

Appendix 1 Supplementary materials to Angiolini et al., 2019.

Environmental drivers of plant assemblages: are there differences between palustrine and lacustrine wetlands? A case study from the northern Apennines.

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Life Form	Chorological type	Red List		Species	Abridged species name	Lacustrine		Palustrine	
		species	Family			N° of occurrences	Frequency (%)	N° of occurrences	Frequency (%)
P	Eurasian		Sapindaceae	<i>Acer campestre</i> L.	Ace cam	1	0.8	0	0.0
H	Orophilous		Asteraceae	<i>Adenostyles glabra</i> (Mill.) DC. subsp. <i>glabra</i>	Ade gla	1	0.8	0	0.0
G	Boreal		Apiaceae	<i>Aegopodium podagraria</i> L.	Aeg pod	0	0	1	2.4
H	Boreal		Poaceae	<i>Agrostis stolonifera</i> L.	Agr sto	4	3.2	4	9.5
H	Eurasian		Lamiaceae	<i>Ajuga reptans</i> L.	Aju rep	3	2.4	0	0.0
Hy	Wide distribution		Alismataceae	<i>Alisma plantago aquatica</i> L.	Ali pla	9	7.2	3	7.1
H	Eurasian		Poaceae	<i>Alopecurus aequalis</i> Sobol.	Alo aeq.	1	0.8	1	2.4
T	S-European-Medit		Poaceae	<i>Alopecurus rendlei</i> Eig	Alo ren	1	0.8	0	0.0
H	Eurasian		Poaceae	<i>Anthoxanthum odoratum</i> L.	Ant odo	3	2.4	0	0.0
H	Eurasian		Apiaceae	<i>Anthriscus sylvestris</i> (L.) Hoffm. subsp. <i>sylvestris</i>	Ant syl	0	0	2	4.8
H	Eurasian		Asteraceae	<i>Arctium nemorosum</i> Lej.	Arc nem	0	0	1	2.4
G	Endemic	x	Araceae	<i>Arisarum proboscideum</i> (L.) Savi	Ari pro	1	0.8	0	0.0
G	European oroph		Rubiaceae	<i>Asperula taurina</i> L. subsp. <i>taurina</i>	Asp tau	0	0	1	2.4
H	Wide distribution		Woodsiaceae	<i>Athyrium filix-femina</i> (L.) Roth	Ath fil	2	1.6	2	4.8
G	Boreal		Apiaceae	<i>Berula erecta</i> (Huds.) Coville	Ber ere	10	8	3	7.1
T	Wide distribution		Poaceae	<i>Bromus hordeaceus</i> L.	Bro hor	3	2.4	0	0.0
H	Eurasian		Poaceae	<i>Bromus ramosus</i> Huds.	Bro ram	0	0	1	2.4
Hy	Boreal	x	Plantaginaceae	<i>Callitriche palustris</i> L.	Cal pal	2	1.6	0	0.0
Hy	Eurasian		Plantaginaceae	<i>Callitriche stagnalis</i> Scop.	Cal sta	8	6.4	2	4.8
H	Eurasian		Brassicaceae	<i>Cardamine amara</i> L.	Car ama	16	12.8	3	7.1
T	Eurasian		Brassicaceae	<i>Cardamine impatiens</i> L.	Car imp	1	0.8	0	0.0
H	European oroph		Asteraceae	<i>Carduus personata</i> (L.) Jacq. subsp. <i>personata</i>	Car per	0	0	2	4.8
H	S-European-Medit		Cyperaceae	<i>Carex distans</i> L.	Car dis	5	4	1	2.4
G	European		Cyperaceae	<i>Carex flacca</i> Schreb.	Car fla	1	0.8	0	0.0
G	Eurasian		Cyperaceae	<i>Carex hirta</i> L.	Car hir	19	15.2	1	2.4
H	S-European-Medit		Cyperaceae	<i>Carex otrubae</i> Podp.	Car otr	8	6.4	2	4.8
H	Boreal		Cyperaceae	<i>Carex ovalis</i> Gooden.	Car ova	2	1.6	0	0.0
H	Boreal		Cyperaceae	<i>Carex pallescens</i> L.	Car pal	1	0.8	0	0.0
