

Taxa	Organ	Outcrop	NLR	Biome name
Bryophyta, Lycophyta and Pteridophyta				
<i>Cryptogrammasporis</i> sp.	M	10	<i>Cryptogamma</i>	(–)
<i>Echinatisporites</i> sp.	M	4	<i>Selaginella</i>	(–)
<i>Equisetum</i> sp.	S	8	<i>Equisetum</i>	(–)
<i>Laevigatosporites</i> sp.	M	1–7, 9–10	?	(–)
<i>Leiotriletes</i> sp.	M	2, 9	<i>Lygodium</i>	(–)
<i>Microfoveolatosporis</i> sp.	M	4, 9–10	Schizaeaceae	(–)
<i>Osmunda parschlugiana</i>	L	10	<i>O. regalis</i>	(–)
<i>Polypodiaceoisporites</i> sp.	M	9–10	Pteridaceae?	(–)
<i>Pteridium oeningense</i>	L	8	<i>P. aquilinum</i>	(–)
<i>Retitriletes pseudoclavatus</i> /R. <i>reticuloides</i>	M	2, 4, 6, 9–10	<i>Lycopodium</i> sect. <i>Lycopodium</i>	(–)
<i>Ricciaepollenites</i> <i>transdanubicus</i>	M	9–10	<i>Riccia duplex</i>	(–)
<i>Rugulatisporites quintus</i>	M	1–7, 9–10	<i>Osmunda regalis</i>	(–)
<i>Verrucatosporites</i> spp.	M	2–4, 9–10	Polypodiaceae	(–)
Gymnosperms				
<i>Abiespollenites maximus</i>	M	1–6, 8–10	<i>Abies</i>	CLEG, CLMX, COEG, COMX
<i>Abies saportana</i>	F	2, 5–8	<i>Abies pinsapo</i>	CLEG, CLMX, COEG, COMX
<i>Cathayapollis gaussenii</i>	M	1–6, 8–10	<i>Cathaya</i>	WTEM
<i>Cryptomeria anglica</i>	S/L	2–3, 5–8	<i>C. japonica</i>	WTEM, WTEG
Cupressaceae gen. et sp. indet	S/L	6	<i>Thuja</i> , <i>Chamaecyparis</i>	CLEG, CLMX, COEG, COMX, TEDE, WTEM
<i>Cycadopites</i> sp.	M	2–3, 5, 10	<i>Cycadaceae/Ginkgoaceae</i>	COMX, TEDE, WTEM, TEXE
<i>Ephedripites</i> sp.	M	2–3, 6, 8–10	<i>Ephedra</i>	DESE
<i>Ginkgo adiantoides</i>	L	6	<i>G. biloba</i>	COMX, TEDE, WTEM
<i>Inaperturopollenites dubius</i>	M	1–6, 8–10	Cupressaceae	WTEM, WTEG, TREG
<i>Inaperturopollenites</i> <i>verrupapillatus</i>	M	1–6, 8–10	Taxodioids (<i>Taxodium</i> , <i>Glyptostrobus</i>)	WTEM, WTEG, TREG
<i>Piceapollis planoides</i>	M	2–4, 9–10	<i>Picea</i> <i>asperata/schrenkiana</i>	CLEG, COEG, CLMX, COMX, TEDE
<i>Pinus palaeostrobis</i>	L	2, 5–7	<i>Pinus</i> spp.	CLEG, CLMX, COEG, COMX
<i>Pinuspollenites labdacus</i>	M	1–6, 8–10	<i>Pinus</i> spp.	CLEG, CLMX, COEG, COMX
<i>Pinus</i> sp.	C/S	2–3, 5–8	<i>Pinus</i> spp.	CLEG, CLMX, COEG, COMX
<i>Sciadopityspollenites serratus</i>	M	2–3, 10	<i>Sciadopytis</i>	(–)

<i>Sequoiapollenites major</i>	M	1–7, 9–10	Taxodioids (<i>Sequoia</i> , <i>Metasequoia</i> , <i>Sequoiadendron</i> , <i>Cryptomeria</i>)	WTEM, WTEG, TREG
<i>Torreya bilinica</i>	L	8	<i>T. californica</i> / <i>T.</i> <i>taxifolia</i>	CLMX, COEG, COMX, WTEM, WTEG, TRSE, TREG
cf. <i>Tsuga</i> sp.	C	2, 7–8	<i>Tsuga</i> , <i>Cathaya</i>	CLMX, COEG, COMX, WTEM, WTEG
