Bibliographic reference.

SORIANO, C., A. GASTÓN & P. BARIEGO (2005). Diversidad florística en las parcelas españolas de Nivel II de la Red Europea de Seguimiento Intensivo y Continuo de Ecosistemas Forestales. *Actas del IV Congreso Forestal Español. Sociedad Española de Ciencias Forestales*.

Abstract.

1. Plant species diversity of European forests is a main issue of ground vegetation assessment of ICP Forests Level II monitoring program. Plant species richness variations have been usually related to environmental gradients. The first objective of this analysis is to describe vascular plant species richness trends against environmental gradients in Spanish Level II plots. The second objective is to find out if species richness – environment relations change when splitting species richness data in different life forms.
2. Vascular plant species richness from 46 plots was calculated joining two surveys (spring and autumn) conducted in the whole plot (2500 m^2) in 1999. After splitting species lists in different life forms, woody, perennial herbaceous and annual herbaceous plant species richness were calculated. Data on climate was estimated with a statistical model built using historical meteorological data. Soil data was provided by ICP Forests National Focal Centre in Spain. Tree and shrub layer coverage was visually estimated during ground vegetation surveys. Pearson's lineal correlation coefficients were calculated between species richness (total, woody, perennial, annual) and each environmental variable. Tests of significance were made using F statistic.
3. No significant correlation was found between total vascular plant species richness and any of the considered environmental variables. Woody plant richness is higher in plots with higher soil pH and shorter drought. Perennial herbaceous plant richness is higher in colder and more shaded plots. Annual herbaceous plant richness is higher in warmer, dryer and less fertile plots.
4. Opposite trends in different life forms species richness may explain lack of significant correlations between total species richness and considered environmental factors. Our results support the idea that vascular plant species richness assessment may improve splitting data in life forms or other kind of functional groups.

Tables.

Code	Description and units	Min.	Max.	Mean	Std. Dev.
Vasc	Total vascular plant species richness	12	91	48.93	18.48
Leñ	Woody plant species richness	1	32	15.00	7.64
HPeren	Perennial herbaceous plant species richness	5	50	23.72	12.47
HAnual	Annual herbaceous plant species richness	0	48	10.22	12.69
CArbo	Tree layer cover (%)	12	96	54.26	23.71
CArbu	Shrub layer cover (%)	0	95	34.96	32.11
P	Mean annual precipitation (mm)	383	1787	882.89	349.35
PEst	Mean summer precipitation (mm)	22	370	109.09	73.14
T	Mean annual temperature (ºC)	3.5	17.2	12.20	3.00
TMc	Mean of the maximum temperatures of the warmer month (ºC)	14.6	36.7	28.43	4.16
Tmf	Mean of the minimum temperatures of the colder month (ºC)	-6.5	6.9	0.39	3.09
Seq	Drought period (months)	0	5	2.15	1.51
pH10cm	pH of the first 10 cm of mineral soil	3.5	7.3	5.33	1.13
N10cm	Nitrogen of the first 10 cm of mineral soil (g/Kg)	0.3	7.1	2.91	1.57

Table 1. Codes, description and units of the considered variables.

	CArbo	CArbus	P	PEst	T	TMc	Tmf	Seq	pH10cm	N10cm
Vasc										
Leñ								-0,32*	0,44**	
HPeren	0,32*				-0,40**		-0,45**			
HAnual		-0,31*		-0,47**	0,40**	0,62**		0,53**		-0,47**

Table 2. Pearson correlation coefficients, only shown those statistically significant with a confidence level higher than 95% (*) or 99% (**). n = 46.