H	Eurasian		Cyperaceae	<i>Carex pendula</i> Huds.	Car pen	4	3.2	3	7.1
H	Wide distribution		Cyperaceae	<i>Carex pseudocyperus</i> L.	Car pse	4	3.2	0	0.0
H	Eurasian		Cyperaceae	<i>Carex remota</i> L.	Car rem	13	10.4	3	7.1
H	Eurasian		Cyperaceae	<i>Carex sylvatica</i> Huds. subsp. <i>sylvatica</i>	Car syl	2	1.6	0	0.0
G	Boreal	x	Cyperaceae	<i>Carex vesicaria</i> L.	Car ves	6	4.8	2	4.8
			Caryophyllaceae	<i>Cerastium</i> sp.	Cer sp.	0	0	1	2.4
			Characeae	<i>Chara</i> sp.	Cha sp.	1	0.8	0	0.0
			Characeae	<i>Chara vulgaris</i> L.	Cha vul	6	4.8	4	9.5

T	Eurasianic		Amaranthaceae	Chenopodium polyspermum L.	Che pol	1	0.8	0	0.0
H	Boreal		Onagraceae	Circaea lutetiana L.	Cir lut	2	1.6	0	0.0
G	Eurasianic		Asteraceae	Cirsium arvense (L.) Scop.	Cir arv	3	2.4	1	2.4
H	Orophilous		Asteraceae	Cirsium creticum (Lam.) D'Urv. subsp. triumfetti (Lacaita) K. Werner	Cir cre	1	0.8	2	4.8
H	Eurasianic		Asteraceae	Cirsium vulgare (Savi) Ten.	Cir vul	4	3.2	0	0.0
H	Boreal		Lamiaceae	Clinopodium vulgare L.	Cli vul	0	0	1	2.4
H	Eurasianic		Poaceae	Dactylis glomerata L.	Dac glo	1	0.8	2	4.8
G	Eurasianic		Orchidaceae	Dactylorhiza sambucina (L.) Soó	Dac sam	1	0.8	0	0.0
G	Eurasianic		Orchidaceae	Dactyloriza maculata (L.) Soó subsp. fuchsii (Druce) Hyl.	Dac mac	1	0.8	0	0.0
H	S-European-Medit		Caprifoliaceae	Dipsacus fullonum L.	Dip ful	4	3.2	2	4.8
G	Wide distribution		Dryopteridaceae	Dryopteris filix-mas (L.) Schott	Dry fil	0	0	1	2.4
G	Wide distribution	x	Cyperaceae	Eleocharis palustris (L.) Roem. et Schult. subsp. palustris	Ele pal	14	11.2	8	19.0
G	Boreal		Poaceae	Elymus repens (L.) Gould subsp. repens	Ely rep	2	1.6	1	2.4
H	Eurasianic		Onagraceae	Epilobium hirsutum L.	Epi hir	4	3.2	3	7.1
H	Eurasianic		Onagraceae	Epilobium montanum L.	Epi mon	5	4	1	2.4
H	Eurasianic		Onagraceae	Epilobium parviflorum Schreb.	Epi par	8	6.4	1	2.4
H	Eurasianic		Onagraceae	Epilobium tetragonum L.	Epi tet	6	4.8	2	4.8
G	Boreal	x	Orchidaceae	Epipactis palustris (Miller) Crantz	Epi pal	5	4	0	0.0
G	Boreal		Equisetaceae	Equisetum arvense L.	Equ arv	22	17.6	3	7.1
G	Boreal		Equisetaceae	Equisetum palustre L.	Equ pal	20	16	3	7.1
G	Boreal		Equisetaceae	Equisetum telmateia Ehrh.	Equ tel	3	2.4	2	4.8
H	Eurasianic		Asteraceae	Eupatorium cannabinum L. subsp. cannabinum	Eup can	7	5.6	1	2.4
Ch	Eurasianic		Euphorbiaceae	Euphorbia amygdaloides L. subsp. amygdaloides	Eup amy	0	0	1	2.4
H	Boreal		Rosaceae	Fragaria vesca L.	Fra ves	1	0.8	0	0.0
H	European		Fabaceae	Galega officinalis L.	Gal off	7	5.6	3	7.1
T	Eurasianic		Lamiaceae	Galeopsis speciosa Mill.	Gal spe	1	0.8	1	2.4
T	Eurasianic		Rubiaceae	Galium aparine L.	Gal apa	0	0	1	2.4
