



Phytosociology and natural subtropical grassland communities on a granitic hill in southern Brazil

Fitossociologia e comunidades de campos subtropicais naturais em um morro granítico no sul do Brasil

Robberson Bernal Setubal & Ilsi Iob Boldrini

Appendix 1 – Floristic and phytosociological list and communities distribution of the 177 species registered in 70 sampling units (1 x1 m) in the sampling of the grassland vegetation at Morro São Pedro, Porto Alegre municipality, RS state, Brazil, ordered by botanical families. FA = absolute frequency; FR = relative frequency; CA = absolute cover; CR = relative cover; IVI = importance value index. First 30 IVI-rated species in bold. Vouchers were deposited in the Herbarium ICN

Families / Species	Voucher	Rg	Dg	Mog	Mag	FA (%)	FR (%)	CA (%)	CR (%)	IVI (%)
ACANTHACEAE										
<i>Ruellia brevicaulis</i> (Nees) Lindau.	R. Setubal & I. Boldrini, 101			x		2.00	0.14	0.60	0.05	0.09
ALSTROEMERACEAE										
<i>Alstroemeria albescens</i> M.C. Assis	R. Setubal & D. Fuhro, 201	x	x			4.00	0.28	2.00	0.16	0.22
AMARANTHACEAE										
<i>Gomphrena graminea</i> Moq.	R. Setubal, 99	x				2.00	0.14	1.00	0.08	0.11
<i>Pfaffia tuberosa</i> (Sprengel) Hicken	R. Setubal & A. Mello, 261	x	x	x		13.00	0.90	5.30	0.42	0.66
ANACARDIACEAE										
<i>Schinus weinmannifolius</i> Engl.	R. Setubal <i>et al.</i> , 281		x			1.00	0.07	1.00	0.08	0.07
APIACEAE										
<i>Cyclospermum leptophyllum</i> (Pers.) Eichler	R. Setubal & A. Mello, 397		x	x		2.00	0.14	0.60	0.05	0.09
<i>Eryngium balansae</i> H. Wolff	R. Setubal <i>et al.</i> , 703	x				2.00	0.14	2.50	0.20	0.17
<i>Eryngium ciliatum</i> Cham. & Schtdl.	R. Setubal, 142	x	x			2.00	0.14	1.50	0.12	0.13
<i>Eryngium elegans</i> Cham. & Schtdl.	R. Setubal, 141		x	x		9.00	0.62	16.00	1.26	0.94
<i>Eryngium eriophorum</i> Cham. & Schtdl.	R. Setubal, 38	x				4.00	0.28	2.00	0.16	0.22
<i>Eryngium horridum</i> Malme	R. Setubal <i>et al.</i> , 277	x	x			4.00	0.28	5.50	0.43	0.36
<i>Eryngium megapotamicum</i> Malme	R. Setubal, 138	x				1.00	0.07	1.00	0.08	0.07
<i>Eryngium paniculatum</i> Cav. & Dombey ex F. Delaroche	R. Setubal & M. Grings, 39	x	x			2.00	0.14	1.00	0.08	0.11
<i>Eryngium pritis</i> Cham. & Schtdl.	R. Setubal & J. Bassi, 36	x	x	x		41.00	2.83	92.00	7.26	5.04

Families / Species	Voucher	Rg	Dg	Mog	Mag	FA (%)	FR (%)	CA (%)	CR (%)	IVI (%)
<i>Eryngium sanguisorba</i> Cham. et. Schltld.	R. Setubal, 37	x	x	x		28.00	1.93	17.00	1.34	1.64
APOCYNACEAE										
<i>Macrosiphonia longiflora</i> (Desf.) Müll. Arg.	R. Setubal, 97	x	x			4.00	0.28	2.00	0.16	0.22
ARALIACEAE										
<i>Hydrocotyle exigua</i> Malme	R. Setubal & M. Grings, 645	x		x		4.00	0.28	2.10	0.17	0.22
ASTERACEAE										
<i>Acmella bellidioides</i> (Smith in Rees) R.K. Jansen	R. Setubal, 55	x	x	x		5.00	0.35	2.10	0.17	0.26
<i>Aspilia montevidensis</i> (Spreng.) Kuntze	R. Setubal, 56	x	x	x		47.00	3.25	31.00	2.44	2.85
<i>Baccharis articulata</i> (Lam.) Pers.	R. Setubal & G. Seger, 156	x	x			5.00	0.35	3.50	0.28	0.31
<i>Baccharis cognata</i> DC.	R. Setubal, 22	x	x	x		25.00	1.73	28.10	2.22	1.97
<i>Baccharis crispa</i> Spreng.	R. Setubal, 155		x			2.00	0.14	2.50	0.20	0.17
<i>Baccharis incisa</i> Hook. & Arn.	R. Setubal, 68		x			1.00	0.07	1.00	0.08	0.07
<i>Baccharis ochracea</i> Spreng.	R. Setubal <i>et al.</i> , 65	x	x	x		4.00	0.28	3.00	0.24	0.26
<i>Baccharis pentodonta</i> Malme	R. Setubal, 19	x				2.00	0.14	1.00	0.08	0.11
<i>Baccharis sessiliflora</i> Vahl.	R. Setubal, 749	x				3.00	0.21	3.00	0.24	0.22
<i>Baccharis subopposita</i> DC.	R. Setubal, 157	x	x			5.00	0.35	10.00	0.79	0.57
<i>Calea cymosa</i> Less.	R. Setubal <i>et al.</i> , 103	x				2.00	0.14	1.00	0.08	0.11
<i>Calea uniflora</i> Less.	R. Setubal, 53	x	x	x		10.00	0.69	5.50	0.43	0.56
<i>Chaptalia integerrima</i> (Vell.) Burkart	R. Setubal & J. Bassi, 51	x	x	x		9.00	0.62	5.00	0.39	0.51
<i>Chaptalia piloselloides</i> (Vahl) Baker	R. Setubal, 752	x	x	x		15.00	1.04	7.50	0.59	0.81
<i>Chromolaena congesta</i> (Hook. & Arn.) R.M. King & H. Rob.	R. Setubal & M. Grings, 110	x	x	x		33.00	2.28	16.10	1.27	1.77
<i>Chromolaena laevigata</i> (Lam.) R.M. King & H. Rob.	R. Setubal, 123		x			2.00	0.14	1.00	0.08	0.11
<i>Chromolaena verbenacea</i> (DC.) R.M. King & H. Rob.	R. Setubal, 186		x	x		6.00	0.41	4.00	0.32	0.36
<i>Chrysoaena flexuosa</i> (Sims) H.Rob.	R. Setubal, 62	x	x	x		42.00	2.90	23.00	1.81	2.36
<i>Criscia stricta</i> (Spreng.) Katinas	R. Setubal & J. Bassi, 49		x	x		2.00	0.14	1.00	0.08	0.11

