

Conservation of species-rich subtropical grasslands: traditional management vs. legal conservation requirements in primary and secondary grasslands

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Table S1. Endemic and endangered species recorded in three grassland types (PGCA = primary grasslands in conservation areas, SGCA = secondary grassland in conservation areas, PGTM = primary grassland subjected to the traditionally management) at the fifty-eight study sites in southern Rio Grande do Sul, South Brazil. The degree of threat of species was checked in the current Red List made for the state (Decreto Estadual nº 52.109/ 2014) and endemic species is according to Andrade *et al.* 2018 – ED: Endemic; CR: Critically Endangered; EN: Endangered; VU: Vulnerable; NT: Near Threatened.

Families / Species	Categories	PGCA	SGCA	PGTM
Amaranthaceae				
<i>Gomphrena sellowiana</i> Mart.	ED, CR	X		
<i>Gomphrena graminea</i> Moq.	NT	X		X
<i>Gomphrena perennis</i> L.	NT	X		
<i>Pfaffia gnaphaloides</i> (L. f.) Mart.	NT	X		X
Apocynaceae				
<i>Mandevilla coccinea</i> (Hook. & Arn.) Woodson	VU	X		
Asparagaceae				
<i>Clara ophiopogonoides</i> Kunth	EN	X		X
Asteraceae				
<i>Lessingianthus macrocephalus</i> (Less.) H. Rob.	ED	X		X
<i>Pamphalea commersonii</i> Cass.	EN	X		X
<i>Schlechtendahlia luzulifolia</i> Less.	ED, NT	X		
<i>Trichocline cisplatina</i> E. Pasini & M.R. Ritter	ED, VU	X		
<i>Trichocline incana</i> (Lam.) Cass.	EN	X		
Bromeliaceae				
<i>Dyckia choristaminea</i> Mez	ED, EN	X		
<i>Dyckia leptostachya</i> Baker	VU	X		X
Cactaceae				
<i>Frailea gracillima</i> (Lem.) Britton & Rose	ED, VU	X		
<i>Frailea pygmaea</i> (Speg.) Britton & Rose	ED, VU			X
<i>Gymnocalycium denudatum</i> (Link & Otto) Pfeiff. ex Mittler	ED, EN	X		
<i>Parodia ottonis</i> (Lehm.) N.P. Taylor	VU	X		X
Euphorbiaceae				
<i>Croton gnaphalii</i> Baill.	ED	X		
<i>Adesmia securigerifolia</i> Herter	ED	X		
<i>Mimosa rocae</i> Lorentz & Niederl.	ED, EN	X		X
<i>Mimosa cf. schleidenii</i> Herter	ED, CR	X		
Iridaceae				
<i>Cypella pusilla</i> (Link, Klotzsch & Baker) Benth. & Hook. f.	ED, CR	X		X
<i>Herbertia pulchella</i> Sweet	ED	X		X
<i>Kelissa brasiliensis</i> (Baker) Ravenna	ED, VU	X		X



Table S2. Species and their mean cover value in three grassland types (PGCA = primary grasslands in conservation areas, SGCA = secondary grassland in conservation areas, PGTM = primary grassland subjected to the traditionally management) at the fifty-eight study sites in southern Rio Grande do Sul, South Brazil. Data is from quantitative sampling conducted in three groups of three 1m² subplots per site. For species considered in the analysis of indicator species the significance level is indicated with the respective cover value (in one or two groups): *** < 0.001, ** < 0.01, * < 0.05. Exotic species are identified with * after the species name, according to Rolim *et al.* (2014).