H	S-European-Medit		Rubiaceae	Galium debile Desv.	Gal deb	2	1.6	0	0.0
H	Eurasianic		Rubiaceae	Galium mollugo L. subsp. erectum Syme	Gal mol	16	12.8	3	7.1
H	S-European-Medit		Rubiaceae	Galium palustre L. subsp. elongatum (C. Presl) Lange	Gal elo	3	2.4	0	0.0
H	Eurasianic	x	Rubiaceae	Galium palustre L. subsp. palustre	Gal pal	22	17.6	3	7.1
T	Eurasianic		Poaceae	Gaudinia fragilis (L.) P. Beauv.	Gau fra	1	0.8	0	0.0
T	Eurasianic		Geraniaceae	Geranium dissectum L.	Ger dis	1	0.8	2	4.8
G	Orophilous		Geraniaceae	Geranium nodosum L.	Ger nod	4	3.2	2	4.8
T	Wide distribution		Geraniaceae	Geranium robertianum L.	Ger rob	0	0	2	4.8
H	Boreal		Rosaceae	Geum urbanum L.	Geu urb	1	0.8	2	4.8
Hy	Wide distribution	x	Poaceae	Glyceria fluitans (L.) R.Br.	Gly flu	13	10.4	0	0.0
G	Wide distribution		Poaceae	Glyceria notata Chevall.	Gly not	22	17.6	8	19.0
H	Eurasianic		Apiaceae	Heracleum sphondylium L. subsp. ternatum (Velen.) Brummit	Her sph	0	0	2	4.8
H	Boreal		Poaceae	Holcus lanatus L.	Hol lan	14	11.2	4	9.5
			Hypericaceae	Hypericum sp.	Hyp sp.	1	0.8	0	0.0
H	Eurasianic		Hypericaceae	Hypericum tetrapterum Fr.	Hyp tet	13	10.4	2	4.8
T	Eurasianic		Balsaminaceae	Impatiens noli-tangere L.	Imp nol	0	0	2	4.8
G	Wide distribution		Juncaceae	Juncus articulatus L.	Jun art	25	20	8	19.0
H	Wide distribution		Juncaceae	Juncus effusus L.	Jun eff	17	13.6	4	9.5

H	Eurasiatic		Juncaceae	<i>Juncus inflexus</i> L.	Jun inf	32	25.6	6	14.3
H	Eurasiatic		Fabaceae	<i>Lathyrus pratensis</i> L. subsp. <i>pratensis</i>	Lat pra	1	0.8	0	0.0
Hy	Wide distribution		Araceae	<i>Lemna minor</i> L.	Lem min	19	15.2	1	2.4
Hy	Wide distribution		Araceae	<i>Lemna trisulca</i> L.	Lem tri	3	2.4	0	0.0
H	Boreal		Poaceae	<i>Lolium perenne</i> L.	Lol per	0	0	1	2.4
H	Eurasiatic		Lamiaceae	<i>Lycopus europaeus</i> L. subsp. <i>europaeus</i>	Lyc eur	8	6.4	4	9.5
H	Eurasiatic		Primulaceae	<i>Lysimachia nummularia</i> L.	Lys num	0	0	2	4.8
H	European	x	Primulaceae	<i>Lysimachia punctata</i> L.	Lys pun	9	7.2	0	0.0
T	Eurasiatic		Fabaceae	<i>Medicago lupulina</i> L.	Med lup	1	0.8	2	4.8
H	Eurasiatic		Lamiaceae	<i>Mentha aquatica</i> L. subsp. <i>aquatica</i>	Men aqu	45	36	14	33.3
H	S-European-Medit		Lamiaceae	<i>Mentha spicata</i> L.	Men spi	5	4	1	2.4
G	Boreal		Poaceae	<i>Milium effusum</i> L.	Mil eff	0	0	2	4.8
H	Eurasiatic		Boraginaceae	<i>Myosotis scorpioides</i> L. subsp. <i>scorpioides</i>	Myo sco	16	12.8	1	2.4
H	Eurasiatic		Boraginaceae	<i>Myosotis sylvatica</i> Hoffm.	Myo syl	1	0.8	0	0.0
Hy	Wide distribution	x	Haloragaceae	<i>Myriophyllum spicatum</i> L.	Myr spi	5	4	1	2.4
Hy	Wide distribution	x	Hydrocharitaceae	<i>Najas marina</i> L. subsp. <i>marina</i>	Naj mar	2	1.6	0	0.0