<i>Zonalapollenites maximus</i>	M	1–2, 5, 9–10	<i>Tsuga</i>	CLMX, COEG, COMX, WTEM, WTEG
Angiosperms				
<i>Acaciopollenites</i> sp.	M	3	<i>Acacia</i>	WTEM, TRDE, TEGR, TEXE
<i>Acer integerrimum</i>	L	3, 6–8	<i>Acer</i> sect. <i>Platanoidea</i>	COEG, COMX, WTEM, TEDE
<i>Acer pyrenaicum</i>	L	1–3, 5–8	<i>Acer</i> sect. <i>Acer</i> and <i>Goniocarpa</i>	COEG, COMX, WTEM, TEDE
<i>Acer subcampestre</i>	L	8	<i>Acer</i> sect. <i>Platanoidea</i>	COEG, COMX, WTEM, TEDE
<i>Acer</i> sp. 1 (samari)	F	2–3, 5–8	<i>Acer</i> sect. <i>Acer</i> and <i>Goniocarpa</i>	COEG, COMX, WTEM, TEDE
<i>Acer</i> sp. 2 (samari)	F	3	<i>Acer</i> sect. <i>Platanoidea</i>	COEG, COMX, WTEM, TEDE
<i>Aceripollenites</i> sp.	M	1–6, 8–10	<i>Acer</i> spp.	COEG, COMX, WTEM, TEDE
<i>Alnipollenites verus</i>	M	1–10	<i>Alnus</i>	CLDE, COEG, COMX, WTEM
<i>Alnus occidentalis</i>	L	2–3, 5–8, 10	<i>A. glutinosa</i> subsp. <i>barbata</i>	CLDE, COEG, COMX, WTEM
<i>Alnus</i> sp.	L	8	<i>A. subcordata</i>	CLDE, COEG, COMX, WTEM
<i>Aralia multifida</i>	L	8	<i>Aralia</i> spp.	COMX, WTEM, TRSE, TEDE, WTEG
<i>Araliaceopollenites reticuloides</i>	M	10	<i>Hedera</i>	TREG, TRSE
<i>Betula pseudoluminifera</i>	L	5–6	<i>B. grossa</i>	CLDE, COEG, COMX
<i>Buxapollis buxoides</i>	M	2, 6–7	<i>Buxus sempervirens</i>	WTEM, WTEG, TRSE
<i>Buxapollis</i> sp.	M	2–3, 5–10	<i>Buxus liukiuensis</i>	WTEM, WTEG, TRSE
<i>Buxus pliocenica</i>	L	2–3, 5–6	<i>B. sempervirens</i> - <i>colchica-hyrcana</i> group	WTEM, WTEG, TRSE
<i>Caesalpinites</i> sp.	L	2	Caesalpinoideae	TREG, TRSE, TRDE
<i>Caprifoliipites andreanszkyi</i>	M	2–3, 9–10	<i>Viburnum</i>	CLEG, CLMX, COEG,

				COMX, WTEM, WTEG
<i>Carpinites carpinoides</i>	M	1–6, 8–10	<i>Carpinus betulus/ C. orientalis</i>	TEDE, WTEM
<i>Carpinus grandis</i>	L	2–3, 6–8	<i>Carpinus</i> spp.	TEDE, WTEM
<i>Carpinus neilreichii</i>	F	6	<i>C. orientalis</i>	TEDE, WTEM
<i>Caryapollenites simplex</i>	M	1–6, 8–10	<i>Carya</i>	TEDE, WTEM
<i>Caryophyllidites</i> sp.	M	1–6, 9–10	Caryophyllaceae	TEGR
<i>Cedrela heliconia</i>	L	2–3, 8	<i>Cedrela, Toona</i>	TEDE, WTEM, TRDE,
<i>Celtipollenites komloensis</i>	M	2, 4, 10	<i>Celtis</i>	COMX, TEDE, WTEM
<i>Ceratophyllum schrotzburgense</i>	S/L	8, 10	<i>Ceratophyllum</i>	(–)
<i>Chenopodipollis</i> spp.	M	1–6, 8–10	Amaranthaceae	TEGR
<i>Cichoreacidites</i> spp.	M	1–6, 9–10	Asteraceae	TEXE, TEGR
<i>Cistacearumpollenites</i> spp.	M	1–6, 8–10	Cistaceae	WTEM, WTEG, TEXE
Commelinidae incertae sedis (<i>Rhizocaulon</i> sp.)	I	6	Commelinidae	(–)
Commelinidae incertae sedis (<i>Typha latissima</i>)	L	2–3, 5–8, 10	Typhaceae?	(–)
