

Electronic appendices

Wieżik M. et al.: Western-Carpathian mountain spruce woodlands at their southern margin: natural or anthropogenic origin?

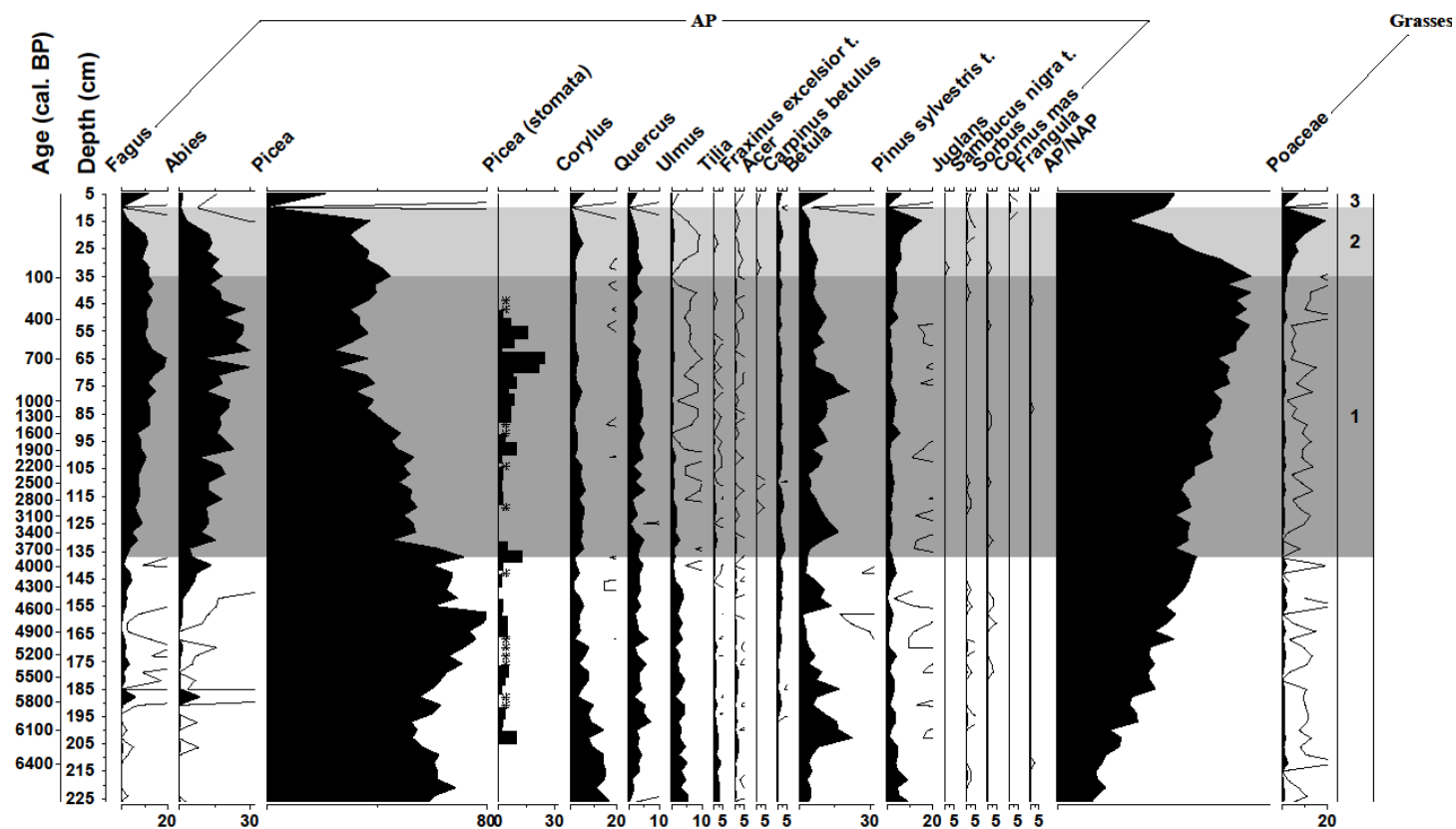
Electronic Appendix 1. Results of the radiocarbon dating for sequences used in the study

Locality	Samples	Depth (cm)	¹⁴ C BP	Dating method	Dated material	Agreement of model
Pohorelská Maša	UG-21142	78.5–81.5	958	AMS	seeds (<i>Carex</i>), mosses, spindles	A= 79
Pohorelská Maša	UG-18782	141–144	4122	AMS	wood (<i>Picea</i>)	
Pohorelská Maša	UG-21143	182.5–185.5	5626	AMS	seeds (<i>Rubus</i> , <i>Sambucus</i>), mosses, <i>Picea</i> needles	
Pohorelská Maša	UG-15942	224.5–227.5	6514	AMS	seeds (<i>Rubus</i> , <i>Sambucus</i>) <i>Abies</i> needles	
Zbojská	UG-21148	31–33	730	AMS	seeds (<i>Rubus</i>), mosses, <i>Picea</i> needles	A= 92
Zbojská	UG-18790	61–63	1300	AMS	seeds (<i>Rubus</i>)	
Zbojská	UG-21149	81–83	4780	AMS	seeds (<i>Rubus</i>), mosses	
Zbojská	UG-15952	99–102	5820	AMS	<i>Picea</i> and <i>Abies</i> needles	
Turček	Gd-12126	65–66	740	AMS	undefined	A= 65
Turček	Gd-10899	94–96	3370	AMS	undefined	
Pálenica	DeA-10237	29–31	320	AMS	seeds	A= 98
Pálenica	DeA-10236	59–61	1668	AMS	<i>Picea</i> needles, seeds	
Pálenica	DeA_11178	77–75	1611	AMS	<i>Picea</i> needles	
Pálenica	UG-17165	89–91	1500	AMS	seeds (<i>Carex</i> , <i>Scirpus</i>), <i>Abies</i> needles	
Klářa	DeA-10213	29–31	85	AMS	seeds	