Families / Species	Voucher	Rg	Dg	Mog	Mag	FA (%)	FR (%)	CA (%)	CR (%)	IVI (%)
<i>Disynaphia ligulifolia</i> (Hook. & Arn.) R.M. King & H. Rob.	R. Setubal <i>et al.</i> , 132	x	x	x		21.00	1.45	30.10	2.37	1.91
<i>Eclipta megapotamica</i> (Spreng.) Sch. Bip. ex S.F. Blake	R. Setubal, 347				x	3.00	0.21	1.50	0.12	0.16
<i>Eupatorium hirsutum</i> Hook. & Arn.	R. Setubal <i>et al.</i> , 159	x	x			8.00	0.55	4.00	0.32	0.43
<i>Grazielia intermedia</i> (DC.) R.M. King & H. Rob.	R. Setubal, 114	x				1.00	0.07	2.00	0.16	0.11
<i>Gyptis pinnatifida</i> Cass.	R. Setubal & G. Seger, 187	x				3.00	0.21	3.00	0.24	0.22
<i>Heterothalamus psiadioides</i> Less.	R. Setubal & J. Bassi, 45			x		2.00	0.14	0.60	0.05	0.09
<i>Isostigma peucedanifolium</i> (Spreng.) Less.	R. Setubal & M. Grings, 213	x	x	x		3.00	0.21	1.50	0.12	0.16
<i>Lucilia acutifolia</i> (Poir.) Cass.	R. Setubal & M. Grings, 214	x	x	x		7.00	0.48	2.30	0.18	0.33
<i>Lucilia nitens</i> Less.	R. Setubal & M. Grings, 215	x	x	x		6.00	0.41	2.60	0.21	0.31
<i>Mikania fulva</i> (Hook. & Arn.) Baker	R. Setubal & M. Grings, 216		x	x		3.00	0.21	1.50	0.12	0.16
<i>Orthopappus angustifolius</i> (Sw.) Gleason	R. Setubal <i>et al.</i> , 108	x	x			6.00	0.41	3.50	0.28	0.35
<i>Pterocaulon angustifolium</i> DC.	R. Setubal <i>et al.</i> , 106	x	x			3.00	0.21	1.50	0.12	0.16
<i>Schlechtendalia luzulifolia</i> Less.	R. Setubal, 105	x	x	x		7.00	0.48	14.00	1.10	0.79
<i>Stenachaenium campestre</i> Baker	R. Setubal, 761		x			1.00	0.07	1.00	0.08	0.07
<i>Trixis nobilis</i> (Vell.) Katinas	R. Setubal & M. Grings, 442	x				1.00	0.07	1.00	0.08	0.07
<i>Stenocephalum megapotamicum</i> (Spreng.) Sch. Bip.	R. Setubal, 61		x	x		2.00	0.14	1.00	0.08	0.11
<i>Stomatanthes oblongifolius</i> (Spreng.) H. Rob.	R. Setubal <i>et al.</i> , 139	x	x			2.00	0.14	1.00	0.08	0.11
<i>Vernonanthura nudiflora</i> (Less.) H. Rob.	R. Setubal & J. Cabral, 58	x	x	x		13.00	0.90	6.70	0.53	0.71
<i>Vernonia squarrosa</i> (D. Don) Less.	R. Setubal, 437	x	x			3.00	0.21	1.10	0.09	0.15
<i>Viguiera immarginata</i> (DC.) Herter	R. Setubal & M. Grings, 223	x	x	x		3.00	0.21	1.50	0.12	0.16
BROMELIACEAE										
<i>Dyckia leptostachya</i> Baker	R. Setubal & J. Bassi, 367	x	x			5.00	0.35	7.00	0.55	0.45
CACTACEAE										
<i>Parodia ottonis</i> (Lehm.) N.P. Taylor	R. Setubal, 363	x				4.00	0.28	2.00	0.16	0.22

