

The following Appendix (Appendixes 1, 2) is the Electronic Supplementary Material of the article entitled “Lithological indicators of discontinuities in mountain soils rich in calcium carbonate in the Polish Carpathians” at <https://doi.org/10.1007/s11629-019-5842-8>.

Appendix 1 Lithic discontinuity identification.

Uniformity Value (UV) *	
The UV ₁ was based on comparisons of the content of soil particles between two directly adjacent layers (or horizons)*	$UV_1 = \frac{\left[\frac{\%silt + \%very\ fine\ sand}{\%sand - \%very\ fine\ sand} \right]_{in\ upper\ horizon/layer}}{\left[\frac{\%silt + \%very\ fine\ sand}{\%sand - \%very\ fine\ sand} \right]_{in\ lower\ horizon/layer}} - 1$
The UV ₂ considers the whole granulometric fraction in the soil**	$UV_2 = \frac{\left[\frac{\%clay + \%silt}{\%sand} \right]_{in\ upper\ horizon/layer}}{\left[\frac{\%clay + \%silt}{\%sand} \right]_{in\ lower\ horizon/layer}} - 1$

Explanations: If UV₁ and UV₂ values are close to 0, the more likely it is that an LD does not occur between two soil layers. Values higher than 0.60 clearly indicate the presence of an LD.

Lithological Discontinuity Index (LDI) **	
In order to state the lithological discontinuity within the sand fraction, the Lithological Discontinuity Index (LDI) should be calculated***	LDI ₁
	$\frac{\left \left(\frac{coarse\ sand_a}{fine\ sand_a} - \frac{coarse\ sand_b}{fine\ sand_b} \right) \right }{\frac{coarse\ sand_b}{fine\ sand_b}} \geq 25\%$
	and/or
	LDI ₂
	$\frac{\left \left(\frac{coarse\ sand_a}{medium\ sand_a} - \frac{coarse\ sand_b}{medium\ sand_b} \right) \right }{\frac{coarse\ sand_b}{medium\ sand_b}} \geq 25\%$

Explanations: * - according to Cremeens and Mokma (1986); ** - according to Kowalska et al. (2016); *** - according to IUSS Working Group (2015)

Appendix 2 Soil texture.

Soil profile	Depth (cm)	Soil horizon	Particle content (%)								Texture group
			2.0 - 1.0 mm	1-0.5 mm	0.5-0.25 mm	0.25-0.1 mm	0.1-0.05 mm	0.05-0.02 mm	0.02-0.002 mm	<0.002 mm	
	1-0	O	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
P1	0-15	Ahk1	8	8	9	7	21	15	26	6	SL
	>15-30	Ahk2	13	14	11	9	21	11	17	4	SL
	>30-40	ACk	10	14	10	5	2	16	29	14	L
	>40-65	2Ck1	16	11	6	5	10	11	21	20	L
	>65-90	3C1	5	6	5	5	8	16	37	18	SiL
	>90-120	3C2	11	11	10	8	6	13	28	13	L
	2-0	O	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
P2	0-7	Ah1	1	0	0	1	11	13	44	30	SiCL
	>7-20	Ah2	2	1	1	2	1	10	47	36	SiCL
	>20-33	2BCk	6	5	4	5	4	27	19	30	CL
	>33-50	2BCkt1	6	4	4	4	3	7	42	30	CL
	>50-90	2BCkt2	3	5	4	5	4	8	46	25	SiL
	1-0	O	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
P3	0-10	Ah	1	2	3	7	18	30	0	39	CL
	>10-22	Bt	1	1	1	5	14	16	31	31	CL
	>22-46	Btg1	1	1	1	6	6	21	35	29	SiCL
	>46-75	2Btg2	0	1	2	6	5	21	36	29	SiCL
	75-115	2BCtg	1	2	3	4	10	26	34	20	SiL
	3-0	O	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
P4	0-18	Ap	2	4	5	3	27	14	41	4	SiL
	>18-29	ABt	3	4	4	3	8	25	44	9	SiL
	>29-48	2Btg1	1	2	3	5	8	27	29	25	SiL
	>48-70	2Btg2	0	1	1	3	7	21	41	26	SiL
	>70-90	3BCtg1	2	2	2	2	3	15	36	38	SiCL
	>90	3BCtg2	2	2	1	2	1	16	36	40	SiCL
	2-0	O	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
P5	0-20	Ap	1	2	1	2	10	15	50	19	SiL
	>20-33	ABt	1	1	1	2	11	16	46	22	SiL
	>33-50	Bt	0	1	1	3	17	7	44	27	SiL
	>50-70	BtC1	0	1	1	2	14	12	43	27	SiL
	>70-110	2BtC2	0	1	1	2	4	20	42	30	SiCL
	>110	2C	0	0	0	0	6	12	52	31	SiCL
	1-0	O	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
P6	0-15	AB	1	1	1	1	15	26	38	17	SiL
	>15-30	Btg1	1	1	1	1	0	24	39	33	SiCL
	>30-60	2Btg2	3	2	1	2	1	15	40	36	SiCL
	>60-90	2BCtg	1	1	1	2	9	5	45	36	SiCL

Texture (FAO 2006): SL – sandy loam, L – loam, SiL – silt loam, SiCL – silty clay loam, CL – clay loam, C – clay, SiC – silty clay. n.d. – not determined.