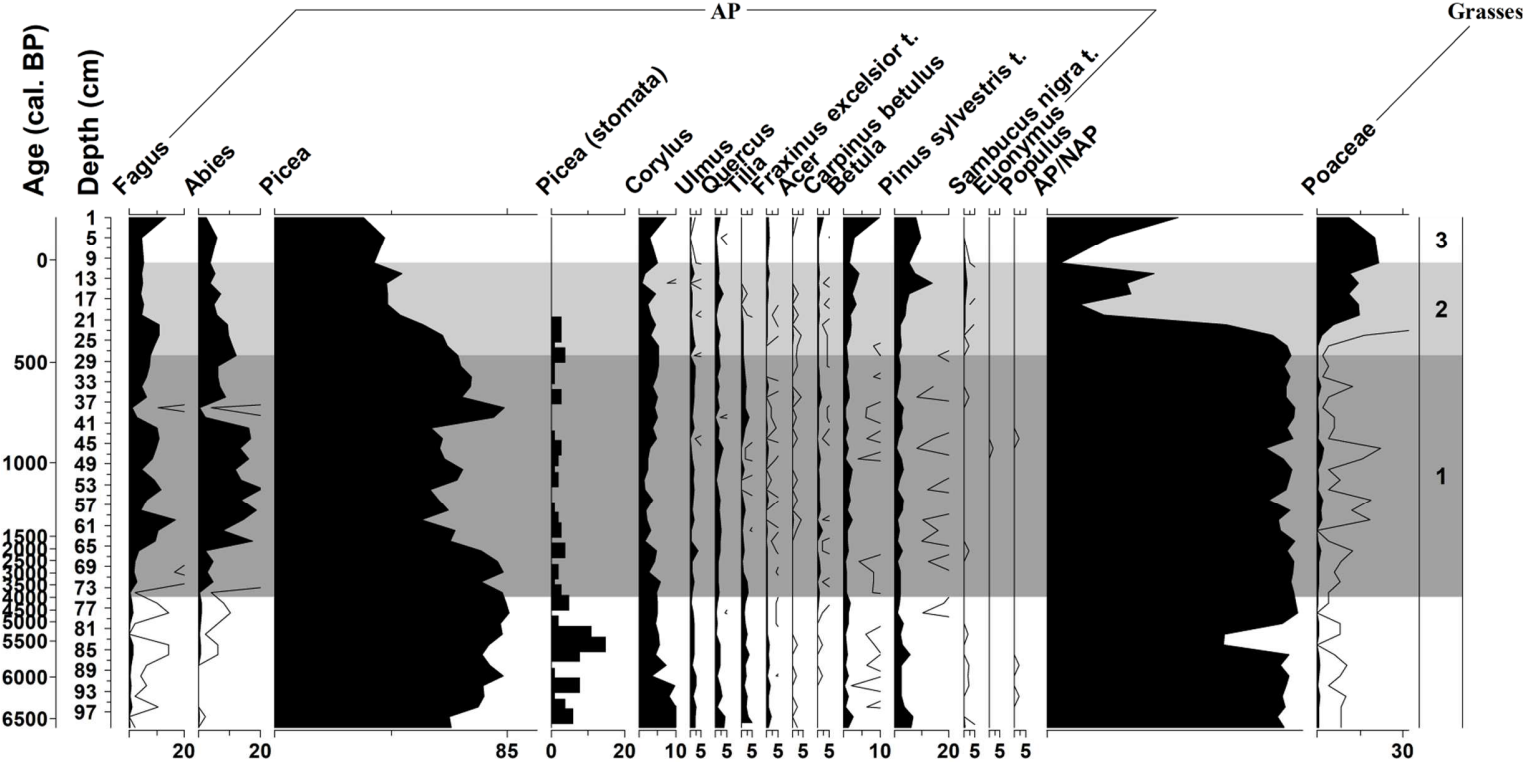
Kláňa	DeA-10212	51–53	162	AMS	wood, seeds	A= 96
Kláňa	UG-17164	83–85	760	AMS	seeds (<i>Picea</i> , <i>Carex</i> , <i>Caltha</i>), <i>Abies</i> needles	
Bykovo	DeA-16171	38–36	531	AMS	seeds (<i>Rubus</i>)	A= 92
Bykovo	DeA-13500	70–68	5611	AMS	<i>Picea</i> needles	
Bykovo	DeA-13499	100–98	7006	AMS	<i>Picea</i> needles	
Biele skaly						
Biele skaly	DeA-19264	68	1712	AMS	<i>Picea</i> needles	
Biele skaly	DeA-16480	100	3766	AMS	seeds (<i>Rubus</i>), <i>Picea</i> needles	
Žliebky	UG-15943	81–83	1186	AMS	mosses (<i>Bryum</i> , <i>Call cusp</i>) + <i>Picea</i> needles	A= 93
Žliebky	UG-18783	101–103	2223	AMS	mosses, seeds	
Žliebky	UG-15944	121–119	5246	AMS	seeds + <i>Picea</i> needles	
Žliebky	UG-18784	127–129	8002	AMS	seeds	

Electronic Appendix 2. Percentage pollen diagrams for main tree taxa, supplemented by evidence from macro-remains and stomata. The grey shading indicates individual study periods: 1. The period of climazonal woodlands; 2. The period of systematic human interventions to woodlands 3. The period of modern development of spruce monocultures.