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CELASTRACEAE										
<i>Maytenus cassineformis</i> Reissek	R. Setubal, 866	x				1.00	0.07	1.00	0.08	0.07
CONVOLVULACEAE										
<i>Cuscuta</i> sp.	R. Setubal & J. Cabral, 340	x	x	x		5.00	0.35	1.70	0.13	0.24
<i>Dichondra sericea</i> Sw.	R. Setubal & M. Grings, 644	x	x			2.00	0.14	2.50	0.20	0.17
<i>Evolvulus sericeus</i> Sw.	R. Setubal, 342	x	x	x		20.00	1.38	4.80	0.38	0.88
CYPERACEAE										
<i>Bulbostylis juncooides</i> (Vahl) Kük. ex Osten	R. Setubal & I. Boldrini, 33	x	x			4.00	0.28	4.00	0.32	0.30
<i>Bulbostylis subtilis</i> M.G. López	R. Setubal, 766	x	x	x		5.00	0.35	2.50	0.20	0.27
<i>Carex phalaroides</i> Kunth	R. Setubal, 769	x		x		2.00	0.14	1.00	0.08	0.11
<i>Cyperus aggregatus</i> (Willd.) Endl.	R. Setubal, 32		x			3.00	0.21	1.50	0.12	0.16
<i>Cyperus haspan</i> L. var. <i>haspan</i>	R. Setubal, 30				x	1.00	0.07	2.00	0.16	0.11
<i>Eleocharis nudipes</i> (Kunth) Palla	R. Setubal & J. Bassi, 26				x	1.00	0.07	8.00	0.63	0.35
<i>Rhynchospora barrosiana</i> Guagl.	R. Setubal, 781		x	x	x	13.00	0.90	15.00	1.18	1.04
<i>Rhynchospora emaciata</i> (Nees) Boeckeler	R. Setubal, 18			x		2.00	0.14	1.00	0.08	0.11
<i>Rhynchospora holoschoenoides</i> (Rich.) Herter	R. Setubal, 783				x	1.00	0.07	2.00	0.16	0.11
<i>Rhynchospora rugosa</i> (Vahl) Gale	R. Setubal & A. Mello, 24	x	x			8.00	0.55	4.00	0.32	0.43
<i>Rhynchospora setigera</i> Griseb.	R. Setubal, 17	x	x			7.00	0.48	4.00	0.32	0.40
<i>Scleria balansae</i> Maury	R. Setubal, 784		x	x		24.00	1.66	32.00	2.52	2.09
DROSERACEAE										
<i>Drosera brevifolia</i> Pursh	R. Setubal, 334			x		2.00	0.14	2.50	0.20	0.17
EUPHORBIACEAE										
<i>Bernardia multicaulis</i> Müll. Arg.	R. Setubal, 786	x	x	x		6.00	0.41	2.60	0.21	0.31
<i>Croton lanatus</i> var. <i>astrogyms</i> (Baill.) P.E. Berry	R. Setubal & A. Mello, 337	x	x			7.00	0.48	4.00	0.32	0.40
<i>Euphorbia selloi</i> (Klotzsch & Garcke) Boiss.	R. Setubal, 338	x	x			11.00	0.76	1.90	0.15	0.45
FABACEAE										
<i>Centrosema virginianum</i> (L.) Benth.	R. Setubal, 161	x	x	x		19.00	1.31	10.00	0.79	1.05

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<i>Collaea stenophylla</i> (Hook. & Arn.) Benth.	R. Setubal, 163	x	x	x		27.00	1.86	16.50	1.30	1.58
<i>Crotalaria tweediana</i> Benth.	R. Setubal & I. Boldrini, 165	x	x			6.00	0.41	3.50	0.28	0.35
<i>Desmanthus virgatus</i> (L.) Willd.	R. Setubal & J. Bassi, 166	x	x	x		29.00	2.00	12.10	0.95	1.48
<i>Desmodium adscendens</i> (Sw.) DC.	R. Setubal & J. Bassi, 167				x	1.00	0.07	3.00	0.24	0.15
<i>Desmodium cuneatum</i> Hook. & Arn.	R. Setubal, 168		x	x		2.00	0.14	1.00	0.08	0.11
<i>Desmodium incanum</i> DC.	R. Setubal & J. Bassi, 169	x	x			3.00	0.21	1.10	0.09	0.15
<i>Eriosema tacuarembense</i> Arechav.	R. Setubal, 170	x	x			6.00	0.41	2.60	0.21	0.31
<i>Galactia gracillima</i> Benth.	R. Setubal, 791	x				2.00	0.14	0.60	0.05	0.09
<i>Galactia neesii</i> var. <i>australis</i> Malme	R. Setubal & A. Mello, 171	x	x	x		9.00	0.62	5.50	0.43	0.53
<i>Galactia pretiosa</i> Burkart	R. Setubal, 172	x	x	x		16.00	1.10	5.60	0.44	0.77
<i>Macroptilium prostratum</i> (Benth.) Urb.	R. Setubal, 176	x	x			19.00	1.31	9.50	0.75	1.03
<i>Mimosa acerba</i> Benth.	R. Setubal, 459	x	x			11.00	0.76	6.20	0.49	0.62
<i>Mimosa cruenta</i> Benth. var. <i>cruenta</i>	R. Setubal, 440	x		x		3.00	0.21	4.00	0.32	0.26
<i>Mimosa daleoides</i> Benth.	R. Setubal & G. Seger, 479		x			1.00	0.07	2.00	0.16	0.11
<i>Mimosa dolens</i> subsp. <i>rigida</i> (Benth.) Barneby	R. Setubal, 793	x	x			7.00	0.48	3.50	0.28	0.38
<i>Mimosa parvipinna</i> Benth.	R. Setubal & M. Grings, 466	x	x			3.00	0.21	1.50	0.12	0.16
<i>Poiretia tetraphylla</i> (Poir.) Burkart	R. Setubal & M. Grings, 177		x	x		2.00	0.14	1.00	0.08	0.11
<i>Rhynchosia corylifolia</i> Mart. ex Benth.	R. Setubal, 178	x	x			12.00	0.83	10.00	0.79	0.81
<i>Rhynchosia diversifolia</i> Micheli	R. Setubal & J. Bassi, 179	x	x			12.00	0.83	5.60	0.44	0.64
<i>Rhynchosia hauthalli</i> (Kuntze) Grear	R. Setubal & A. Mello, 180	x	x			2.00	0.14	1.00	0.08	0.11
<i>Rhynchosia lateritia</i> Burkart	R. Setubal, 796	x	x			6.00	0.41	7.50	0.59	0.50
HYPOXIDACEAE										
<i>Hypoxis decumbens</i> L.	R. Setubal, 385		x	x		2.00	0.14	1.10	0.09	0.11
IRIDACEAE										
<i>Gelasine elongata</i> (Graham) Ravenna	R. Setubal, 120	x		x		2.00	0.14	0.60	0.05	0.09
<i>Herbertia pulchella</i> Sweet	R. Setubal & M. S. Rigo, 741	x	x	x		13.00	0.90	5.70	0.45	0.67
<i>Sisyrinchium micranthum</i> Cav.	R. Setubal & A. Mello, 119	x	x			5.00	0.35	1.30	0.10	0.22