H	Wide distribution		Brassicaceae	<i>Nasturtium officinale</i> R.Br. subsp. <i>officinale</i>	Nas off	12	9.6	1	2.4
G	Boreal		Oxalidaceae	<i>Oxalis acetosella</i> L.	Oxa ace	1	0.8	2	4.8
T	S-European-Medit		Lythraceae	<i>Peplis portula</i> L.	Pep por	5	4	3	7.1
T	Boreal		Polygonaceae	<i>Persicaria hydropiper</i> (L.) Delarb	Per hyd	2	1.6	0	0.0
G	Eurasiatic		Asteraceae	<i>Petasites hybridus</i> (L.) G.Gaertn., B.Meyer & Scherb. subsp. <i>hybridus</i>	Pet hyb	3	2.4	5	11.9
H	S-European-Medit		Poaceae	<i>Phleum bertolonii</i> DC.	Phl ber	0	0	1	2.4
G	Wide distribution		Poaceae	<i>Phragmites australis</i> (Cav.) Trin. ex Steud.	Phr aus	14	11.2	1	2.4
H	Eurasiatic		Plantaginaceae	<i>Plantago major</i> L.	Pla maj	5	4	1	2.4
H	Boreal		Poaceae	<i>Poa nemoralis</i> L. subsp. <i>nemoralis</i>	Poa nem	1	0.8	0	0.0
H	S-European-Medit		Poaceae	<i>Poa sylvicola</i> Guss.	Poa syl	3	2.4	0	0.0
H	Eurasiatic		Poaceae	<i>Poa trivialis</i> L. s.l.	Poa tri	19	15.2	9	21.4
T	Wide distribution		Polygonaceae	<i>Polygonum maculosa</i> (L.) Gray	Pol mac	6	4.8	1	2.4
Hy	Wide distribution		Potamogetonaceae	<i>Potamogeton crispus</i> L.	Pot cri	0	0	1	2.4
Hy	Wide distribution		Potamogetonaceae	<i>Potamogeton natans</i> L.	Pot nat	12	9.6	4	9.5
Hy	Wide distribution	x	Potamogetonaceae	<i>Potamogeton nodosus</i> Poir.	Pot nod	5	4	0	0.0
H	S-European-Medit		Rosaceae	<i>Potentilla micrantha</i> Ramond ex DC.	Pot mic	0	0	1	2.4
H	Eurasiatic		Rosaceae	<i>Potentilla reptans</i> L.	Pot rep	6	4.8	1	2.4
H	Eurasiatic		Primulaceae	<i>Primula vulgaris</i> Huds. subsp. <i>vulgaris</i>	Pri vul	2	1.6	0	0.0
P	Eurasiatic		Rosaceae	<i>Prunus spinosa</i> L. subsp. <i>spinosa</i>	Pru spi	1	0.8	0	0.0
G	Wide distribution		Dennstaedtiaceae	<i>Pteridium aquilinum</i> (L.) Kuhn subsp. <i>aquilinum</i>	Pte aqu	0	0	1	2.4
H	S-European-Medit		Asteraceae	<i>Pulicaria dysenterica</i> (L.) Bernh.	Pul dys	9	7.2	4	9.5
H	Eurasiatic		Ranunculaceae	<i>Ranunculus lanuginosus</i> L.	Ran lan	7	5.6	5	11.9
H	Eurasiatic		Ranunculaceae	<i>Ranunculus repens</i> L.	Ran rep	45	36	11	26.2
Hy	European		Ranunculaceae	<i>Ranunculus trichophyllus</i> Chaix subsp. <i>trichophyllus</i>	Ran tri	14	11.2	13	31.0
Np	European		Rosaceae	<i>Rubus hirtus</i> (group)	Rub hir	0	0	1	2.4
Np	Boreal		Rosaceae	<i>Rubus idaeus</i> L.	Rub ida	2	1.6	0	0.0
Np	S-European-Medit		Rosaceae	<i>Rubus ulmifolius</i> Schott	Rub ulm	3	2.4	0	0.0

H	Eurasian		Polygonaceae	Rumex conglomeratus Murray	Rum con	23	18.4	6	14.3
H	Eurasian		Polygonaceae	Rumex obtusifolius L. subsp. obtusifolius	Rum obt	3	2.4	0	0.0
P	Eurasian		Salicaceae	Salix alba L.	Sal alb	1	0.8	1	2.4
