
Quercus pyrenaica	2008	Sánchez-Palomares O et al. Las estaciones ecológicas actuales y potenciales de los rebollares españoles. Monografías INIA: Serie Forestal, nº 17. Madrid.
Juniperus thurifera	2010	Alonso Ponce R et al. Las estaciones ecológicas actuales y potenciales de los sabinares albares españoles. Monografías INIA: Serie Forestal, nº19. INIA. Madrid.
Pinus uncinata	2010	Sánchez-Palomares O et al. Las estaciones ecológicas actuales y potenciales de los pinares de *Pinus uncinata*. Informe final Proyecto RTA2009-00071-C02. INIA-CIFOR, Madrid.
Quercus ilex (2 ssp.)	2012	Sánchez-Palomares O et al. Las estaciones ecológicas actuales y potenciales de los encinares españoles. Monografías INIA: Serie Forestal, nº 23. Madrid.
Pinus pinea	2013	Sánchez-Palomares O et al. Autoecología paramétrica de *Pinus pinea* L. en la España peninsular. Monografías INIA: Serie Forestal, nº 26. Madrid.
Abies alba	2013	López-Senespleda E et al. Informe final del proyecto RTA2010-00095: Tipificación ecológico selvícola de las principales especies forestales españolas. INIA-CIFOR, Madrid.
Quercus petraea	2013	López-Senespleda E et al. Informe final del proyecto RTA2010-00095: Tipificación ecológico selvícola de las principales especies forestales españolas. INIA-CIFOR, Madrid.
Quercus robur	2013	López-Senespleda E et al. Informe final del proyecto RTA2010-00095: Tipificación ecológico selvícola de las principales especies forestales españolas. INIA-CIFOR, Madrid.
Quercus faginea	2015	López-Senespleda E. Autoecología paramétrica de los quejigares españoles. Tesis Doctoral. Universidad de Valladolid, Palencia.

Table S3. Climatic, edaphic and topographical variables included in the database of ModERFoRest. Acronyms stem from the Spanish definition of each variable. ND: dimensionless. Meteorological seasons are defined according to the recommendation of the World Meteorological Organization (winter: December, January and February, and so on). All soil variables evaluating physical properties were calculated as a weighted average in terms of horizon thickness. All soil variables evaluating chemical properties were calculated as a weighted average in terms of horizon thickness and depth, following Russel & Moore (1968)

Acronym	Variable	Units	Definition
ALT	Altitude	m	Altitude above sea level
ARC	Clay fraction	%	Percentage of particles with diameter <2 µm (Soil Conservation Service, 1972)
ARE	Sand fraction	%	Percentage of particles with diameter between 2000 and 50 µm (Soil Conservation Service, 1972)
CA	Calcium	ppm	Calcium content
CAC	Active carbonates	%	(MAPA, 1994)
CCC	Cementation coefficient	ND	(Gandullo, 2000)
CIL	Silt impermeability coefficient	ND	(Gandullo, 2000)
CIN	Inactive carbonates	%	(MAPA, 1994)
CNS	Carbon/Nitrogen ratio	ND	Carbon/Nitrogen ratio in the 25-cm topsoil
COND	Conductivity	µS/cm	Electrical conductivity of saturated paste
CRAD	Water holding capacity	mm	(Domingo Santos et al., 2006)
DEF	Annual moisture deficit	mm	Sum of the 12 monthly differences ETP-P, whenever ETP>P
DREN	Annual soil drainage	mm	(Gandullo, 2000)
DSQ	Drought duration	month	Number of months with the temperature curve above precipitation curve in the Walther-Lieth diagram (Walter & Walter, 1953)
ETP	Evapotranspiration	mm	Sum of the 12 monthly evapotranspiration (Thornthwaite & Mather, 1957)
ETRMP	Annual actual evapotranspiration	mm	(Gandullo, 2000)
G	Growing season	month	Number of months with average temperature T≥6ºC and P≥2T
HE	Equivalent moisture	%	(Sánchez Palomares & Blanco, 1985)
IH	Hydric index	ND	(100SUP-60DEF)/ETP
INS	Insolation	ND	(Gandullo, 1974)
IP	Patterson's index	mm·month	(Gandullo & Serrada, 1977)
ISQ	Drought intensity	º/1	Dry area/Wet area in the Walther-Lieth diagram (Walter & Walter, 1953)
IVRNT	Vernet's index	ºC/mm	(Vernet & Vernet, 1966)
K	Potassium	ppm	Potassium content
KP	Lithology coefficient for PPF	-	(Gandullo & Serrada, 1977)
LAT	Latitude	º	
LIM	Silt fraction	%	Percentage of particles with diameter between 50 and 2µm (Soil Conservation Service, 1972)
M	Martonne´s aridity index	mm/ºC	PT/(TM+10)
MG	Magnesium	ppm	Magnesium content
MINRES	Minimum annual soil water content	mm	(Gandullo, 2000)
MO	Organic matter	%	Organic matter percentage
MOS	Topsoil organic matter	%	Organic matter percentage in the 25-cm topsoil
N	Nitrogen content	%	Nitrogen percentage