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<i>Sisyrinchium palmifolium</i> L.	R. Setubal, 126	x	x	x		28.00	1.93	18.50	1.46	1.70
<i>Sisyrinchium vaginatum</i> Spreng.	R. Setubal, 129	x	x	x		20.00	1.38	6.10	0.48	0.93
<i>Trimezia spathata</i> (Baker) Ravenna	R. Setubal, 130		x			2.00	0.14	1.50	0.12	0.13
JUNCACEAE										
<i>Juncus microcephalus</i> Kunth	R. Setubal & A. Mello, 383				x	3.00	0.21	6.00	0.47	0.34
LAMIACEAE										
<i>Glechom ciliata</i> Benth.	R. Setubal, 372	x	x	x		16.00	1.10	8.50	0.67	0.89
LINACEAE										
<i>Linum burkartii</i> Mildner	R. Setubal, 805	x				1.00	0.07	1.00	0.08	0.07
MALVACEAE										
<i>Abutilon malachroides</i> A. St.-Hil. & Naudin	R. Setubal & A. Mello, 81		x			4.00	0.28	2.00	0.16	0.22
<i>Krapovickasia urticifolia</i> (A. St.-Hil.) Fryxell	R. Setubal, 84	x	x			3.00	0.21	0.70	0.06	0.13
<i>Pavonia friesii</i> Krapov.	R. Setubal & G. Seger, 83	x	x			5.00	0.35	2.50	0.20	0.27
<i>Sida regnellii</i> R.E. Fr.	R. Setubal, 806		x			2.00	0.14	0.60	0.05	0.09
<i>Wissadula glechomatifolia</i> (St. Hil.) R. E. Fries	R. Setubal & A. Mello, 87	x	x	x		18.00	1.24	8.30	0.65	0.95
MELASTOMATACEAE										
<i>Tibouchina gracilis</i> (Bonpl.) Cogn.	R. Setubal, 262	x	x	x		12.00	0.83	7.10	0.56	0.69
<i>Tibouchina urbanii</i> Cogn.	R. Setubal, 467				x	3.00	0.21	2.00	0.16	0.18
MYRTACEAE										
<i>Eugenia dimorpha</i> O. Berg	R. Setubal & M. S. Rigo, 689	x	x			3.00	0.21	2.50	0.20	0.20
ORCHIDACEAE										
<i>Habenaria edwallii</i> Cogn.	R. Setubal, 811			x		1.00	0.07	2.00	0.16	0.11
<i>Liparis vexillifera</i> (Lex.) Cogn.	R. Setubal, 92	x	x			2.00	0.14	1.00	0.08	0.11
OXALIDACEAE										
<i>Oxalis bipartita</i> A. St.-Hil.	R. Setubal & G. Seger, 353			x	x	4.00	0.28	2.50	0.20	0.24
<i>Oxalis brasiliensis</i> G. Lodd.	R. Setubal, 354	x	x			8.00	0.55	2.40	0.19	0.37
POACEAE										
<i>Andropogon lateralis</i> Nees	R. Setubal, 225	x	x	x	x	30.00	2.07	32.50	2.56	2.32

