

### Electronic Appendix 1. Sites used for the map in Fig. 4

Sites used for the map (Fig. 4) from PALYCZ database:

<http://botany.natur.cuni.cz/palycz/> (locality and latitude/longitude in brackets)

Anenské údolí (50.5887/16.1175), Barbora (48.9558/14.8333), Bláto (49.0417/15.191), Borkovická blata (49.2328/14.6327), Brentenlohe (49.7872/12.4625), Červené blato (48.8608/14.8102), Dvůr Anšov (48.7773/16.4225), Fláje - Kiefern (50.6829/13.5799), Horní Pole (49.2132/15.3148), Hozelec (49.0464/20.332), Hrabanovská černava (50.2164/14.8316), Hůrecká slat' (49.1522/13.3276), Chrást (50.2603/14.5441), Jablůnka (49.3833/17.95), Jedlová (49.397/19.6605), Jestřebské blato (50.5989/14.6047), Kameničky (49.7387/15.9636), Klíčava (50.1462/13.833), Knížecí pláně (48.9646/13.635), Komořanské jezero (50.5351/13.5184), Kožlí (49.3601/14.0209), Liptovský Jan (49.0417/19.6778), Loučky (49.3242/15.5336), Mělnický úval (50.2993/14.5781), Mokré louky (South) (49.0022/14.778), Nad Dolským mlýnem (50.8523/14.3387), Palašiny (49.6813/15.478), Plešné jezero (48.7767/13.8657), Podhořany (49.2492/20.4708), Praha-Podbaba (50.1125/14.3917), Rokytecká slat' (49.0153/13.4122), Rybářenská slat' (49.0313/13.4619), Řásná (49.2306/15.3708), Řezabinec (49.2502/14.0897), Spišská Belá (49.1847/20.45), Šafárka (48.882/20.575), Švarcenberk (49.1456/14.7048), Velanská cesta (48.7748/14.9283), Verněřovice (50.6217/16.1958), Vlčí rokle (50.6045/16.1284), Vracov (48.9778/17.2052), Weiherlohe (49.7297/12.3875), Zbudovská blata (49.0748/14.349), Zlatnická dolina (49.5167/19.2833)

Sites used for the map (Fig. 4) from EPD database:

<http://www.europeanpollendatabase.net/> (locality and latitude/longitude in brackets)

Aegelsee (46.6458/7.5433), Algendar (39.9406/3.9586), Altenweiher (48.0133/6.9944), Ampoix (45.6333/2.9333), Amsoldingensee (46.725/7.575), Amsoldingensee (46.725/7.575), Arkutino Lake (42.3667/27.7333), Aronde (49.4625/2.6911), Auneau (48.4561/1.7936), Avrig (45.7167/24.3833), Balladrum (46.0167/8.75), Banyoles (42.1333/2.75), Basse-Ville (47.1861/-1.8581), Bedlno (51.2042/20.2833), Bellefontaine (46.5753/6.0931), Besbog (41.75/23.6667), Biot (43.8/7.1), Black Sea (South) (42.0675/28.485), Black Sea (Southwest) (42.0675/28.8889), Black Sea (Southwest) (42.1842/28.9167), Black Sea (West) (42.8333/29.9167), Boehnigsee Goldmoos (46.2592/7.8431), Bois de la Masse (45.5/2.7333), Bois des Gardes (45.4167/2.7), Brugiroux (45.1472/2.8489), Burgmoos (47.1722/7.6744), Cala Galdana (39.9369/3.965), Cala'n Porter (39.8706/4.1314), Clapeyret (44.1472/7.2389), Col des Lauzes (45.7692/6.5333), Col du Pré (45.6892/6.6106), Colfiorito (43.025/12.925), Correo (44.5083/5.9831), Cristol Lake (44.9975/6.6333), Czajkow (50.7833/21.2833), Dry Lake II (42.05/23.5333), Dürrenecksee moor (47.1667/13.8667), Edessa (40.8181/21.9525), Embouchac (43.5664/3.9167), Etang d'Ouveillan (43.2667/3), Etang du Lautrey (46.5872/5.8639), Fuchsschwanzmoos (47.1167/13.9), Giannitsa B (40.6667/22.3167), Gorno (50.85/20.8333), Grand Ratz de Pellet (45.3417/5.6083),