Acronym	Variable	Units	Definition
NA	Sodium	ppm	Sodium content
NH	Mean annual sun hours	hours	
NMF	Number of cold months	month	Number of months with average temperature ≤6ºC
NS	Topsoil nitrogen content	%	Nitrogen percentage in the 25-cm topsoil
OSCM	Average temperature range	ºC	Subtraction result of TMC-TMF
OSCXN	Maximum temperature range	ºC	Subtraction result of TXC-TNF
OXFE	Free iron oxides	%	Free iron oxides content (Soil Conservation Service, 1972)
P	Phosphorus	ppm	Phosphorus content
PERM	Permeability	ND	(Gandullo, 2000)
PHA	pH in H_2O	pH	pH in water
PHK	pH in KCl	pH	pH in 1 N KCl solution
PI	Winter precipitation	mm	Sum of the monthly winter precipitations
PND	Slope	%	Slope
PO	Autumn precipitation	mm	Sum of the monthly autumn precipitations
PP	Spring precipitation	mm	Sum of the monthly spring precipitations
PPF	Potential forest productivity	m^3/ha/yr	(Gandullo & Serrada, 1977)
PT	Annual precipitation	mm	Sum of the 12 monthly precipitation
PV	Summer precipitation	mm	Sum of the monthly summer precipitations
SEQF	Annual physiological drought	mm	(Gandullo, 2000)
SUP	Annual moisture surplus	mm	Sum of the 12 monthly differences P-ETP-P, whenever P>ETP
TF	Fine-earth fraction	%	Percentage of particles with diameter >2 mm (Soil Conservation Service, 1972)
TM	Average annual temperature	ºC	Mean of the 12 monthly mean temperatures
TMC	Average temperature of the hottest month	ºC	Maximum of the 12 monthly average temperatures
TMF	Average temperature of the coldest month	ºC	Minimum of the 12 monthly average temperatures
TMI	Average winter temperature	ºC	Mean of the mean temperatures of the three winter months
TMO	Average autumn temperature	ºC	Mean of the mean temperatures of the three autumn months
TMP	Average spring temperature	ºC	Mean of the mean temperatures of the three spring months
TMV	Average summer temperature	ºC	Mean of the mean temperatures of the three summer months
TN	Average minimum annual temperature	ºC	Mean of the 12 monthly minimum temperatures
TNF	Minimum temperature of the coldest month	ºC	Mean of the minimum temperatures of the month with the lowest average temperature
TNI	Minimum winter temperature	ºC	Mean of the mean minimum temperatures of the three winter months
TNO	Minimum autumn temperature	ºC	Mean of the mean minimum temperatures of the three autumn months
TNP	Minimum spring temperature	ºC	Mean of the mean minimum temperatures of the three spring months
TNV	Minimum summer temperature	ºC	Mean of the mean minimum temperatures of the three summer months
TX	Average maximum annual temperature	ºC	Mean of the 12 monthly maximum temperatures
TXC	Maximum temperature of the hottest month	ºC	Mean of the maximum temperatures of the month with the highest average temperature
TXI	Maximum winter temperature	ºC	Mean of the mean maximum temperatures of the three winter months
TXO	Maximum autumn	ºC	Mean of the mean maximum temperatures of the

Acronym	Variable	Units	Definition
	temperature		three autumn months
TXP	Maximum spring temperature	ºC	Mean of the mean maximum temperatures of the three spring months
TXV	Maximum summer temperature	ºC	Mean of the mean maximum temperatures of the three summer months

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