Szymura T. H., Kassa H., Chmolowska D., Szymura M., Swacha G., Kącki Z. & Zając A. (2026) Predictors of vascular plant species richness in Poland. – Preslia 98: 241–263.

Supplementary Table S1. Description of the explanatory variables.

variable type	variable name	units	explanation	data source
anthropogenic	agricultural tractors density	N/ha	number of agricultural tracks per agricultural land area in a square	CSOP
anthropogenic	average farm size	ha	average farm size in basic administrative unit (gmina)	CSOP
anthropogenic	broadleaved and mixed forests	%	percentage of broadleaved and mixed forests	CORINE
anthropogenic	communication routes length	km	sum of communication routes in a square	BDOO
anthropogenic	coniferous forests	%	percentage of coniferous forests	CORINE
anthropogenic	cropland	%	percentage of arable land in a square	CORINE
anthropogenic	effective mesh size		effective mesh size	CORINE
anthropogenic	fertilizer amount	kg/ha	N,P, and K fertilizers amount	CSOP
anthropogenic	human population density	N/km^2	average human population density, basing on residents register data in $1km^2$ grid	CSOP
anthropogenic	human population density CV	%	human population density coefficient of variation	CSOP
anthropogenic	income	zl per capita	average total annual income per capita in basic administrative unit (gmina)	CSOP
anthropogenic	income CV	%		CSOP
anthropogenic	Income max	zl per capita	maximal total annual income per capita in basic administrative unit (gmina)	CSOP
anthropogenic	landscape diversity	-	Shannon's diversity index of the landscape. SHDI equals minus the sum, across all patch types, of the proportional abundance of each patch type multiplied by that proportion. Highest values of SHDI denote higher landscape diversity.	CORINE
anthropogenic	length of roads	km	sum of roads length in a square	BDOO
anthropogenic	maximal human population density	N/km^2	maximal human population density in a square	CSOP
anthropogenic	maximal income	zl per capita	maximal annual income per capita in basic administrative unit (gmina) in a square	CSOP
anthropogenic	seminatural areas	%	percentage of seminatural area in a square	CORINE
anthropogenic	urban areas	%	percentage of urbanized areas in a square	CORINE
climate	annual sum of precipitation	mm	annual sum of precipitation	CHELSA V2.1
climate	annual sum of precipitation CV	%	annual sum of precipitation coefficient of variation	CHELSA V2.1
climate	mean annual temperature	°C	annual mean temperature	CHELSA V2.1
climate	mean annual temperature CV	%	annual mean temperature coefficient of variation	CHELSA V2.1
climate	temperature sezonality	°C	standard deviation of monthly temperature averages in a year multiplied by 100	CHELSA V2.1
climate	temperature sezonality CV	%	temperature sezonality coefficient of variation	CHELSA V2.1
paleoecology	last glaciation maximum	%	fraction of area covered by ice sheet in LGM	EPHA (2019)
topography	available water capacity		available water capacity	LUCAS
soil	available water capacity CV	%	available water capacity coefficient of variation	LUCAS
soil	bulk density	$kg*m^3$	bulk density	LUCAS
soil	bulk density CV	%	bulk density CV	LUCAS
soil	calcium carbonate	$g*kg^{-1}$	calcium carbonate	LUCAS
soil	calcium carbonate CV	%	calcium carbonate CV	LUCAS
soil	carbon to nitrogen ratio		carbon to nitrogen ratio	LUCAS
soil	carbon to nitrogen ratio CV	%	carbon to nitrogen ratio CV	LUCAS
soil	cation exchange capacity	cmol/kg	cation exchange capacity	LUCAS
soil	cation exchange capacity CV	%	cation exchange capacity CV	LUCAS
soil	clay content	%	clay content	LUCAS

soil	clay content CV	%	clay content CV	LUCAS
soil	coarse grained fraction	%	coarse grained fraction	LUCAS
soil	coarse grained fraction coefficient of variation	%	coarse grained fraction coefficient of variation	LUCAS
soil	loess sediments	%	percentage of areas covered by loess and it s derivates in a square	Lehmkul et al. (2021)
soil	maximal value of pH	pH scale		LUCAS
soil	nitrogen content	$g*kg^{-1}$		LUCAS
soil	nitrogen content CV	%		LUCAS
soil	pH	pH scale	pH in H_20	LUCAS
soil	pH CV	%		LUCAS
soil	phosphorus content	$mg*kg^{-1}$		LUCAS
soil	phosphorus content CV	%		LUCAS
soil	potasium content	$mg*kg^{-1}$		LUCAS
soil	potasium content CV	%		LUCAS
soil	sand content			LUCAS
soil	sand CV	%		LUCAS
soil	silt			LUCAS
soil	silt CV	%		LUCAS
topography	diurnal anisotropic heating index	-	diurnal anisotropic heating index (Hengl & Reuter 2008)	GMES RDA
topography	diurnal anisotropic heating index CV	%		GMES RDA
topography	slope	°		GMES RDA
topography	slope CV	%		GMES RDA
topography	sum of rivers length	km	sum of rivers length in a square	BDOO
topography	terrain roughness index	dimensionless, high values reflect high variability of altitude	reflects local differentiation of altitude (Hengl & Reuter 2008).	GMES RDA
topography	topographic position index	dimensionless – high value reflects convex form, while low – concave.	compare elevation of central rasters with peripherial within a buffers (DeReu 2013).	GMES RDA
topography	topographic position index CV	%		GMES RDA
topography	topographic wetness index	dimensionless, high values reflect potentially moister soil, while low values – dry areas	the topographic wetness index modelled accumulation of water resulting from location within the catchment, the catchment size and slope (Hengl & Reuter 2008).	GMES RDA
topography	topographic wetness index CV	%		GMES RDA
topography	water bodies percentage	%	percentage of waterbodies in a square	CORINE

Data sources:

BDOO - Baza danych obiektów ogólnogeograficznych (eng. Geographic Objects Database): http://www.codgik.gov.pl/index.php/zasob/baza-danych-ogolnogeograficznych.html. Data acces: 05.03.2021.

CHELSA V.2.1: https://chelsa-climate.org/

CORINE - Corine Land Cover 2018: http://clc.gios.gov.pl/

CSOP - Central Statistical Office of Poland: http://stat.gov.pl/en/. Data access: 08.04.2022.

De Reu, J., Bourgeois, J., Bats, M., Zwertvaegher, A., Gelorini, V., De Smedt, P., et al. 2013. Application of the topographic position index to heterogeneous landscapes. Geomorphology. 186: 39-49

EPHA – European prehistoric and historic atlas Last Glacial Maximum: https://zbsa.eu/en/last-glacial-maximum

GMES RDA - GMES RDA project: https://www.eea.europa.eu/data-and-maps/data/eu-dem

Hengl, T., Reuter, H.I., editors. 2008 Geomorphometry: Concepts, Software, Applications. Developments in Soil Science. 33rd ed. Elsevier.

Lehmkuhl, F., J.J. Nett, S. Pötter, P. Schulte, T. Sprafke, Z. Jary, and P. Antoine. 2021. "Loess landscapes of Europe–Mapping, geomorphology, and zonal differentiation." *Earth-Science Reviews* 215: 103496.

LUCAS - Land Use/Cover Area frame statistical Survey Soil: https://esdac.jrc.ec.europa.eu/content/chemical-properties-european-scale-based-lucas-topsoil-data and https://esdac.jrc.ec.europa.eu/content/topsoil-physical-properties-europe-based-lucas-topsoil-data