<i>Cornaceaepollis</i> sp.	M	1–3, 9–10	<i>Cornus</i>	COMX, TEDE, WTEM
<i>Corylus</i> sp.	IN	8	<i>C. colurna</i>	COEG, COMX, TEDE
<i>Cupuliferoidaepollenites pusillus</i>	M	2–3, 5–6, 9–10	Castaneoideae	TEDE, WTEM, WTEG, TRSE, TREG
<i>Cyrillaceaepollenites exactus</i>	M	10	Cyrillaceae, Clethraceae	WTEM, TRSE, TREG
<i>Cyperaceaepollis neogenicus</i>	M	2–4, 9–10	Cyperaceae	TEGR
<i>Daphnogene polymorpha</i>	L	5–6, 8	<i>Cinnamomum</i>	WTEM, TRSE, TREG, WTEG
<i>Decodon</i> sp.	L	6, 8	<i>Decodon</i>	(–)
<i>Droseridites</i> sp.	M	2, 9–10	<i>Drosera</i>	(–)
<i>Echium</i> type	M	2	Boraginaceae	WTEM, WTEG, TRSE, TREG, TEGR
<i>Ericipites</i> sp.	M	1–6, 8–10	Ericaceae	CLDE, CLEG, COEG, COMX, TEDE, TEGR, WTEM
Fabaceae gen et sp. Indet.	L	8	<i>Robinia? Cassia?</i>	TRSE, TREG, TRDE
<i>Fagus gussonii</i>	L	2–3, 5–8, 10	<i>F. sylvatica</i>	WTEM, TEDE
<i>Fagus haidingeri</i>	L	1–3, 5–8, 10	<i>F. longipetiolata</i>	WTEM, TEDE
<i>Fagus</i> sp.	F	8	<i>Fagus</i>	WTEM, TEDE
<i>Faguspollenites verus</i>	M	1–10	<i>Fagus</i>	WTEM, TEDE
<i>Fraxinipollis</i> sp.	M	1–3, 5–6, 8–10	<i>Fraxinus</i>	COEG, COMX, TEDE, WTEM
<i>Fraxinus numana</i>	F	2–3, 6, 8	<i>Fraxinus</i>	COEG, COMX, TEDE,

				WTEM
<i>Geranium</i> type	M	3, 9–10	<i>Geranium molle</i>	TEGR
<i>Graminidites</i> spp.	M	1–6, 8–10	Poaceae	TEGR
<i>Hedera</i> cf. <i>multinervis</i>	L	7	<i>H. helix/hibernica</i>	TREG
<i>Ilexpollenites iliacus</i>	M	1–3, 5–6, 9–10	<i>Ilex aquifolium/I. macrocarpa</i>	WTEM, WTEG, TRSE, TREG
<i>Intratrilopollenites instructus</i>	M	1–6, 8–10	<i>Tilia</i>	COEG, COMX, TEDE, WTEM
<i>Juglanspollenites verus</i>	M	1–3, 5–6, 8–10	<i>Juglans cinerea</i>	WTEM, TEDE
<i>Laurophyllum pseudoprinceps</i>	L	5–6	<i>Ocotea</i>	WTEM, TRSE, TREG, WTEG
<i>Laurophyllum</i> sp.	L	6–8	<i>Laurus?</i>	WTEM, TRSE, TREG, WTEG
cf. <i>Laurophyllum</i> sp.	L	8	Lauraceae, Magnoliaceae	WTEM, TRSE, TREG, WTEG
<i>Leguminocarpon</i> sp. 1	F	8	Caesalpinoidea, Faboideae	TREG, TRSE, TRDE
<i>Leguminocarpon</i> sp. 2	F	8	Mimosoideae, Faboideae	WTEM, TRSE, TREG, TRDE, TEXE
<i>Liliacidites</i> spp.	M	2–6, 8–10	Liliaceae	(–)
<i>Linum</i> type	M	1, 6	<i>L. catharticum</i>	TEGR
<i>Lonicera pollis grandis</i>	M	2–3, 6, 9–10	<i>Lonicera caprifolium</i>	COMX, TEDE, WTEM, WTEG
<i>Momipites gracilis/M. punctatus</i>	M	2–3, 9–10	<i>Engelhardia</i>	WTEM, WTEG
<i>Monocolpopollenites</i> sp.	M	2, 10	Arecaceae	TREG
<i>Multiporopollenites maculosus</i>	M	2	<i>Juglans</i>	WTEM, TEDE
cf. <i>Myrica</i> sp.	L	2, 6, 8	<i>M. arborea ?</i>	WTEM, WTEG