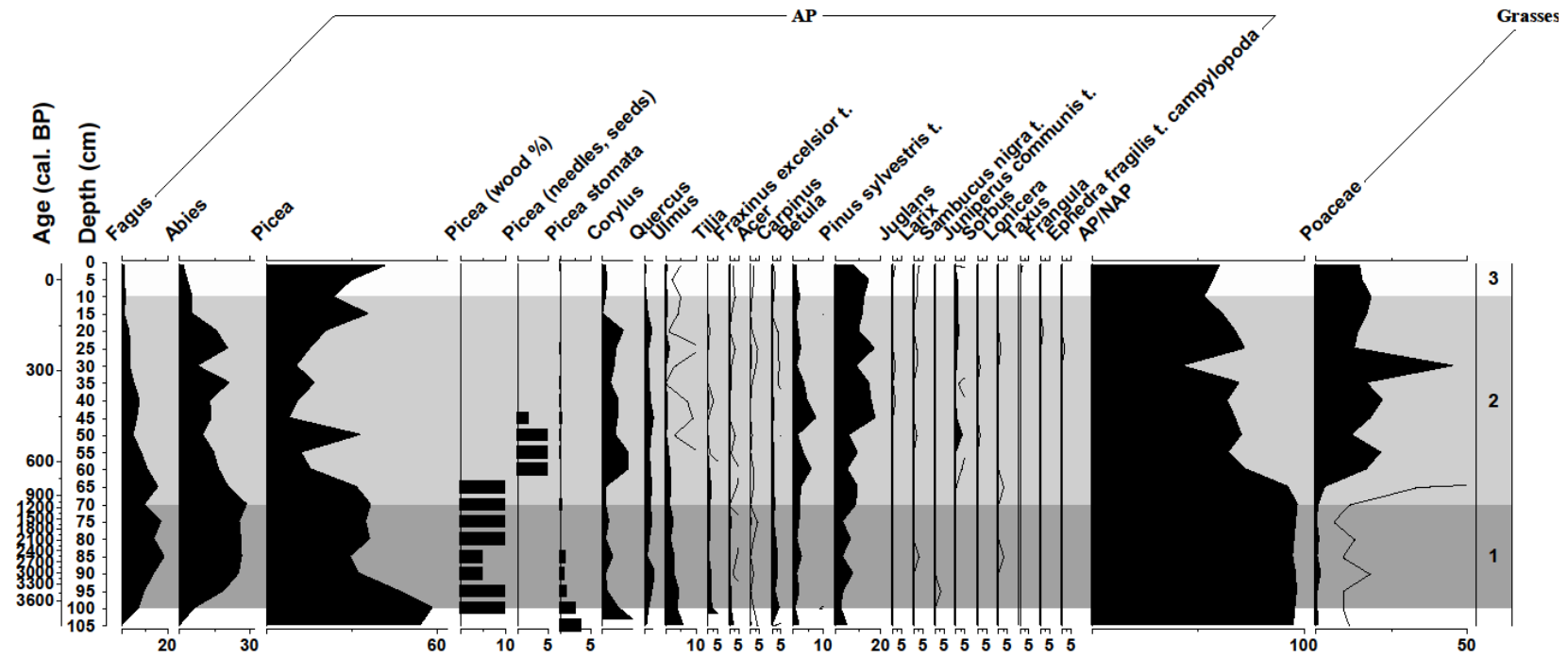
Pohorelská Maša



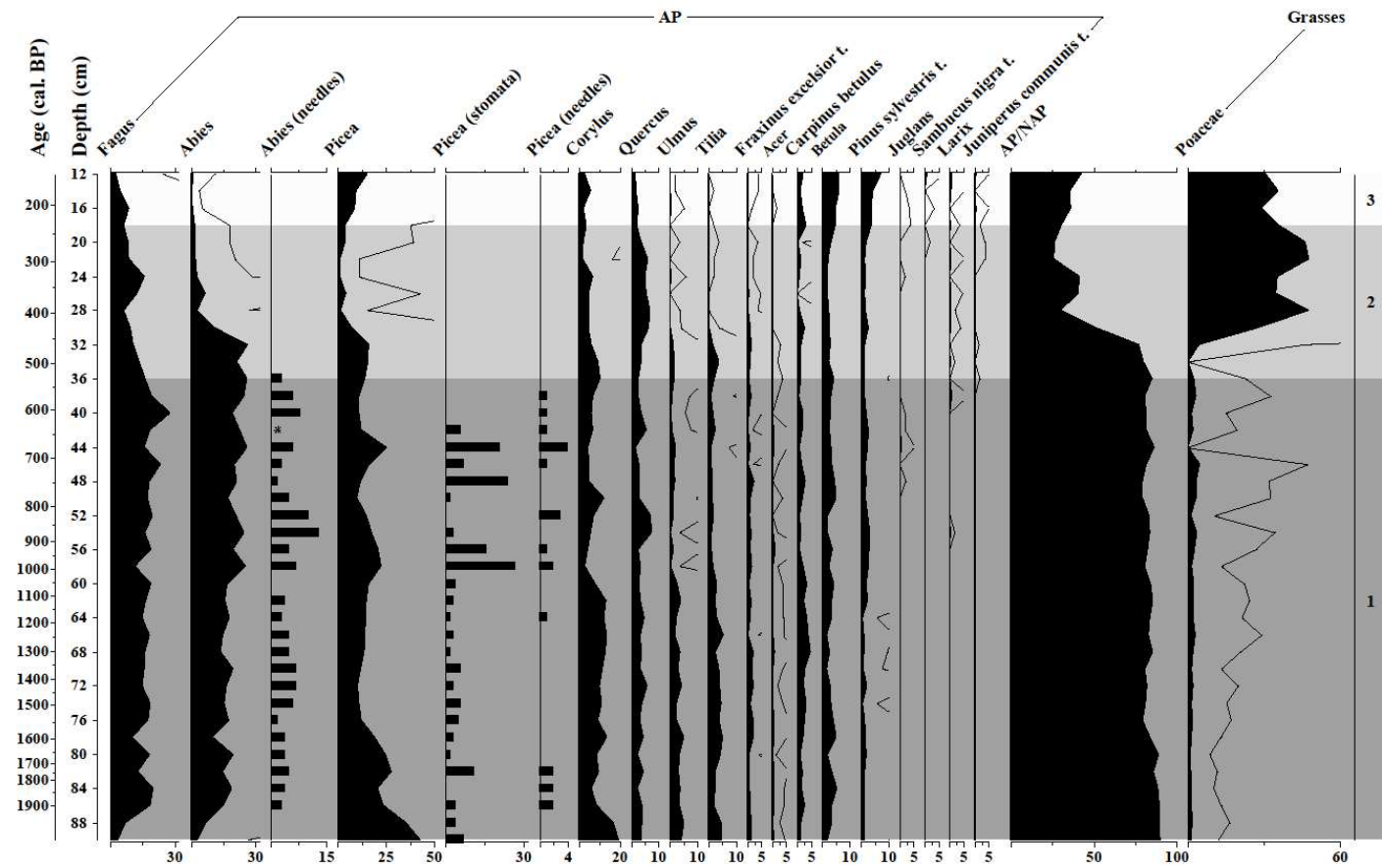
Zbojská



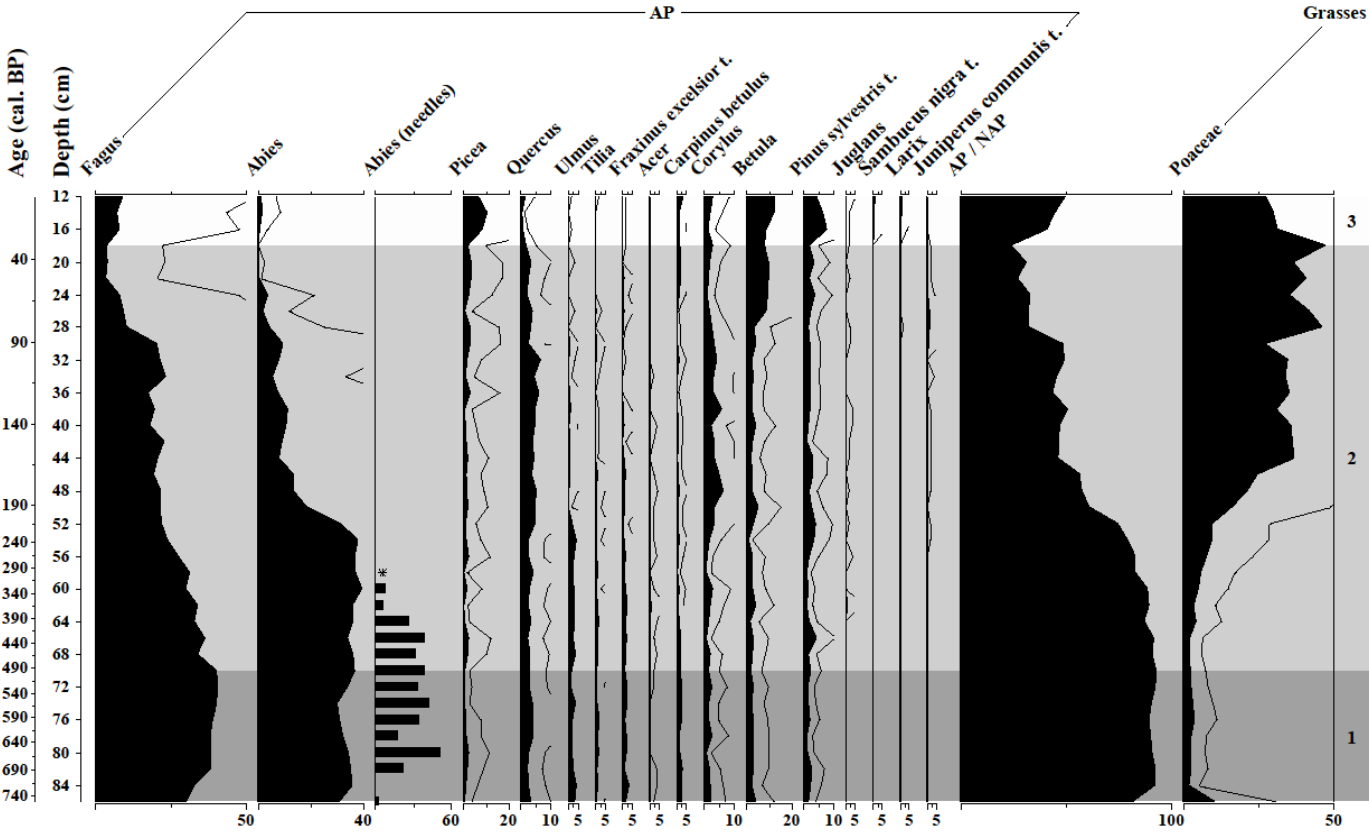
