forests

Table S1. List of species present in study plots, allometric models used for foliage biomass estimation (Table S3) and alien status.

Species	Allometic Models	Alien Status
Acer campestre L.	*Acer*	native
Acer ginnala Maxim.	*Acer*	alien
Acer negundo L.	*Acer*	invasive
Acer platanoides L.	*Acer*	native
Acer pseudoplatanus L.	*Acer*	native
Aesculus hippocastanum L.	Broadleaved	alien
Alnus glutinosa (L.) Gaertn.	*Alnus*	native
Amelanchier alnifolia Nutt.	*Amelanchier*	alien
Amelanchier spicata K.Koch	*Amelanchier*	alien
Berberis aquifolium Pursh	*Cornus*	alien
Betula pendula Roth	*Betula*	native
Betula pubescens Ehrh.	*Betula*	native
Carpinus betulus L.	*Carpinus*	native
Cornus sanguinea L.	*Cornus*	native
Corylus avellana L.	*Corylus*	native
Cotoneaster lucidus Schltdl.	*Prunus serotina*	alien
Crataegus laevigata DC.	*Prunus serotina*	native
Crataegus monogyna Jacq.	*Prunus serotina*	native
Crataegus rhipidophylla Gand.	*Prunus serotina*	native
Euonymus europaeus L.	*Cornus*	native
Fagus sylvatica L.	*Fagus*	native
Frangula alnus Mill.	*Frangula*	native
Fraxinus excelsior L.	*Fraxinus*	native
Juniperus communis L.	*Juniperus*	native
Larix decidua Mill.	*Larix*	native
Ligustrum vulgare L.	*Cornus*	native
Lonicera xylosteum L.	*Cornus*	native
Malus sylvestris Mill.	*Prunus serotina*	native
Philadelphus coronarius L.	*Philadelphus*	alien
Picea abies (L.) H.Karst.	*Picea*	native
Pinus strobus L.	*Pinus*	alien
Pinus sylvestris L.	*Pinus*	native
Populus ×canadensis Moench	Broadleaved	alien
Populus tremula L.	*Populus*	native
Prunus avium (L.) L.	*Prunus serotina*	native
Prunus insititia L.	*Prunus serotina*	alien
Prunus mahaleb L.	*Prunus serotina*	alien
Prunus padus L.	*Prunus serotina*	native
Prunus serotina Ehrh.	*Prunus serotina*	invasive
Prunus spinosa L.	*Prunus serotina*	native
Pyrus communis L.	*Prunus serotina*	native
Quercus petraea (Matt.) Liebl.	*Quercus*	native
Quercus robur L.	*Quercus*	native
Quercus rubra L.	*Quercus*	invasive
Rhamnus cathartica L.	*Cornus*	native
Ribes alpinum L.	*Ribes*	alien
Ribes rubrum L.	*Ribes*	alien

Ribes uva-crispa L.	*Ribes*	native
Robinia pseudoacacia L.	*Robinia*	invasive
Rosa canina L.	*Rosa*	native
Sambucus nigra L.	*Sambucus*	native
Sorbus aucuparia L.	*Sorbus*	native
Symphoricarpos albus (L.) C.Koch	*Symphoricarpos*	alien
Syringa vulgaris L.	*Cornus*	alien
Tilia cordata Mill.	Broadleaved	native
Tilia platyphyllos Scop.	Broadleaved	native
Ulmus glabra Huds.	*Ulmus*	native
Ulmus laevis Pall.	*Ulmus*	native
Ulmus minor Mill.	*Ulmus*	native

Table S2. Mean + SE values of SLA obtained from databases for species present in study plots.