Families / Species	PGCA	SGCA	PGTM
Acanthaceae			
<i>Justicia axilaris</i> (Nees) Lindau	0.02	0.02	0.03
<i>Justicia laevilinguis</i> (Nees) Lindau	0	0	0
<i>Ruellia hypericoides</i> (Nees) Lindau	0.01	0	0.01
<i>Ruellia morongii</i> Britton	0.04	0	0.01
<i>Stenandrium diphyllum</i> Nees	0.06	0	0.11
<i>Stenandrium dulce</i> (Cav.) Nees	0.01	0	0.01
Amaranthaceae			
<i>Amaranthus cf. deflexus</i> L.*	0	0.02	0
<i>Alternanthera</i> sp.	0.01	0	0
<i>Gomphrena graminea</i> Moq.	0.08	0	0.03
<i>Gomphrena sellowiana</i> Mart.	0.01	0	0
<i>Gomphrena perennis</i> L.	0.01	0	0
<i>Pfaffia gnaphaloides</i> (L. f.) Mart.	0.1	0	0.04
<i>Pfaffia tuberosa</i> (Spreng.) Hicken	0.27	0.12	0.17
Amaryllidaceae			
<i>Beauverdia sellowiana</i> (Kunth) Herter	0.01	0	0.01
<i>Habranthus tubispathus</i> (L'Hér.) Traub	0.06	0	0.07
<i>Haylockia americana</i> (Hoffmanns.) Herter	0.01	0	0
<i>Ipheion uniflorum</i> Raf.	0.01	0	0
<i>Nothoscordum gracile</i> (Aiton) Stearn	0	0.04	0.01
<i>Nothoscordum montevidense</i> Beauverd	0.06	0	0.08
<i>Zephyranthes mesochloa</i> Herb. ex Lindl	0.02	0	0
Anacardiaceae			
<i>Lithraea brasiliensis</i> Marchand	0.07	0.1	0.01
<i>Schinus polygamus</i> (Cav.) Cabrera	0.06	0.05	0
Anemiaceae			
<i>Anemia tomentosa</i> (Sav.) Sw.	0.02	0	0
Apiaceae			
<i>Eryngium horridum</i> Malme	2.45	4.88**	1.55
<i>Cyclosporum leptophyllum</i> (Pers.) Sprague	0.12	0.15	0.31
<i>Centella asiatica</i> (L.) Urb.	0.55	0.9	0.54
<i>Daucus pusillus</i> Michx. *	0.01	0	0
<i>Eryngium ciliatum</i> Cham. & Schltld.	0.03	0	0
<i>Eryngium ebracteatum</i> Lam.	0	0.01	0.03
<i>Eryngium echinatum</i> Urb.	0	0	0.19
<i>Eryngium elegans</i> Cham. Et Schlecht.	0	0.09	0.03
<i>Eryngium eriophorum</i> Cham. Schltld.	0.01	0	0
<i>Eryngium megapotamicum</i> Malme	0.05	0	0
<i>Eryngium nudicaule</i> Lam.	0.16	0.01	0.69
<i>Eryngium pristis</i> Cham. & Schltld.	0.05	0	0
<i>Eryngium sanguisorba</i> Cham. Et Schlecht.	0.36	0.07	0.22
Apocynaceae			
<i>Asclepias campestris</i> Vell.	0	0	0
<i>Asclepias curassavica</i> L.	0.01	0.01	0
<i>Mandevilla coccinea</i> (Hook. & Arn.) Woodson	0.01	0	0
<i>Mandevilla petraea</i> (A.St.-Hil.) Pichon	0.01	0	0
<i>Oxypetalum muticum</i> E.Fourn.	0.03	0	0
<i>Oxypetalum solanoides</i> Hook. & Arn.	0.01	0	0
Aquifoliaceae			
<i>Ilex dumosa</i> Reissek	0.01	0.05	0



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Table S2. Cont.