Np	Endemic	x	Salicaceae	Salix apennina A.K. Skvortsov	Sal ape	3	2.4	0	0.0
P	Eurasian		Salicaceae	Salix caprea L.	Sal cap	2	1.6	0	0.0
H	Eurasian		Lamiaceae	Salvia glutinosa L.	Sal glu	1	0.8	1	2.4
H	European oroph		Saxifragaceae	Saxifraga rotundifolia L. subsp. rotundifolia	Sax rot	0	0	0	0.0
H	Eurasian		Poaceae	Schedonorus arundinaceus (Schreb.) Dumort	Sch aru	1	0.8	3	7.1
H	Eurasian		Poaceae	Schedonorus giganteus (L.) Holub	Sch gig	0	0	2	4.8
G	Wide distribution	x	Cyperaceae	Schoenoplectus lacustris (L.) Palla	Sch lac	2	1.6	0	0.0
G	S-European-Medit		Cyperaceae	Schoenoplectus litoralis (Schrad.) Palla	Sch lit	1	0.8	0	0.0
G	S-European-Medit		Cyperaceae	Scirpoides holoschoenus (L.) Soják	Sci hol	0	0	1	2.4
H	Eurasian		Scrophulariaceae	Scrophularia umbrosa Dumort. subsp. umbrosa	Scr umb	2	1.6	1	2.4
H	Eurasian		Asteraceae	Senecio ovatus (G.Gaertn., B.Meyer & Scherb.) Willd.	Sen ova	0	0	1	2.4
H	European oroph		Asteraceae	Senecio squalidus L. (= Senecio rupestris W. et K.)	Sen squ	3	2.4	0	0.0
H	Eurasian		Caryophyllaceae	Silene dioica (L.) Clairv.	Sil dio	1	0.8	2	4.8
Np	Eurasian		Solanaceae	Solanum dulcamara L.	Sol dul	9	7.2	2	4.8
Hy	Eurasian		Typhaceae	Sparganium erectum L. s.l.	Spa ere	17	13.6	5	11.9
H	Eurasian	x	Caryophyllaceae	Stellaria graminea L.	Ste gra	1	0.8	0	0.0
H	Eurasian		Caryophyllaceae	Stellaria nemorum L. subsp. montana (Pierrat) Berher	Ste nem	1	0.8	0	0.0
G	European		Boraginaceae	Symphytum tuberosum L. subsp. angustifolium (A. Kern.) Nyman	Sym tub	0	0	1	2.4
H	Boreal		Ranunculaceae	Thalictrum aquilegifolium L. subsp. aquilegifolium	Tha aqu	0	0	1	2.4
H	Boreal		Fabaceae	Trifolium pratense L.	Tri pra	0	0	2	4.8
H	Eurasian		Fabaceae	Trifolium repens L.	Tri rep	4	3.2	1	2.4
G	Eurasian		Asteraceae	Tussilago farfara L.	Tus far	5	4	1	2.4
G	Boreal		Typhaceae	Typha angustifolia L.	Typ ang	6	4.8	1	2.4
G	Wide distribution		Typhaceae	Typha latifolia L.	Typ lat	10	8	3	7.1
H	Wide distribution		Urticaceae	Urtica dioica L. subsp. dioica	Urt dio	9	7.2	3	7.1
I	European		Lentibulariaceae	Utricularia australis R.Br.	Utr aus	1	0.8	1	2.4
Ch	Boreal		Ericaceae	Vaccinium myrtillus L.	Vac myr	1	0.8	0	0.0
H	European	x	Caprifoliaceae	Valeriana officinalis L.	Val off	7	5.6	1	2.4
H	Wide distribution		Plantaginaceae	Veronica anagallis-aquatica L. subsp. anagallis-aquatica	Ver ana	2	1.6	2	4.8
H	Eurasian		Plantaginaceae	Veronica beccabunga L.	Ver bec	26	20.8	4	9.5
T	S-European-Medit		Plantaginaceae	Veronica cymbalaria Bodard	Ver cym	0	0	1	2.4
T	Wide distribution		Plantaginaceae	Veronica persica Poir.	Ver per	0	0	1	2.4
			Fabaceae	Vicia sp.	Vic sp.	0	0	3	1.7
Hy	Wide distribution	x	Potamogetonaceae	Zannichellia palustris L.	Zan pal	0	0	6	3.5