Grande Briere (47.3667/-2.25) Grosses Überling Schattseit-Moor (47.1667/13.9), Halos I (39.1667/22.8333), Hieres sur Amby (45.7908/5.2833), Hirschen Moor (47.8333/8.0917), Holzmaar (50.1167/6.8833), Hort Timoner (39.875/4.1264), Hoya del Castillo (41.25/-0.5), Iezerul Calimani (47.3278/25.2736), Ioannina (39.65/20.9167), Ioannina (39.7625/20.7306), Ioannina II (39.6919/20.8397), Ivano-Frankovskoye (49.9167/23.7667), Jasiel (49.3728/21.8869), Jaslo (49.7833/21.4667), Khimaditis Ib (40.6167/21.5833), Khimaditis III (40.6125/21.5861), Kletnia Stara (51.635/21.6792), Krumpa (51.3/11.85), Kupena (41.9833/24.3333), La Taphanel (45.2744/2.6792), La Vie (48.5483/-0.2583), Lac Couve (45.6964/6.5347), Lac de Chambedaze (45.4506/2.8778), Lac de Perle (44.1417/7.6), Lac de Siguret (44.7917/6.55), Lac Long Inférieur (44.0578/7.45), Lac Mouton (44.0578/7.4447), Lac Noir (45.4536/2.6272), Lac Saint (44.42/6.3364), Lacs Noels (44.9731/2.8589), Lago dell'Accesa (42.9864/10.8833), Lago di Martignano (42.1167/12.3333), Lago Grande di Mont (40.9444/15.6), Lago Grande di Mont (40.9444/15.6), Lago Padule (44.2986/10.2147), Laguna Guallar (41.4/-0.2167), Lake Bala (46.8183/17.735), Lake Balaton (Centr (46.7444/17.4008), Lake Balaton (North (47.0017/18.1042), Lake Duranunlak (43.6667/28.55), Lake Racou (42.5542/2.0083), Lake Shabla-Ezeretz (43.5833/28.55), Lake Varna (Belosla (43.2/27.8333), Lake Xinias (39.05/22.2667), Le Fourne (48.4444/-0.1917), Le Grand (45.4733/5.4167), Le Grand Etang de S (44.35/5.2333), Le Marais St Boetie (49.6167/3.8167), Le Monal (45.5569/6.9286), Le Mont (45.5514/6.5489), Les Echets (45.8333/5), Les Saisi (45.7372/6.4769), Lignin Lake (44.1042/6.7086), Lignin Lake (44.1042/6.7086), Lobsigens (47.0319/7.2992), Loras (45.6639/5.2444), Lutiniere (46.4444/-0.8622), Madic (45.35/2.45), Mareuge (45.6219/2.8997), Meerfelder Maar (50.1/6.75), Mohos (46.0833/25.9167), Moulin de (45.8497/1.6458), Navarrés (39.1/-0.6833), Peuil Peat Bog (45.125/5.6436), Peyreleva (45.7083/2.3833), Pla de Llacs (42.1742/-2.4769), Place du Commerce (47.2139/-1.5561), Plan du Clou (45.6997/6.5392), Plan du Jeu (45.6072/6.5322), Plan du Lac (45.3153/6.8167), Plan du Laus (44.2417/6.7022), Plateau de Prarion (45.8847/6.7494), Pré Rond (44.9189/6.5942), Puerto de (43.0333/-2.05), Puscizna Rekowianska (49.4833/19.8167), Puy de Pailleret (45.5167/2.8167), Rotsee (47.0756/8.3256), Roztoki (49.7167/21.5833), Sabbion (44.13/7.4733), Saint Julien de Rat (45.35/5.6233), Saint Sauveur (43.5664/3.9167), Saint-Urs (48.5194/-0.2533), Selle di (44.15/7.6944), Serrent (47.8094/-2.4681), Schwemm (47.65/12.3), Slopiec (50.7833/20.7833), Solokiya (50.4167/24.1667), Son Bou (39.9247/4.0272), Starniki (50.2667/26.0167), Stoyanov 2 (50.3833/24.6333), Suchedniow (51.05/20.85), Szymbark (49.6333/21.1), Tarnawa Wyżna (49.1/22.8333), Tarnowiec (49.7/21.6167), Tourbiere de Bresle (49.4/2.25), Tourves (43.5/5.9), Trumer Moos (47.9333/13.0667), Tschokljovo Marsh (42.3667/22.8333), Vallée de la Voise (48.4167/1.75), Vallon de Provence (44.3911/6.4042), Venice (45.5/12.25), Vitosha Mountains P (42.8333/23.8333), Voros-mocsar (46.4772/19.1908), Wasenmoos beim Zell (47.9833/13.1), Wolbrom (50.3833/19.7667), Zalozhtsy (49.75/25.45), Zirbenwal (46.8583/11.025), Zsombo Swamp (46.3614/19.9942)