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<i>Andropogon macrothrix</i> Trin.	R. Setubal & I. Boldrini, 432			x		4.00	0.28	3.00	0.24	0.26
<i>Aristida filifolia</i> (Arechav.) Herter	R. Setubal & I. Boldrini, 680	x	x			6.00	0.41	8.00	0.63	0.52
<i>Aristida flaccida</i> Trin. & Rupr.	R. Setubal & I. Boldrini, 694		x			6.00	0.41	7.00	0.55	0.48
<i>Aristida laevis</i> (Nees) Kunth	R. Setubal, 681	x	x	x		12.00	0.83	13.50	1.06	0.95
<i>Axonopus siccus</i> (Nees) Kuhlmann.	R. Setubal <i>et al.</i> , 679	x	x	x		10.00	0.69	16.00	1.26	0.98
<i>Axonopus suffultus</i> (Mikan ex Trin.) Parodi	R. Setubal <i>et al.</i> , 230	x	x	x		20.00	1.38	27.50	2.17	1.78
<i>Chascolytrum subaristatum</i> (Lam.) Desv.	R. Setubal, 672	x	x	x		17.00	1.17	8.50	0.67	0.92
<i>Chascolytrum uniolae</i> (Nees) Essi, Longhi-Wagner & Souza-Chies	R. Setubal & J. Bassi, 673	x	x	x		18.00	1.24	10.00	0.79	1.02
<i>Danthonia cirrata</i> Hack. & Arechav.	R. Setubal, 232		x			3.00	0.21	2.00	0.16	0.18
<i>Dichanthelium sabulorum</i> (Lam.) Gould. & C.A. Clark	R. Setubal, 626	x	x	x	x	24.00	1.66	16.00	1.26	1.46
<i>Elionurus muticus</i> (Spreng.) Kuntze	R. Setubal, 235	x	x	x		16.00	1.10	17.00	1.34	1.22
<i>Eustachys uliginosa</i> (Hack.) Herter	R. Setubal, 684	x		x		4.00	0.28	4.50	0.35	0.32
<i>Gymnopogon burchellii</i> (Munro ex Doell) Ekman	R. Setubal & G. Seger, 241	x	x	x		27.00	1.86	18.70	1.47	1.67
<i>Ischaemum minus</i> J. Presl	R. Setubal & A. Mello, 668				x	5.00	0.35	40.00	3.15	1.75
<i>Melica brasiliana</i> Ard.	R. Setubal & G. Seger, 666		x			3.00	0.21	1.50	0.12	0.16
<i>Panicum olyroides</i> Kunth var. <i>olyroides</i>	R. Setubal, 614	x	x	x		12.00	0.83	13.00	1.03	0.93
<i>Paspalum ionanthum</i> Chase	R. Setubal & A. Mello, 189		x	x		3.00	0.21	5.00	0.39	0.30
<i>Paspalum maculosum</i> Trin.	R. Setubal, 191		x	x		7.00	0.48	12.00	0.95	0.71
<i>Paspalum plicatum</i> Michx.	R. Setubal, 193	x	x	x	x	27.00	1.86	22.50	1.77	1.82
<i>Paspalum urvillei</i> Steud.	R. Setubal & M. Grings, 194				x	1.00	0.07	2.00	0.16	0.11
<i>Piptochaetium montevidense</i> (Spreng.) Parodi	R. Setubal & J. Bassi, 663	x	x	x		7.00	0.48	5.00	0.39	0.44
<i>Saccharum villosum</i> Steud.	R. Setubal, 248	x	x	x	x	10.00	0.69	16.50	1.30	1.00
<i>Schizachyrium imberbe</i> (Hack.) A. Camus	R. Setubal & I. Boldrini, 701	x	x			8.00	0.55	9.50	0.75	0.65
<i>Schizachyrium tenerum</i> Nees	R. Setubal <i>et al.</i> , 249	x	x	x	x	17.00	1.17	36.10	2.85	2.01

Families / Species	Voucher	Rg	Dg	Mog	Mag	FA (%)	FR (%)	CA (%)	CR (%)	IVI (%)
<i>Setaria parviflora</i> (Poir.) Kerguelén	R. Setubal & A. Mello, 661		x	x		4.00	0.28	1.20	0.09	0.19
<i>Setaria vaginata</i> Spreng.	R. Setubal & A. Mello, 660	x	x	x		7.00	0.48	4.10	0.32	0.40
<i>Sorghastrum albescens</i> (E. Fourn.) Beetle	R. Setubal, 254	x	x	x		39.00	2.69	106.00	8.36	5.53
<i>Sporobolus indicus</i> (L.) R. Br.	R. Setubal & I. Boldrini, 659		x			1.00	0.07	1.00	0.08	0.07
<i>Stipa filiculmis</i> Delile	R. Setubal, 196	x	x			3.00	0.21	10.00	0.79	0.50
<i>Stipa melanosperma</i> J. Presl.	R. Setubal, 197	x	x			17.00	1.17	14.50	1.14	1.16
<i>Stipa nutans</i> Hack.	R. Setubal & I. Boldrini, 199		x	x		11.00	0.76	12.50	0.99	0.87
<i>Trachypogon montufarii</i> (Kunth) Nees var. <i>montufarii</i>	R. Setubal & I. Boldrini, 257	x	x			9.00	0.62	17.00	1.34	0.98
<i>Trachypogon montufarii</i> var. <i>mollis</i> (Nees) Andersson	R. Setubal, 825	x	x	x		14.00	0.97	13.50	1.06	1.02
POLYGALACEAE										
<i>Monnina oblongifolia</i> Arechav.	R. Setubal, 116	x	x	x		16.00	1.10	10.20	0.80	0.96
<i>Polygala brasiliensis</i> L.	R. Setubal & A. Mello, 112			x		5.00	0.35	1.70	0.13	0.24
<i>Polygala extraaxillaris</i> Chodat	R. Setubal, 111		x	x		3.00	0.21	1.50	0.12	0.16
<i>Polygala molluginifolia</i> A. St.-Hil. & Moq.	R. Setubal & G. Seger, 115		x	x		2.00	0.14	0.60	0.05	0.09
RUBIACEAE										
<i>Galianthe fastigiata</i> Griseb.	R. Setubal, 146	x	x	x		18.00	1.24	7.00	0.55	0.90
<i>Galium hirtum</i> Lam.	R. Setubal & M. Grings, 687	x				2.00	0.14	1.00	0.08	0.11
<i>Galium humile</i> Cham. & Schltdl.	R. Setubal, 830	x	x	x		5.00	0.35	2.10	0.17	0.26
<i>Galium megapotamicum</i> (Spreng.) Ehrend.	R. Setubal & M. Grings, 686	x	x	x		8.00	0.55	4.80	0.38	0.47
<i>Galium richardianum</i> (Gillies ex Hook. & Arn.) Hicken	R. Setubal, 831	x	x			12.00	0.83	1.60	0.13	0.48
<i>Richardia grandiflora</i> (Cham. & Schltdl.) Steud.	R. Setubal, 145	x	x			12.00	0.83	6.00	0.47	0.65
<i>Spermacoce capitata</i> Ruiz & Pav.	R. Setubal, 134	x	x			4.00	0.28	1.60	0.13	0.20
<i>Spermacoce verticillata</i> (L.) G. Mey	R. Setubal & J. Bassi, 131	x	x			2.00	0.14	1.00	0.08	0.11
SMILACACEAE										
<i>Smilax campestris</i> Griseb.	R. Setubal & J. Bassi, 360	x		x		2.00	0.14	1.00	0.08	0.11