Families / Species	PGCA	SGCA	PGTM
Araliaceae			
<i>Hydrocotyle exigua</i> Malme	0.08	0.11	0.24
Asparagaceae			
<i>Clara ophiopogonoides</i> Kunth	0.02	0	0.01
Asteraceae			
<i>Acanthostyles buniifolius</i> (Hook. & Arn.) R.M.King & H.Rob.	2.04	4.02*	1.2
<i>Achyrocline satureioides</i> (Lam.) DC.	0.09	0.02	0
<i>Acmella bellidioides</i> (Smith in Rees) R.K. Jansen	0.03	0	0.02
<i>Aspilia montevidensis</i> (Spreng.) Kuntze	0.79*	0.27	0.63*
<i>Aster squamatus</i> (Spreng.) Hieron.	0.01	0.02	0.05
<i>Baccharis aliena</i> (Spreng.) Joch.Müll.	0.15	0.2	0
<i>Baccharis articulata</i> (Lam.) Pers.	0.02	0	0.03
<i>Baccharis cf. linearifolia</i> (Lam.) Pers.	0.01	0	0
<i>Baccharis cognata</i> DC.	0.02	0	0
<i>Baccharis coridifolia</i> DC.	0.02	0	0.37
<i>Baccharis crispa</i> Spreng.	4.66	3.88	2.81
<i>Baccharis dracunculifolia</i> DC.	0.68	4.62**	0.14
<i>Baccharis ochracea</i> Spreng.	0.32	0.01	0.36
<i>Baccharis patens</i> Baker	0.05	0	0.01
<i>Baccharis psiadioides</i> (Less.) Joch.Müll.	0.01	0	0.01
<i>Baccharis riograndensis</i> I.L.Teodoro & J.Vidal	0.56*	0	0.73*
<i>Baccharis spicata</i> (Lam.) Baill.	0.19	0.38	0.01
<i>Baccharis tridentata</i> Vahl	0	0.07	0.01
<i>Badilloa steetzii</i> (B.L.Rob.) R.M.King & H.Rob.	0.09	0.07	0.02
<i>Bidens pilosa</i> L.	0.09	0.23	0
<i>Calea cymosa</i> Less.	0.06	0	0.01
<i>Calea pinnatifida</i> (R. Br.) Less.	0.04	0.15	0
<i>Calea uniflora</i> Less.	0.12	0	0.09
<i>Chaptalia exscapa</i> (Pers.) Baker	0.1	0.01	0.15
<i>Chaptalia integerrima</i> (Vell.) Burkart	0.01	0	0
<i>Chaptalia mandoni</i> Burkart	0.05	0	0.07
<i>Chaptalia nutans</i> (L.) polak	0.01	0.07	0.01
<i>Chaptalia runcinata</i> Kunth	0.13	0.02	0.16
<i>Chevreulia acuminata</i> Less.	0.04	0	0.1
<i>Chevreulia sarmentosa</i> (Pers.) Blake	0.12	0.16	0.57
<i>Chromolaena laevigata</i> (Lam.) R.M.King & H. Hob	0.11	0.02	0
<i>Chromolaena squarrosula</i> (Hook. & Arn.) R.M.King & H.Rob.	0.04	0	0
<i>Chrysolea flexuosa</i> (Sims) H.Rob.	0.39	0.01	0.25
<i>Cirsium vulgare</i> (Savi) Ten.*	0.03	0.05	0.01
<i>Conyza bonariensis</i> (L.) Cronquist	0.07	0.05	0.05
<i>Conyza primulifolia</i> (Lam.) Cuatrec. & Lourteig	0.14	0.33	0.08
<i>Crepis capillaris</i> (L.) Wallr. *	0.01	0.04	0
<i>Criscia stricta</i> (Spreng.) Katinas	0.13	0	0.04
<i>Eclipta prostrata</i> (L.) L.	0.01	0.02	0.23
<i>Elephantopus mollis</i> Kunth	0.26	1.42	0.1
<i>Eupatorium ascendens</i> Sch. Bip. ex Baker	0.2	0.06	0.12
<i>Facelis retusa</i> (Lam.) Sch. Bip.	0.07	0.16	0.2
<i>Gamochaeta americana</i> (Mill.) Wedd.	0.27	0.31	0.23
<i>Gamochaeta coarctata</i> Willd. Kerguelen	0.01	0.04	0.03
<i>Gamochaeta falcata</i> (Lam.) Cabrera	0.01	0	0
<i>Gamochaeta filaginea</i> (DC.) Cabrera	0.01	0	0.12
<i>Gamochaeta simplicicaulis</i> (Willd. ex Spreng.) Cabrera	0	0	0.05
<i>Gochnatia polymorpha</i> (Less.) Cabrera	0	0.05	0
<i>Grazielia intermedia</i> (DC.) R.M.King & H.Rob.	0	0.15	0
<i>Gyptis tanacetifolia</i> (Gillies ex Hook. & Arn.) D.J.N. Hind & Flann	0.02	0	0
<i>Holocheilus brasiliensis</i> (L.) Cabrera	0.01	0	0



Table S2. Cont.

