Article

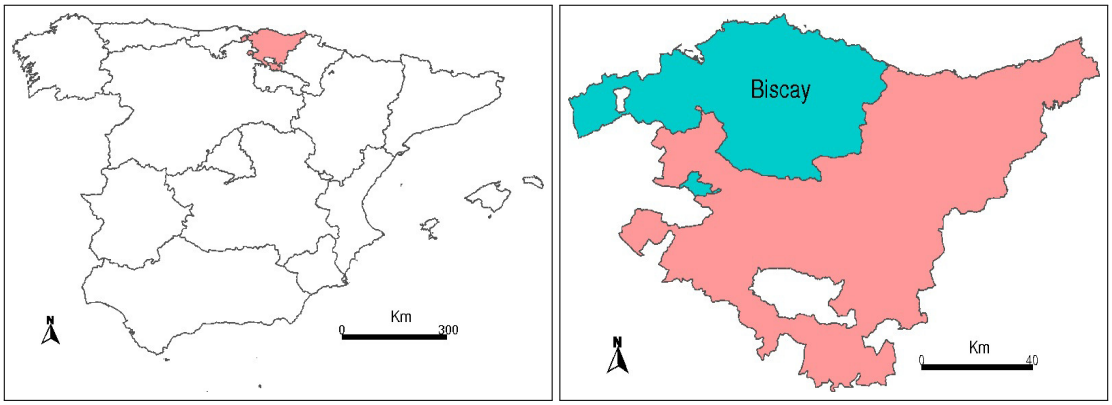
Spatial Distribution of Biomass and Woody Litter for Bio-Energy in Biscay (Spain)

Esperanza Mateos [1,*] and Leyre Ormaetxea [2]

[1] Department of Chemical and Environmental Engineering, University of the Basque Country UPV/EHU. Rafael Moreno 'Pitxitxi', n 3. 48013-Bilbao, Spain.
[2] Department of Mathematics, Faculty of Science and Technology, University of the Basque Country UPV/EHU. Barrio Sarriena s/n 48940, Leioa, Spain.
* e-mail: esperanza.mateos@ehu.eus, telephone: +034946104343 and fax: +034946104300.

Academic Editor: name
Version May 2, 2018 submitted to Forests

1. Supplementary Material



(a) Spain (b) Biscay

Figure S1. The target study area: province of Biscay (Spain)

Table S1. Equations of forest biomass fractions (W_i) expressed in kg (oven-dry-weight, (102 $\pm$ 2° C, 24h)), coefficient of determination (R^2), and standard error of estimate (SEE).