Turček



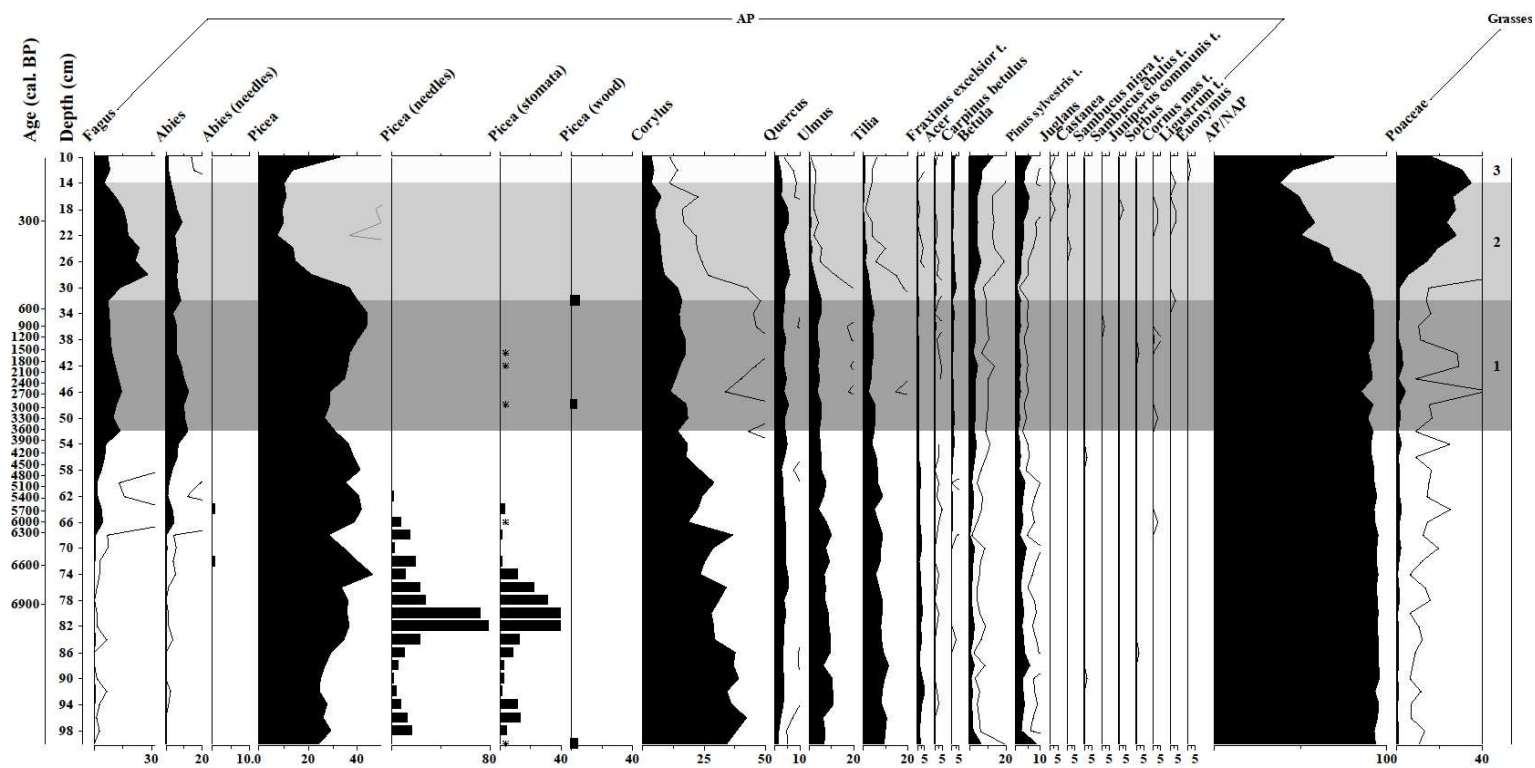
Pálenica



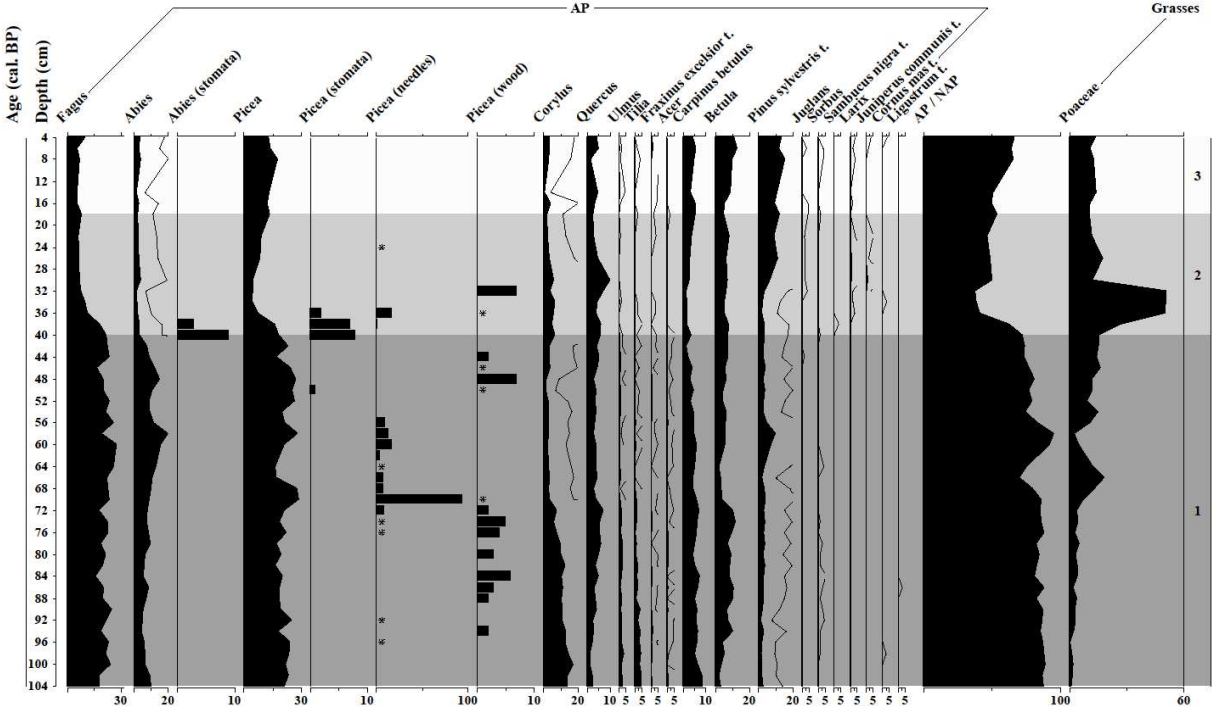
Klášť



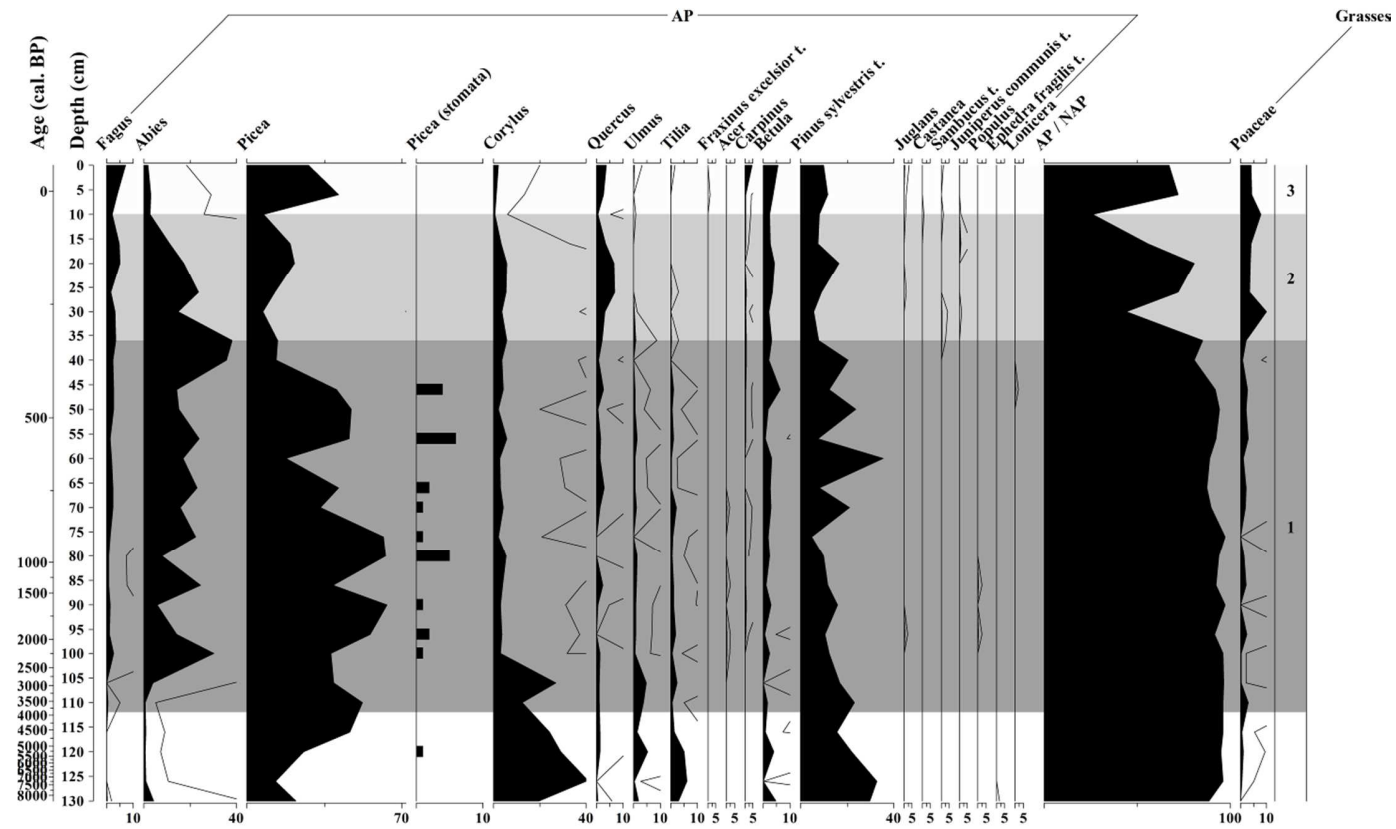