Species	N	Mean	SE
Acer campestre	33	12.658	0.580
Acer ginnala	1	25.000	0.000
Acer negundo	18	23.284	1.256
Acer platanoides	50	16.886	0.766
Acer pseudoplatanus	54	15.172	0.695
Aesculus hippocastanum	7	13.700	0.000
Alnus glutinosa	42	15.785	0.595
Amelanchier alnifolia	4	16.810	3.420
Amelanchier spicata	2	19.608	0.000
Betula pendula	105	15.029	0.303
Betula pubescens	29	13.067	0.366
Carpinus betulus	64	22.094	1.248
Castania sativa	10	14.340	0.722
Cornus sanguinea	21	18.932	0.268
Corylus avellana	40	21.983	0.402
*Cotoneaster lucidus**	2	12.026	1.895
Crataegus laevigata	18	20.708	0.000
Crataegus monogyna	117	10.974	0.059
*Crataegus rhipidophylla***	-	15.841	-
Euonymus europea	10	14.395	0.000
Fagus sylvatica	134	18.833	0.430
Frangula alnus	21	15.183	0.124
Fraxinus excelsior	71	13.419	0.511
Juniperus communis	14	6.796	0.291
Larix decidua	93	12.216	0.393
Ligustrum vulgare	17	11.937	0.122
Lonicera xylosteum	27	26.325	0.053
Berberis aquifolium	18	9.050	0.000
Malus sylvestris	19	18.234	0.376
Philadeplhus coronarius	1	24.78	0.000
Picea abies	58	5.296	0.254
Pinus sylvestris	119	4.989	0.072
Pinus strobus	12	13.432	2.028
Populus tremula	78	13.876	0.331
Prunus avium	33	13.435	0.771
Prunus insititita	19	15.540	0.000

Prunus mahaleb	55	16.988	0.117
Prunus padus	33	21.082	0.197
Prunus serotina	73	19.222	0.512
Prunus spinosa	73	13.249	0.105
Pyrus communis	2	6.807	0.601
Quercus petraea	60	11.519	0.531
Quercus robur	83	16.879	0.220
Quercus rubra	171	15.456	0.200
Rhamnus catharticus	9	17.414	0.000
Ribes alpinum	9	16.672	0.100
Ribes rubrum	29	30.020	0.122
Ribes uva-crispa	31	20.658	0.228
Robinia pseudoacacia	35	20.672	0.791
Rosa canina	18	13.484	0.106
Sambucus nigra	36	20.896	0.123
Sorbus aucuparia	46	11.656	0.387
Symbporicarpos albos	29	20.618	0.000
Syringa vulgaris	36	12.746	0.082
Tilia cordata	39	24.853	1.804
Tilia platyphyllos	29	33.231	1.116
Ulmus glabra	60	19.146	0.949
Ulmus laevis	14	19.120	0.000
Ulmus minor	26	24.709	0.410

*—values for *C. acutifolius*, **—averaged from *C. monogyna* and *C. laevigata*.

Table S3. Allometric equations determining foliage biomass of particular tree species recorded on the study plots. Equations adopted were established for habitat conditions similar to those of this study. Abbreviations: DBH—diameter at breast height; CF—correction factor to reverse transformation of log-log models. Taxa group is referenced to particular species in **Table S1**.