Families / Species	Voucher	Rg	Dg	Mog	Mag	FA (%)	FR (%)	CA (%)	CR (%)	IVI (%)
SOLANACEAE										
<i>Calibrachoa excellens</i> R. E. Fries	R. Setubal, 835	x				1.00	0.07	1.00	0.08	0.07
<i>Calibrachoa ovalifolia</i> (Miers) Stehmann & Semir	R. Setubal, 836	x	x			3.00	0.21	1.50	0.12	0.16
VERBENACEAE										
<i>Glandularia marrubioides</i> (Cham.) Tronc.	R. Setubal, 447	x	x			5.00	0.35	1.70	0.13	0.24
<i>Glandularia thymoides</i> (Cham.) N. O'Leary	R. Setubal, 394		x	x		4.00	0.28	2.00	0.16	0.22
<i>Lantana montevidensis</i> (Spreng.) Briq.	R. Setubal & J. Bassi, 390	x	x			3.00	0.21	2.50	0.20	0.20
<i>Lippia</i> aff. <i>pusila</i>	R. Setubal & M. Grings, 616		x			3.00	0.21	2.00	0.16	0.18
<i>Lippia hieracifolia</i> Cham.	R. Setubal, 393	x		x		2.00	0.14	1.00	0.08	0.11
<i>Verbena intermedia</i> Gillies & Hook. ex Hook.	R. Setubal, 604		x	x		2.00	0.14	1.00	0.08	0.11
Totals		126	137	89	16	1448.00	100.00	1267.90	100.00	100.00

Appendix 2 – List of 16 indicator species from four grassland communities at Morro São Pedro, Porto Alegre municipality, RS, based on the calculation of phytosociological parameters per community and analysis of indicator species ($p = 0.05$). FA = absolute frequency; FR = relative frequency; CA = absolute cover; CR = relative cover; IVI importance value index.

Families	Species	FA (%)	FR (%)	CA (%)	CR (%)	IVI (%)	p (%)
ROCKY GRASSLANDS							
Poaceae	<i>Axonopus suffultus</i> (Mikan ex Trin.) Parodi	11.00	2.74	16.00	5.05	3.89	0.008
Poaceae	<i>Axonopus siccus</i> (Nees) Kuhlm.	7.00	1.74	14.00	4.42	3.08	0.01
Poaceae	<i>Trachypogon montufarii</i> (Kunth) Nees var. <i>montufarii</i>	7.00	1.74	13.50	4.26	3.00	0.009
Poaceae	<i>Schizachyrium imberbe</i> (Hack.) A. Camus	7.00	1.74	9.00	2.84	2.29	0.01
DRY GRASSLANDS							
Poaceae	<i>Stipa melanosperma</i> J. Presl.	15.00	2.06	13.00	2.19	2.12	0.01
MOIST GRASSLANDS							
Cyperaceae	<i>Scleria balansae</i> Maury	13.00	4.66	25.00	8.98	6.82	0.001
Apiaceae	<i>Eryngium elegans</i> Cham. & Schldtl.	7.00	2.51	13.50	4.85	3.68	0.005
Cyperaceae	<i>Rhynchospora barrosiana</i> Guagl.	8.00	2.87	12.50	4.49	3.68	0.01
Poaceae	<i>Stipa nutans</i> Hack.	9.00	3.23	11.50	4.13	3.68	0.003
Iridaceae	<i>Sisyrinchium vaginatum</i> Spreng.	12.00	4.30	4.90	1.76	3.03	0.001
Poaceae	<i>Paspalum maculosum</i> Trin.	5.00	1.79	10.50	3.77	2.78	0.01
Asteraceae	<i>Chaptalia piloselloides</i> (Vahl) Baker	8.00	2.87	4.00	1.44	2.15	0.009
Asteraceae	<i>Chromolaena verbenacea</i> (DC.) R.M. King & H. Rob.	5.00	1.79	3.50	1.26	1.52	0.01
Polygalaceae	<i>Polygala brasiliensis</i> L.	5.00	1.79	1.70	0.61	1.20	0.006
MARSHY GRASSLANDS							
Poaceae	<i>Ischaemum minus</i> J. Presl	5.00	13.16	40.00	50.63	31.90	0.001
Juncaceae	<i>Juncus microcephalus</i> Kunth	3.00	7.89	6.00	7.59	7.74	0.001
Melastomataceae	<i>Tibouchina urbanii</i> Cogn.	3.00	7.89	2.00	2.53	5.21	0.001
Asteraceae	<i>Eclipta megapotamica</i> (Spreng.) Sch. Bip. ex S.F. Blake	3.00	7.89	1.50	1.90	4.90	0.001