Families / Species	PGCA	SGCA	PGTM
<i>Hypochaeris albiflora</i> (O.K.) Azevêdo-Gonçalves & Matzenbacher	0.09	0	0.07
<i>Hypochaeris chillensis</i> (H.B.K.) Hieron	0.07	0.25	0.19
<i>Hypochaeris glabra</i> L.	0	0	0.01
<i>Hypochaeris megapotamica</i> Cabrera	0	0.01	0.01
<i>Hypochaeris petiolaris</i> (Hook. & Arn.) Griseb	0.01	0	0
<i>Hypochaeris radicata</i> L.*	0.01	0.12	0.06
<i>Hysterionica filiformis</i> (Spreng.) Cabrera	0.05	0	0.02
<i>Lessingianthus brevifolius</i> (Less.) H.Rob.	0.2	0	0.01
<i>Lessingianthus hypochaeris</i> (DC.) H.Rob.	0.05	0	0
<i>Lessingianthus sellowii</i> (Less.) H.Rob.	0.17	0	0.17
<i>Lucilia acutifolia</i> (Poir.) Cass.	0.16	0	0.04
<i>Lucilia nitens</i> Less.	0.29	0.09	0.28
<i>Micropsis dasycarpa</i> (Griseb.) Beauverd	0	0	0.03
<i>Micropsis spathulata</i> (Pers.) Cabrera	0.01	0.02	0.07
<i>Mikania glomerata</i> Spreng.	0.01	0.02	0
<i>Mutisia coccinea</i> A.St.-Hil.	0.01	0.07	0
<i>Noticastrum decumbens</i> (Baker) Cuatrec.	0.02	0	0
<i>Noticastrum diffusum</i> (Pers.) Cabrera	0.05	0.02	0
<i>Noticastrum gnaphalioides</i> (Baker) Cuatrec.	0.07	0	0.01
<i>Orthopappus angustifolius</i> (Sw.) Gleason	0	0.02	0.01
<i>Panphalea commersonii</i> Cass.	0.05	0	0.08
<i>Panphalea</i> sp.	0.01	0	0
<i>Picrosia longifolia</i> D. Don	0	0	0.05
<i>Pluchea sagittalis</i> (Lam.) Cabrera	0	0.09	0
<i>Porophyllum linifolium</i> (L.) DC.	0.08	0.01	0.03
<i>Porophyllum ruderales</i> (Jacq.) Cass.	0	0	0
<i>Pterocaulon alopecuroides</i> (Lam.) DC.	0.02	0	0.03
<i>Pterocaulon angustifolium</i> DC.	0.1	0.09	0.05
<i>Pterocaulon polystachyum</i> DC.	0	0.02	0.07
<i>Pterocaulon rugosum</i> (Vahl) Malme	0.07	0.11	0.05
<i>Schlechtendalia luzulifolia</i> Less.	0.08	0	0
<i>Senecio bonariensis</i> Hook. & Arn.	0	0	0.01
<i>Senecio brasiliensis</i> (Spreng.) Less.	0.31	0.57	0.02
<i>Senecio heterotrichus</i> DC.	0.03	0.12	0.08
<i>Senecio leptolobus</i> DC.	0.06	0.01	0.1
<i>Senecio madagascariensis</i> Poir.*	0.04	0.16	0.1
<i>Senecio selloi</i> (Spreng.) DC.	0.21	0.64	0.25
<i>Solidago chilensis</i> Meyen	0.14	0.75	0.01
<i>Soliva macrocephala</i> Cabrera	0	0	0.01
<i>Soliva pterosperma</i> (Juss.) Less.	0.03	0.22	0.25
<i>Sommerfeltia spinulosa</i> (Spreng.) Less	0.24	0	0.05
<i>Stenachaenium campestre</i> Baker	0.05	0	0.1
<i>Stenachaenium megapotamicum</i> (Spreng.) Baker	0.01	0.2	0
<i>Stenocephalum megapotamicum</i> (Spreng.) Sch.Bip.	0.2	0	0
<i>Stevia lundiana</i> DC.	0.01	0	0.01
<i>Stevia</i> sp.	0.04	0	0.01
<i>Trichocline cisplatina</i> E.Pasini & M.R.Ritter	0.1	0	0.04
<i>Trichocline incana</i> (Lam.) Cass.	0	0	0
<i>Vernonanthura nudiflora</i> (Less.) H.Rob.	0.01	0	0.07
<i>Viguiera nudicaulis</i> Baker	0.01	0	0
<i>Xanthium strumarium</i> L.*	0	0.02	0
Berberidaceae			
<i>Berberis laurina</i> Thunb.	0.01	0.05	0
Brassicaceae			
<i>Lepidium aletes</i> Regel & Körn.	0	0	0.01
<i>Lepidium bonariense</i> L.	0.01	0.02	0.16



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Table S2. Cont.