Taxa Group	Unit	Source	R^2	N	DBH min [cm]	DBH max [cm]	Formula	a	b	CF
Acer	kg	(Forrester et al., 2017)	0.789	70	0	88	Y = exp(a)*D^b*CF	−4.062500	2.066200	1.003181
Alnus	kg	(Forrester et al., 2017)	0.578	231	0	28.3	Y = exp(a)*D^b*CF	−4.469500	1.762300	0.974649
Amelanchier	g	(Brown, 1976)	0.830	39	0.4	4.5	ln(Y) = a + b*ln(D)	1.691000	2.111000	-
Betula	kg	(Forrester et al., 2017)	0.903	231	0	38	Y = exp(a)*D^b*CF	−4.137000	1.886100	1.163206
Broadleaved	kg	(Forrester et al., 2017)	0.847	1824	0	88	Y = exp(a)*D^b*CF	−4.228600	1.862500	1.063653
Carpinus betulus	kg	Jagodziński, unpbl.	0.875	38	0	20	Y = a*D^b	0.019964	1.952606	-
Cornus sanguinea	kg	Jagodziński, unpbl.	0.734	52	0	8	Y = a*D^b	0.138201	1.125622	-
Corylus avellana	kg	Jagodziński, unpbl.	0.668	96	0	16	Y = a*D^b	0.097152	0.926850	-
Fagus	kg	(Forrester et al., 2017)	0.883	330	0	73	Y = exp(a)*D^b*CF	−4.481300	1.907300	1.087518
Frangula alnus	kg	Jagodziński, unpbl.	0.704	74	0	87	Y = a*D^b	0.037851	0.949334	-
Fraxinus	kg	(Forrester et al., 2017)	0.872	158	0	69	Y = exp(a)*D^b*CF	−4.850200	2.406400	0.809231
Juniperus communis	kg	Jagodziński, unpbl.	0.617	30	0	7	Y = a*D^b	0.454480	0.241148	-
Larix	kg	(Jagodziński et al., 2018)	0.767	96	2	58	Y = a*D^b	0.004600	2.103600	-
Philadelphus	g	(Brown, 1976)	0.710	28	0.5	2.9	ln(Y) = a + b*ln(D)	1.921000	2.778000	-
Picea	kg	(Forrester et al., 2017)	0.906	1007	0	77	Y = exp(a)*D^b*CF	−2.795700	1.868800	1.020027
Pinus	kg	(Jagodziński et al., 2019)	0.841	549	0	65	Y = a*D^b	0.030200	1.742000	-
Populus	kg	(Forrester et al., 2017)	0.910	165	0	45	Y = exp(a)*D^b*CF	−4.145400	1.948000	1.011724
Prunus	kg	(Forrester et al., 2017)	0.545	99	0	50	Y = exp(a)*D^b*CF	−4.105800	1.321200	0.956410
Prunus serotina	kg	Jagodziński, unpbl.	0.937	50	0	15	Y = a*D^b	0.049727	1.868954	-
Quercus	kg	(Forrester et al., 2017)	0.911	99	0	68	Y = exp(a)*D^b*CF	−4.466300	2.137500	0.966327
Ribes	g	(Brown, 1976)	0.630	37	0.4	1.4	ln(Y) = a + b*ln(D)	2.164000	2.538000	-
Robinia	kg	(Forrester et al., 2017)	0.936	99	0	24	Y = exp(a)*D^b*CF	−2.798500	1.127800	1.020691
Robinia	kg	(Zasada, 2017)	-	22	7	46	Y = a*D^b	0.001500	1.528800	-
Rosa canina	kg	(Blujdea et al., 2012)	0.744	14	1.5	7.7	Y = exp(a)*D^b*CF	−4.093800	2.363200	1.323800
Sambucus nigra	kg	Jagodziński, unpbl.	0.479	60	0	10	Y = a*D^b	0.180506	0.798760	-
Sorbus aucuparia	kg	Jagodziński, unpbl.	0.792	64	0	9	Y = a*D^b	0.023015	1.665331	-
Symphoricarpos	g	(Brown, 1976)	0.680	31	0.2	1.2	Y = exp(a)*D^b*CF	1.848000	1.721000	-
Ulmus	kg	(Alberti et al., 2005)	0.980	10	0	31	Y = a*D^b	0.130000	1.120000	-

Ulmus—larger trees	kg	(Forrester et al., 2017)	0.969	3521	0	88	Y = exp(a)*D^b*CF	−2.165300	2.414300	1.041484