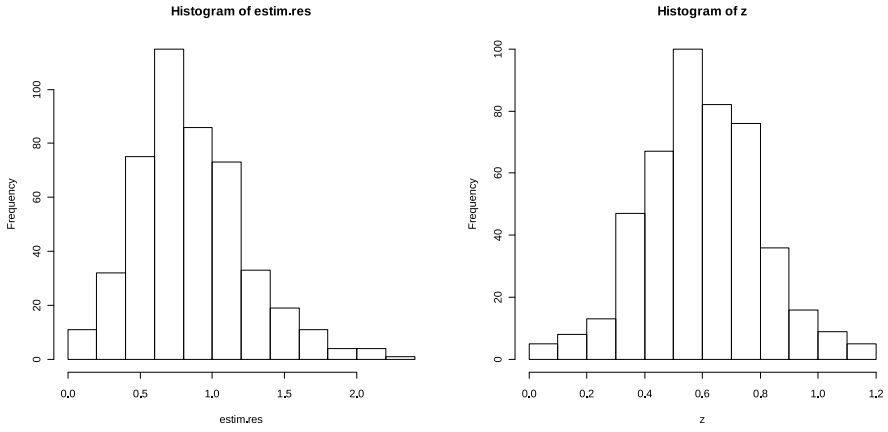
	Species	Equations	R^2	SEE
W_{ab}*	*P. radiata*	$e^{\frac{(0.19327)^2}{2}}\, e^{-2.61093}\, D^{2.48739}$	0.977	0.193270
	E. globulus	$e^{\frac{(0.15785)^2}{2}}\, e^{-1.33002}\, D^{2.19404}$	0.980	0.157850
W_w†	*P. radiata*	$e^{\frac{(0.2000075)^2}{2}}\, e^{-3.0.2878}\, D^{2.56358}$	0.976	0.200075
W_{b7}‡		$e^{\frac{(0.52533)^2}{2}}\, e^{-10.5693}\, D^{3.64861}$	0.710	0.525330
$W_w + W_{b7}$	*E. globulus*	$e^{\frac{(0.196830)^2}{2}}\, e^{-2.20421}\, D^{2.38196}$	0.974	0.196830
W_{b2-7}§	*P. radiata*	$e^{\frac{(0.615400)^2}{2}}\, e^{-4.12515}\, D^{2.1173}$	0.746	0.615400
	E. globulus	$e^{\frac{(0.442402)^2}{2}}\, e^{-2.67562}\, D^{2.19404}$	0.822	0.442402
W_{b2}	*P. radiata*	$e^{\frac{(0.616072)^2}{2}}\, e^{-3.53532}\, D^{1.75877}$	0.669	0.616072
	E. globulus	$e^{\frac{(0.333087)^2}{2}}\, e^{-2.64825}\, D^{1.61429}$	0.858	0.333087
$W_l$$	*P. radiata*	$e^{\frac{(0.333087)^2}{2}}\, e^{-5.03445}\, D^{2.05803}$	0.739	0.609518
	E. globulus	$e^{\frac{(0.333319)^2}{2}}\, e^{-2.05864}\, D^{1.61762}$	0.859	0.333319
W_r‖	*P. radiata*	$e^{\frac{(0.309544)^2}{2}}\, e^{-2.78485}\, D^{2.14449}$	0.939	0.309544

* W_{ab} = aboveground biomass; † W_w = stem wood biomass; ‡ W_{b7} = wood and bark biomass on branches with 7 cm minimum top diameter; § W_{b2-7} = wood and bark biomass on branches with 7 cm maximum butt diameter and 2 cm minimum top diameter; $ W_l = leaf biomass; ‖ W_r = root biomass; D = DBH (cm).

Table S2. Expansion factors (EFs) in plots from NFI4

	S* plot (m^2)	EF
$7.5 \leq D^{\dagger} < 12.5$	78.54	127.324
$12.5 \leq D < 22.5$	314.16	31.831
$22.5 \leq D < 42.5$	706.86	14.147
$D \geq 42.5$	1963.50	5.093

* S = surface; † D = DBH (cm).



(a) E_r (b) $E'_r = \log(E_r + 1)$

Figure S2. Histograms of the values of E_r

Table S3. Normality test (p values) of the values of E_r

	Anderson–Darling	**Cramer–von Mises**	**Lilliefors Kolmogorov–Smirnov**	**Pearson's χ^2**	**Shapiro–Francia**	**SD***
Stratum 1 E_r	2.635×10^{-8}	1.416×10^{-6}	5.467×10^{-5}	0.0001846	1.055×10^{-7}	0.208
Stratum 1 $E'_r = \log(E_r + 1)$	0.3213	0.2942	0.1919	0.1755	0.4482	0.379
Stratum 2 E_r	0.04942	0.1153	0.2351	0.06318	0.02919	0.275
Stratum 3 $E'_r = \sqrt{E_r}$	0.3743	0.4000	0.2684	0.6194	0.3641	0.216
Stratum 9 E_r	0.1953	0.4031	0.476	0.1634	0.09016	0.642
All Strata $E'_r = \log(E_r + 1)$	0.07718	0.3057	0.2273	0.0778	0.006831	0.208

* Standard deviation