<i>Myricipites bituitus</i>	M	1–6, 8–10	<i>Myrica</i>	WTEM, WTEG
<i>Myriophyllumpollenites quadratus</i>	M	1, 9–10	<i>Myriophyllum</i>	(–)
<i>Nyssapollenites pseudocruciatus</i>	M	2–3, 10	<i>Nyssa</i>	WTEM
<i>Oleoidearumpollenites macroreticulatus</i>	M	2–3	<i>Ligustrum, Syringa</i>	COMX, TEDE, WTEM, WTEG, TRSE, TREG
<i>Oleoidearumpollenites reticulatus</i>	M	2–3, 9–10	<i>Olea</i>	WTEM, WTEG, TRSE, TREG
<i>Ononis</i> type	M	6	<i>Ononis</i>	(–)
<i>Ostrya</i> sp.	IN	2–3	<i>Ostrya</i>	TEDE, WTEM
“ <i>Parrotia</i> ” <i>pristina</i>	L	2–3, 5–8	Hamamelidaceae gen. et sp. indet.	COMX, TEDE, WTEM, WTEG, TRSE, TREG
<i>Parthenopollenites marcodurensis</i>	M	2–3, 6, 8–10	Vitaceae	TREG, TRSE
<i>Perforitricolpites digitatus</i>	M	6, 8–10	Convolvulaceae	TEGR

<i>Periporopollenites orientalisformis</i>	M	1–3, 5–6, 9	<i>Altingia, Liquidambar</i>	TEDE, WTEM, WTEG, TREG, TRSE
<i>Persicariopollis pliocenicus</i>	M	2, 6, 9–10	<i>Polygonum</i> sect. <i>persicaria</i>	(–)
<i>Platanipollis ipelensis</i>	M	2–3, 5, 10	<i>Platanus</i>	TEDE
<i>Platycaryapollenites miocaenicus</i>	M	1–3, 5, 9–10	<i>Platycarya strobilacea</i>	WTEM
Poaceae gen et sp. indet.	I	6, 8	Poaceae	TEGR
<i>Polycolpites</i> sp.	M	2–3, 6, 9–10	Lamiaceae	TEGR
<i>Polyatriopollenites stellatus</i>	M	1–6, 8–10	<i>Pterocarya</i>	TEDE, WTEM
<i>Populus tremulaefolia</i>	L	2 – 3,	<i>P. tremula</i> / <i>P. alba</i>	COEG, COMX, TEDE, WTEM
<i>Potamogeton orbiculare</i>	L	2, 7–8	<i>Potamogeton</i> sect. <i>Potamogeton</i>	(–)
<i>Potamogetonacidites ovalis</i>	M	1–6, 8–10	<i>Potamogeton</i>	(–)
<i>Pterocarya paradisiaca</i>	L	6–7	<i>Pterocarya</i>	TEDE, WTEM
<i>Quercopollenites asper</i>	M	1–6, 8–10	<i>Quercus</i> sect. <i>Lobatae</i>	WTEM, WTEG, TRSE, TREG
<i>Quercopollenites granulatus</i>	M	1–6, 8–10	<i>Quercus</i> sect. <i>Quercus</i>	COEG, COMX, TEDE, WTEM, WTEG, TRSE, TREG
<i>Quercus drymeja</i>	L	2–3, 5–8	<i>Quercus</i> group <i>Ilex</i>	WTEM, WTEG, TRSE, TREG
<i>Quercus hispanica</i>	L	2–3, 5–8	<i>Quercus</i> sect. <i>Quercus</i>	COEG, COMX, TEDE, WTEM, WTEG, TRSE, TREG
<i>Quercus mediterranea</i>	L	1, 6–8	<i>Quercus</i> group <i>Ilex</i>	WTEM, WTEG, TRSE, TREG
<i>Quercus neriifolia</i>	L	7–8	<i>Quercus</i> sect. <i>Lobatae</i>	WTEM, WTEG, TRSE, TREG
<i>Quercus</i> sp.	L	8	<i>Quercus</i> groups <i>Ilex</i> / <i>Cerris</i>	WTEM, WTEG, TRSE, TREG
cf. <i>Quercus</i> sp.	L	2–3, 5–8	<i>Quercus</i> group <i>Cerris</i> , <i>Castanea</i>	TEDE, WTEM, WTEG, TRSE, TREG
<i>Quercus</i> type <i>ilex-coccifera</i>	M	2, 10	<i>Quercus</i> group <i>Ilex</i>	WTEM, WTEG, TRSE, TREG