Appendix 3 – List of the 16 species in decreasing IVI order registered in the four communities evaluated in the sampling of the grassland vegetation at Morro São Pedro, Porto Alegre municipality, RS, Brazil. Calculations carried out with the subsets of sampling units from each community. FA = absolute frequency; FR = relative frequency; CA = absolute cover; CR = relative cover; IVI = importance value index.

ROCKY GRASSLANDS				DRY GRASSLANDS			
Species	FR (%)	CR (%)	IVI (%)	Species	FR (%)	CR (%)	IVI (%)
<i>Sorghastrum albescens</i> (E. Fourn.) Beetle	3.16	13.06	8.11	<i>Eryngium pristis</i> Cham. & Schltld.	2.99	9.78	6.38
<i>Eryngium pristis</i> Cham. & Schltld.	3.84	9.61	6.72	<i>Axonopus suffultus</i> (Mikan ex Trin.) Parodi	2.74	5.05	3.89
<i>Disynaphia ligulifolia</i> (Hook. & Arn.) R.M. King & H. Rob.	2.19	4.21	3.20	<i>Andropogon lateralis</i> Nees	2.74	4.57	3.65
<i>Chrysolaena flexuosa</i> (Sims) H. Rob.	3.57	2.44	3.01	<i>Aspilia montevidensis</i> (Spreng.) Kuntze	3.48	2.68	3.08
<i>Baccharis cognata</i> DC.	2.47	3.37	2.92	<i>Axonopus siccus</i> (Nees) Kuhlm.	1.74	4.42	3.08
<i>Aspilia montevidensis</i> (Spreng.) Kuntze	3.02	2.44	2.73	<i>Trachypogon montufarii</i> (Kunth) Nees var. <i>montufarii</i>	1.74	4.26	3.00
<i>Collaea stenophylla</i> (Hook. & Arn.) Benth.	2.00	2.02	2.31	<i>Chromolaena congesta</i> (Hook. & Arn.) R.M. King & H. Rob.	2.99	1.77	2.38
<i>Eryngium sanguisorba</i> Cham. et. Schltld.	2.47	1.85	2.16	<i>Schizachyrium imberbe</i> (Hack.) A. Camus	1.74	2.84	2.29
<i>Desmanthus virgatus</i> (L.) Willd.	2.88	1.43	2.16	<i>Paspalum plicatulum</i> Michx.	1.74	2.68	2.21
<i>Gymnopogon burchellii</i> (Munro ex Doell) Ekman	2.19	2.06	2.13	<i>Sorghastrum albescens</i> (E. Fourn.) Beetle	1.49	2.84	2.17
<i>Stipa melanosperma</i> J. Presl.	2.06	2.19	2.12	<i>Chrysolaena flexuosa</i> (Sims) H. Rob.	2.24	1.58	1.91
<i>Elionurus muticus</i> (Spreng.) Kuntze	1.65	2.53	2.09	<i>Trachypogon montufarii</i> var. <i>mollis</i> (Nees) Andersson	1.74	1.89	1.82
<i>Chromolaena congesta</i> (Hook. & Arn.) R.M. King & H. Rob.	2.33	1.43	1.88	<i>Dyckia leptostachya</i> Baker	1.00	2.05	1.52
<i>Macropitium prostratum</i> (Benth.) Urb.	1.92	1.18	1.55	<i>Panicum olyroides</i> Kunth var. <i>olyroides</i>	1.00	1.73	1.36
<i>Monnina oblongifolia</i> Arechav.	1.78	1.30	1.54	<i>Galactia pretiosa</i> Burkart	1.99	0.63	1.31
<i>Rhynchosia corylifolia</i> Mart. ex Benth.	1.37	1.52	1.44	<i>Eryngium sanguisorba</i> Cham. et. Schltld.	1.49	1.10	1.30