References

1. Alberti, G.; Candido, P.; Peressotti, A.; Turco, S.; Piussi, P.; Zerbi, G. Aboveground biomass relationships for mixed ash (*Fraxinus excelsior* L. and *Ulmus glabra* Hudson) stands in Eastern Prealps of Friuli Venezia Giulia (Italy). *Ann. For. Sci.* **2005**, *62*, 831–836. doi:10.1051/forest:2005089.
2. Annighöfer, P.; Mölder, I.; Zerbe, S.; Kawaletz, H.; Terwei, A.; Ammer, C. Biomass functions for the two alien tree species *Prunus serotina* Ehrh. and *Robinia pseudoacacia* L. in floodplain forests of Northern Italy. *Eur. J. For. Res.* **2012**, *131*, 1619–1635.
3. Blujdea, V.N.B.; Pilli, R.; Dutca, I.; Ciuvat, L.; Abrudan, I.V. Allometric biomass equations for young broadleaved trees in plantations in Romania. *For. Ecol. Manag.* **2012**, *264*, 172–184. doi:10.1016/j.foreco.2011.09.042.
4. Brown, J.K. Estimating shrub biomass from basal stem diameters. *Can. J. For. Res.* **1976**, *6*, 153–158. doi:/10.1139/x76-019.
5. Conti, G.; Gorné, L.D.; Zeballos, S.R.; Lipoma, M.L.; Gatica, G.; Kowaljow, E.; Whitworth-Hulse, J.I.; Cuchietti, A.; Poca, M.; Pestoni, S.; et al. Developing allometric models to predict the individual aboveground biomass of shrubs worldwide. *Glob. Ecol. Biogeogr.* **2019**, *28*, 961–975. doi:10.1111/geb.12907.
6. Dyderski, M.K.; Jagodziński, A.M. Functional traits of acquisitive invasive woody species differ from conservative invasive and native species. *NeoBiota* **2019**, *41*, 91–113. doi:10.3897/neobiota.41.31908.
7. Enquist, B.J.; Condit, R.; Peet, R.K.; Schildhauer, M.; Thiers, B.M. Cyberinfrastructure for an integrated botanical information network to investigate the ecological impacts of global climate change on plant biodiversity. *PeerJ Preprints* **2016**, *4*, e2615v2. doi:10.7287/peerj.preprints.2615v2.
8. Forrester, D.I.; Tachauer, I.H.H.; Annighoefer, P.; Barbeito, I.; Pretzsch, H.; Ruiz-Peinado, R.; Stark, H.; Vacchiano, G.; Zlatanov, T.; Chakraborty, T.; et al. Generalized biomass and leaf area allometric equations for European tree species incorporating stand structure, tree age and climate. *For. Ecol. Manag.* **2017**, *396*, 160–175. doi:10.1016/j.foreco.2017.04.011.
9. GBIF, 2019. Global Biodiversity Information Facility (WWW Document). URL http://www.gbif.org/.
10. Jagodziński, A.M.; Dyderski, M.K.; Gęsikiewicz, K.; Horodecki, P. Effects of stand features on aboveground biomass and biomass conversion and expansion factors based on a *Pinus sylvestris* L. chronosequence in Western Poland. *Eur. J. For. Res.* **2019**, *138*, 673–683. doi:10.1007/s10342-019-01197-z.
11. Jagodziński, A.M.; Dyderski, M.K.; Gęsikiewicz, K.; Horodecki, P. Tree- and Stand-Level Biomass Estimation in a *Larix decidua* Mill. Chronosequence. *Forests* **2018**, *9*, 587. doi:10.3390/f9100587.
12. Kleyer, M.; Bekker, R.M.; Knevel, I.C.; Bakker, J.P.; Thompson, K.; Sonnenschein, M.; Poschlod, P.; van Groenendael, J.M.; Klimeš, L.; Klimešová, J.; et al. The LEDA Traitbase: A database of life-history traits of the Northwest European flora. *J. Ecol.* **2008**, *96*, 1266–1274. doi:10.1111/j.1365-2745.2008.01430.x.
13. Kuehne, C.; Nosko, P.; Horwath, T.; Bauhus, J. A comparative study of physiological and morphological seedling traits associated with shade tolerance in introduced red oak (*Quercus rubra*) and native hardwood tree species in southwestern Germany. *Tree Physiol.* **2014**, *34*, 184–193. doi:10.1093/treephys/tpt124.
14. Starfinger, U.; Kowarik, I.; Rode, M.; Schepker, H. From desirable ornamental plant to pest to accepted addition to the flora?—The perception of an alien tree species through the centuries. *Biol. Invasions* **2003**, *5*, 323–335. doi:10.1023/B:BINV.0000005573.14800.07.
15. Zasada, M., 2017. Raport końcowy z tematu badawczego "Ekologiczne, gospodarcze i urządzeniowe konsekwencje występowania wybranych gatunków drzew obcych w Polsce" realizowanego w latach 2013–2017 przez Samodzielną Pracownię Dendrometrii i Nauki o Produkcyjności Lasu na zlecenie Dyrekcji Generalnej Lasów Państwowych w Warszawie. SGGW, Warszawa.