Ranunculaceae gen. et sp. indet.	M	1–6, 8–10	Ranunculaceae	TREG
Rhamnaceae gen. et sp. indet.	L	8	<i>Berchemia</i> , <i>Rhamnus</i> , <i>Frangula</i>	COMX, TEDE, WTEM, WTEG, TRSE, TREG
<i>Rhamnaceapollenites triquetrus</i>	M	6	<i>Rhamnus</i> / <i>Frangula</i>	COMX, TEDE, WTEM, WTEG, TRSE, TREG
Rubiaceae type	M	2, 9	Rubiaceae	TREG, TRDE, WTEM, WTEG, TRSE

<i>Salix lavateri</i>	L	6, 8	<i>S. nigra/S. caroliniana</i>	CLDE, CLEG, CLMX, COMX, COEG, TEDE, WTEM
<i>Salixipollenites</i> sp.	M	1–6, 8–10	<i>Salix</i>	CLDE, CLEG, CLMX, COMX, COEG, TEDE, WTEM
<i>Sapotaceoidapollenites</i> spp.	M	2–3, 6, 8–10	Sapotaceae	WTEM, TRSE, TREG
<i>Scabiosapollenites magnus</i>	M	1, 3, 9	<i>Scabiosa columbaria</i>	(–)
<i>Slovakipollis elaeagnoides</i>	M	9–10	<i>Elaeagnus</i>	TEDE, WTEM, TEGR, TEXE
<i>Smilax</i> cf. <i>aspera</i> var. <i>fossilis</i>	L	3	<i>S. aspera/S. pendulina</i>	TREG
<i>Sparganiaceapollenites neogenicus</i>	M	1–6, 8–10	<i>Sparganium</i>	(–)
<i>Sporotrapoidites carlesii</i>	M	9–10	<i>Trapa natans</i>	(–)
<i>Tetradomonoporites typhoides</i>	M	2–6, 8–10	<i>Typha latifolia</i>	(–)
<i>Thymelaea villosa</i> type	M	2, 9–10	<i>Thymelaea, Daphne</i>	WTEM, WTEG, TRSE, TREG
<i>Tilia vidali</i>	L	2, 6, 8	<i>Tilia</i>	COEG, COMX, TEDE, WTEM
<i>Trapa ceretana</i>	F	1, 8, 10	<i>T. natans</i>	(–)
<i>Tricolporopollenites rosacearum</i>	M	1	Rosaceae	COMX, TEDE, WTEM, TEGR
<i>Tricolporopollenites indeterminatus</i>	M	3, 6, 10	<i>Parrotia, Distylium</i>	COMX, TEDE, WTEM, WTEG, TRSE, TREG
<i>Tricolporopollenites marginatus</i>	M	6, 10	Euphorbiaceae/Gentianaceae	COMX, TEDE, WTEM, WTEG, TREG, TRSE, TEXE
<i>Tripoporopollenites coryloides</i>	M	1–6, 8–10	<i>Corylus</i>	COEG, COMX, TEDE
<i>Trivestibulopollenites betuloides</i>	M	1–6, 8–10	<i>Betula</i>	CLDE, COEG, COMX
<i>Tubulifloridites</i> spp.	M	1–6, 8–10	Asteraceae	TEXE, TEGR
<i>Ulmus</i> cf. <i>plurinervia</i>	L	5–6, 8	<i>U. pumila/U. parvifolia</i>	COEG, COMX, TEDE, WTEM, TRSE, TREG
<i>Ulmus</i> sp.	F	7–8	<i>Ulmus</i>	COEG, COMX, TEDE, WTEM, TRSE, TREG
<i>Umbelliferoipollenites</i> spp.	M	1–6, 9–10	Apiaceae	TEGR
<i>Zelkova zelkovifolia</i>	L	2–3, 5–8	<i>Z. carpinifolia</i>	COMX, TEDE, WTEM
<i>Zelkovaepollenites potonieii</i>	M	1–6, 8–10	<i>Zelkova</i>	COMX, TEDE, WTEM

Appendix 4: Taxonomic list for the Tortonian and early Messinian of the La Cerdanya Basin. Listing organ (M: miospores, L: leaves, F: fruits, S: seeds, C: cones), site (numbers listed in Figure 1 and Table 1), nearest living relative (NLR) and biome. Biomes is inferred through the ‘taxon – biome’ matrix.