Bykovo



Biele skaly

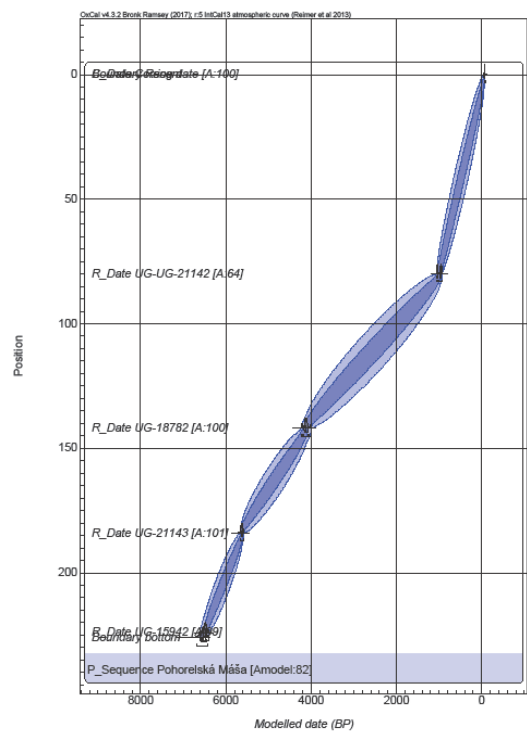


Žliebky

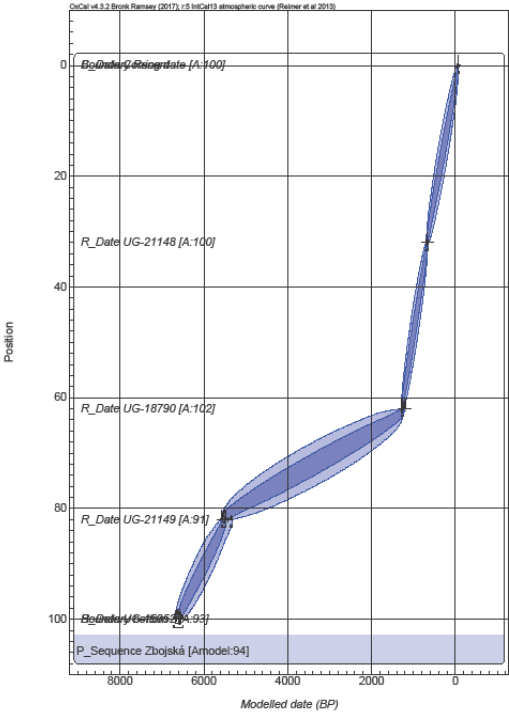


Electronic Appendix 3. The age-depth models of the sites used in this study. The age-deph models for the Turček and Biele skaly sites were not constructed, because only two layers were dated.