MOIST GRASSLANDS				MARSHY GRASSLANDS			
Species	FR (%)	CR (%)	IVI (%)	Species	FR (%)	CR (%)	IVI (%)
<i>Scleria balansae</i> Maury	4.66	8.98	6.82	<i>Ischaemum minus</i> J. Presl	13.16	50.63	31.90
<i>Schizachyrium tenerum</i> Nees	2.51	9.69	6.10	<i>Andropogon lateralis</i> Nees	13.16	5.06	9.11
<i>Sorghastrum albescens</i> (E. Fourn.) Beetle	3.58	7.00	5.29	<i>Dichantherium sabulorum</i> (Lam.) Gould. & C.A. Clark	13.16	3.16	8.16
<i>Eryngium elegans</i> Cham. & Schldl.	2.51	4.85	3.68	<i>Juncus microcephalus</i> Kunth	7.89	7.59	7.74
<i>Rhynchospora barrosiana</i> Guagl.	2.87	4.49	3.68	<i>Eleocharis nudipes</i> (Kunth) Palla	2.63	10.13	6.38
<i>Stipa nutans</i> Hack.	3.23	4.13	3.68	<i>Tibouchina urbanii</i> Cogn.	7.89	2.53	5.21
<i>Saccharum villosum</i> Steud.	2.51	4.67	3.59	<i>Paspalum plicatulum</i> Michx.	7.89	1.90	4.90
<i>Aspilia montevidensis</i> (Spreng.) Kuntze	3.94	2.87	3.41	<i>Rhynchospora barrosiana</i> Guagl.	7.89	1.90	4.90
<i>Sisyrinchium palmifolium</i> L.	3.23	3.23	3.23	<i>Eclipta megapotamica</i> (Spreng.) Sch. Bip. ex S.F. Blake	7.89	1.90	4.90
<i>Sisyrinchium vaginatum</i> Spreng.	4.30	1.76	3.03	<i>Desmodium adscendens</i> (Sw.) DC.	2.63	3.80	3.21
<i>Paspalum maculosum</i> Trin.	1.79	3.77	2.78	<i>Saccharum villosum</i> Steud.	2.63	2.53	2.58
<i>Dichantherium sabulorum</i> (Lam.) Gould. & C.A. Clark	2.87	2.51	2.69	<i>Cyperus haspan</i> L. var. <i>haspan</i>	2.63	2.53	2.58
<i>Paspalum plicatulum</i> Michx.	2.51	2.51	2.51	<i>Paspalum urvillei</i> Steud.	2.63	2.53	2.58
<i>Andropogon lateralis</i> Nees	2.15	2.69	2.42	<i>Rhynchospora holoschoenoides</i> (Rich.) Herter	2.63	2.53	2.58
<i>Chaptalia piloselloides</i> (Vahl) Baker	2.87	1.44	2.15	<i>Schizachyrium tenerum</i> Nees	2.63	0.63	1.63
<i>Gymnopogon burchellii</i> (Munro ex Doell) Ekman	2.51	1.62	2.06	<i>Oxalis bipartita</i> A. St.-Hil.	2.63	0.63	1.63

Appendix 4 – List of the 37 common species among four phytosociological studies of grassland vegetation carried out in the chain of granitic hills at Porto Alegre municipality, RS, Brazil (Morro da Polícia - Boldrini *et al.* 1998; Morro Santana - Overbeck *et al.* 2006; Morro do Osso - Ferreira *et al.* 2010; Morro São Pedro).

Familie	Species
Anacardiaceae	<i>Schinus weinmannifolius</i> Engl.
Apiaceae	<i>Eryngium ciliatum</i> Cham. & Schltld.
Apiaceae	<i>Eryngium horridum</i> Malme
Apiaceae	<i>Eryngium pristis</i> Cham. & Schltld.
Asteraceae	<i>Aspilia montevidensis</i> (Spreng.) Kuntze
Asteraceae	<i>Baccharis articulata</i> (Lam.) Pers.
Asteraceae	<i>Baccharis crispa</i> Spreng.
Asteraceae	<i>Baccharis ochracea</i> Spreng.
Asteraceae	<i>Baccharis sessiliflora</i> Vahl
Asteraceae	<i>Calea uniflora</i> Less.
Asteraceae	<i>Disynaphia ligulifolia</i> (Hook. & Arn.) R.M. King & H. Rob.
Asteraceae	<i>Lucilia acutifolia</i> (Poir.) Cass.
Asteraceae	<i>Orthopappus angustifolius</i> (Sw.) Gleason
Asteraceae	<i>Vernonanthura nudiflora</i> (Less.) H. Rob.
Cactaceae	<i>Parodia ottonis</i> (Lehm.) N.P. Taylor
Cyperaceae	<i>Rhynchospora setigera</i> Griseb.
Euphorbiaceae	<i>Euphorbia selloi</i> (Klotzsch & Garcke) Boiss.
Fabaceae	<i>Centrosema virginianum</i> (L.) Benth.
Fabaceae	<i>Desmodium incanum</i> DC.
Fabaceae	<i>Macroptilium prostratum</i> (Benth.) Urb.
Fabaceae	<i>Rhynchosia diversifolia</i> Micheli
Poaceae	<i>Andropogon lateralis</i> Nees
Poaceae	<i>Aristida filifolia</i> (Arechav.) Herter
Poaceae	<i>Aristida flaccida</i> Trin. & Rupr.
Poaceae	<i>Aristida laevis</i> (Nees) Kunth
Poaceae	<i>Axonopus suffultus</i> (Mikan ex Trin.) Parodi
Poaceae	<i>Chascolytrum subaristatum</i> (Lam.) Desv.
Poaceae	<i>Chascolytrum uniolae</i> (Nees) Essi, Longhi-Wagner & Souza-Chie
Poaceae	<i>Dichanthelium sabulorum</i> (Lam.) Gould. & C.A. Clark
Poaceae	<i>Paspalum plicatulum</i> Michx.
Poaceae	<i>Piptochaetium montevidense</i> (Spreng.) Parodi
Poaceae	<i>Schizachyrium tenerum</i> Nees
Poaceae	<i>Trachypogon montufarii</i> (Kunth) Nees var. <i>montufarii</i>
Rubiaceae	<i>Galianthe fastigiata</i> Griseb.
Rubiaceae	<i>Richardia grandiflora</i> (Cham. & Schltld.) Steud.
Rubiaceae	<i>Spermacoce verticillata</i> (L.) G. Mey
Verbenaceae	<i>Lantana montevidensis</i> (Spreng.) Briq.