**Electronic Appendix 2.** – Additional sites which were not included in the PALYCZ and EPD datasets and which were used for pollen analyses. Per. (Periodisation) abbreviations: PG – Pleniglacial, LG – Late-Glacial, EH – Early Holocene).

Country	Site	Altitude (m)	Latitude	Longitude	Reference	Per.
Bulgaria	Lake Kremensko-5	2124	41.72° N	23.53° E	Atanassova & Stefanova 2003	LG
Bulgaria	Sedmo Rilsko lake	2095	42.22° N	23.31° E	Bozilova & Tonkov 2000	LG
Bulgaria	Ribno Banderishko	2190	41.73° N	23.47° E	Tonkov et al. 2002	LG
Bulgaria	Mozgovitsa	1800	41.42° N	23.12° E	Tonkov 2003	EH
Bulgaria	Lake Trilistnika	2216	42.2° N	23.32° E	Tonkov et al. 2006	LG
Croatia	Malo Jezero	23	42.78° N	17.36° E	Jahns & van den Bogaard 1998	EH
Croatia	Veliko Jezero	23	42.78° N	17.36° E	Jahns & van den Bogaard 1998	EH
Croatia	Lake Vrana (core VRA96)	40	44.85° N	14.38° E	Schmidt et al. 2000	LG
France	La Borde	1660	42.5° N	2.06° E	Jalut 1971	EH
France	Estarres	356	43.09° N	-0.38° W	Jalut et al. 1988	PG
France	Castet	850	43.03° N	0.37° E	Jalut et al. 1988	PG
France	Bious	1550	42.83° N	0.45° E	Jalut et al. 1988	LG
France	Biscaye	409	43.11° N	0.07° E	Mardones & Jalut 1983	PG
Germany	Zöchsen	100	51.38° N	12.05° E	Litt 1992	LG
Italy	Lago del Segrino	374	45.83° N	9.26° E	Gobet et al. 2000	LG
Italy	Pian di Gembro	1350	46.17° N	10.17° E	Pini 2002	LG
Romania	Stereoiu	790	47.81° N	23.54° E	Björkman et al. 2003	LG
Romania	Ponor	1020	46.64° N	22.83° E	Bodnariuc et al. 2002	EH
Romania	Iezerul Calimani	1650	47.33° N	25.27° E	Farcas et al. 1999	LG
Romania	Taul Zanogutii	1840	45.33° N	22.8° E	Farcas et al. 1999	LG
Romania	Preluca Tiganului	730	47.82° N	23.54° E	Feurdean & Bennike 2004	LG
Romania	Turbuta	275	47.37° N	23.5° E	Feurdean & Bennike 2004	LG
Romania	Bisoca	875	45.53° N	26.82° E	Tantau et al. 2009	EH
Slovenia	Griblje	160	45.57° N	15.28° E	Andrič 2007	LG
Slovenia	Mlaka	150	45.5° N	15.21° E	Andrič 2007	EH
Slovenia	Na mahu 1	-	45.98° N	14.54° E	Andrič et al. 2008	LG
Spain	Pla de Llacs	430	42.17° N	-2.48° W	Pérez Obiol 1988	LG
Spain	Sidera	440	42.16° N	-2.46° W	Pérez Obiol 1988	EH
Switzerland	Alpe Palü	1940	46.37° N	10.01° E	Zoller et al. 1998	EH
Switzerland	Lago di Muzzano	337	46° N	8.93° E	Gobet et al. 2000	LG
Switzerland	Hinterburgsee	1515	46.72° N	8.07° E	Heiri et al. 2003	LG
Switzerland	Balladrum	483	46.02° N	8.75° E	Hofstetter et al. 2006	LG
Switzerland	Bay of Geneve	357	46.23° N	6.17° E	Moscariello et al. 1998	LG
Switzerland	Lago di Origlio	416	46.06° N	8.95° E	Tinner et al. 1999	PG

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