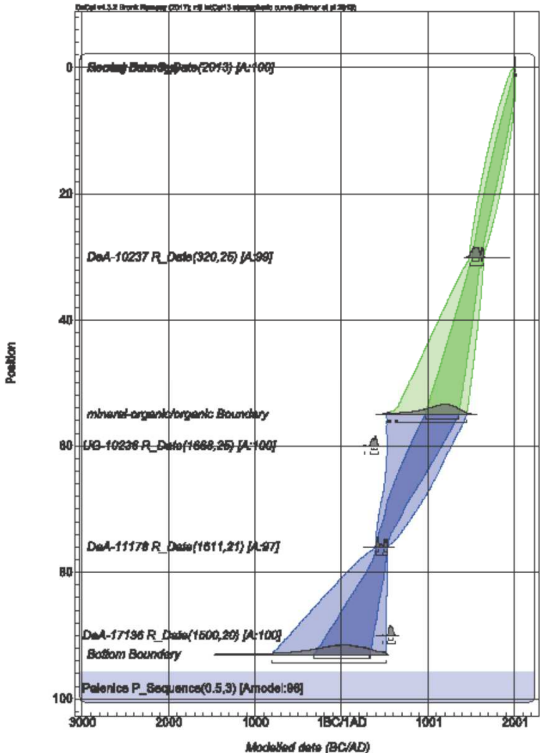
Pohorelská Maša



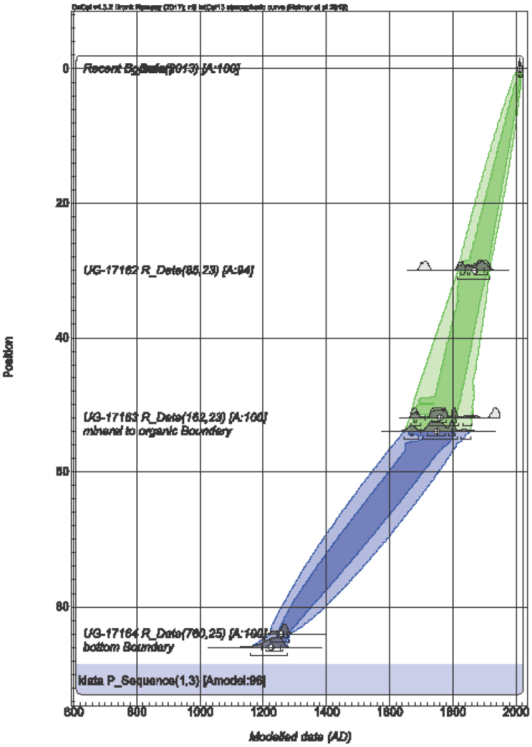
Zbojská



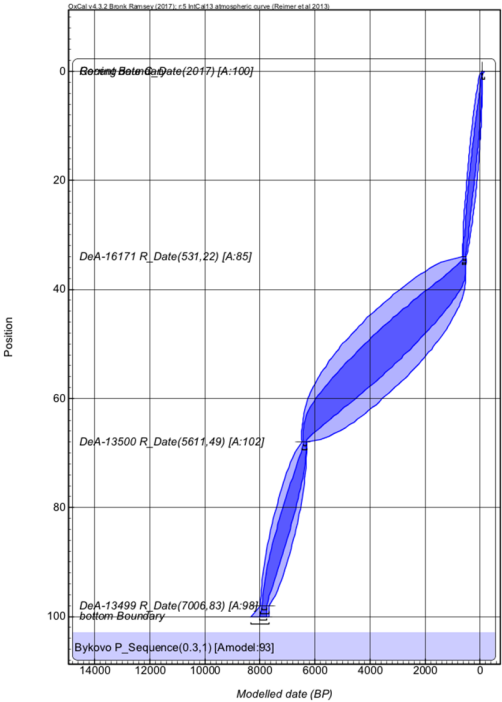
Pálenica



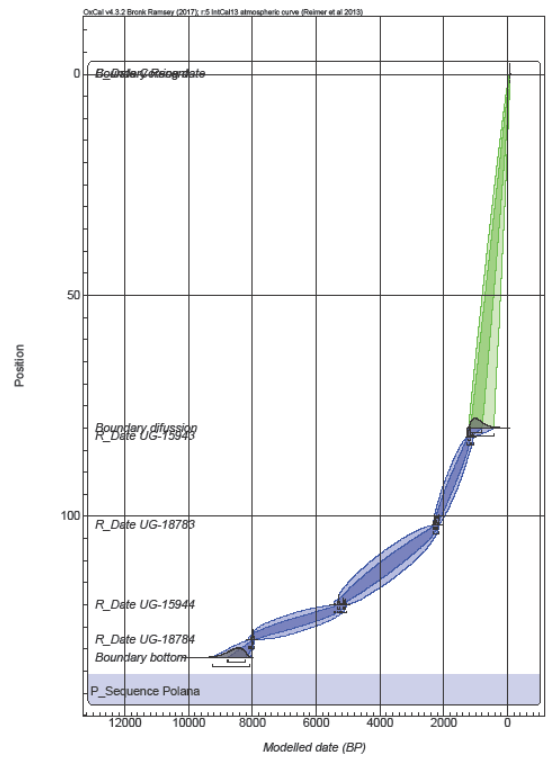
Kláša



Bykovo



Žliebky



Electronic Appendix 4. Pollen counts from surface moss samples

POL 4				POL 5			POL 6			
May		October		May		October		May		October
AP				AP				AP		
Picea	405	526		Picea	289	219		Picea	326	391
Abies	3	26		Abies	13	27		Abies	10	11
Fagus	80	114		Fagus	92	51		Fagus	136	77
Betula	60	66		Betula	61	37		Betula	62	39
Corylus	27	49		Corylus	25	65		Corylus	33	46
Alnus	38	41		Alnus	31	89		Alnus	44	64
Pinus	70	92		Pinus	80	64		Pinus	77	73
Quercus	22	13		Quercus	47	15		Quercus	26	15
Carpinus	16	21		Carpinus	32	30		Carpinus	41	30
Acer	7	3		Aver	2	2		Aver	1	1
Sambucus	1	2		Ulmus	1	0		Fraxinus	11	4
Fraxinus	9	0		Fraxinus	6	4		Salix	6	1
Salix	5	1		Sorbus	2	3		Juglans	1	3
Juglans	2	2		Salix	1	1		Tilia	1	2
Tilia	5	2		Juglans	7	1		Sum	775	757
Sum	750	958		Tilia	6	5		NAP		
NAP				Sum	695	613		Apiaceae	2	0
R.acetosa t.	1	0		NAP				R.acetosa t.	1	5
Brassicaceae	2	3		Apiaceae	9	8		Brassicaceae	10	6
Artemsia	1	6		R.acetosa t.	5	0		Mercur.anua t	1	0
Lotus	1	1		Brassicaceae	8	3		Rubus	10	9
Senecio t.	2	3		Artemsia	3	7		Ambrosia	16	30
Galium	1	1		Rubus	18	18		Senecio t.	6	1
P.lanceolata t.	5	3		Ambrosia	13	21		Gentiana	1	0
Apiaceae	3	5		Senecio t.	2	7		A. ligulifloreae	1	1
Xanthium strumarium	1	0		P. major t.	2	0		Urtica	3	12
Scrophulariaceae	16	6		R. acris t.	4	8		R. acris t.	1	2
Ambrosia	19	28		Galium	1	0		Galium	1	0

Urtica	16	2		P.lanceolata t.	5	2		P.lanceolata t.	4	0
Chenopodiaceae	4	13		Cyperaceae	1	0		Cyperaceae	1	0
Poaceae	46	28		Ranunculaceae	2	0		Scrophulariaceae	5	3
Polypodiaceae	4	18		Scrophulariaceae	6	11		Chenopodiaceae	1	0
Mercurialis annua t.	0	3		Caltha t.	1	0		Poaceae	18	9
Cirsium	0	1		Rosaceae	4	2		Cerastium t.	0	1
A. tubifloreae	0	1		Chenopodiaceae	4	3		Lotus	0	1
A.ligulifloreae	0	1		Poaceae	46	8		Mentha t.	0	1
P. aviculare t.	0	2		A. ligulifloreae	0	1		Artemisia	0	1
Triticum t.	0	2		R. acetosa t.	0	1		Triticum t.	0	1
Silene	0	2		Sum	134	100		Sum	82	83
R. acris t.	0	1		Lyc.tablets	17	17		Lyc.tablets	3	8
Cerealia	0	1		Polypod	42	152		Polypodiaceae	32	36
Sum	122	131								
Lyc.tablets	11	2								