Families / Species	PGCA	SGCA	PGTM
<i>Raphanus raphanistrum</i> L.*	0	0.1	0
Bromeliaceae			
<i>Dyckia choristaminea</i> Mez	0.01	0	0
<i>Dyckia leptostachya</i> Baker	0.01	0	0.01
Cactaceae			
<i>Frailea pygmaea</i> (Speg.) Britton & Rose	0	0	0
<i>Gymnocalycium denudatum</i> (Link & Otto) Pfeiff. ex Mittler	0.02	0	0
Calyceraceae			
<i>Acicarpa tribuloides</i> Juss.	0	0.02	0.11
Campanulaceae			
<i>Lobelia hederacea</i> Cham.	0	0	0.06
<i>Triodanis perfoliata</i> (L.) Nieuwl.*	0	0.01	0
<i>Wahlenbergia linarioides</i> (Lam.) A.DC.	0.08	0	0.1
Caryophyllaceae			
<i>Cerastium commersonianum</i> Ser.	0	0	0.01
<i>Cerastium glomeratum</i> Thuill.*	0.01	0.14	0
<i>Paronychia communis</i> Cambess.	0.01	0.05	0
<i>Silene gallica</i> L.*	0	0	0.01
Cistaceae			
<i>Helianthemum brasiliense</i> (Lam.) Pers.	0.29	0.01	0.25
Commelinaceae			
<i>Commelina diffusa</i> Burm. f.	0	0.05	0
<i>Commelina erecta</i> L.	0.01	0.01	0.01
<i>Tradescantia crassula</i> Link & Otto	0.01	0	0
Convolvulaceae			
<i>Convolvulus crenatifolius</i> Ruiz & Pav.	0.01	0	0
<i>Dichondra macrocalyx</i> Meisn.	0	0.02	0.05
<i>Dichondra sericea</i> Sw.	0.8	0.86	1.31**
<i>Evolvulus sericeus</i> Sw.	0.97*	0.2	0.69*
Cyperaceae			
<i>Abildgaardia ovata</i> (L.) Vahl	0.13	0	0.23
<i>Bulbostylis communis</i> var. <i>scabrida</i> M.G. López & D.A. Simpson	0.01	0	0.1
<i>Bulbostylis consaguinea</i> (Kunth) C.B. Clarke	0	0	0
<i>Bulbostylis contracta</i> (Osten) M.G. López & D.A. Simpson	0.03	0.15	0.14
<i>Bulbostylis juncooides</i> (Vahl) Kük. ex Herter	0.01	0	0
<i>Bulbostylis sphaerocephala</i> (Boeck.) C.B. Clarke	0.16	0	0.08
<i>Carex longii</i> Mack.	0	0	0.03
<i>Carex phalaroides</i> Kunth	0.14	0.06	0.25
<i>Carex sororia</i> Kunth	0.03	0.06	0.07
<i>Cyperus aggregatus</i> (Willd.) Endl.	0.06	0.11	0.08
<i>Cyperus reflexus</i> Vahl	0.04	0.19	0.04
<i>Cyperus rotundus</i> L.*	0	0.15	0
<i>Eleocharis bonariensis</i> Nees	0	0.02	0
<i>Eleocharis flavescens</i> (Poir.) Urb.	0	0	0.04
<i>Eleocharis maculosa</i> (Vahl) Roem. & Schult.	0	0	0.05
<i>Eleocharis minima</i> Kunth	0	0	0.01
<i>Eleocharis sellowiana</i> Kunth	0	0	0.01
<i>Eleocharis viridans</i> Kük. ex Osten	0	0.06	0.39
<i>Fimbristylis autumnalis</i> (L.) Roem. & Schult.	0.03	0.02	0.03
<i>Fimbristylis complanata</i> (Retz.) Link	0.02	0.02	0.1
<i>Fimbristylis dichotoma</i> (Retz.) Vahl	0.02	0.01	0.14
<i>Fimbristylis</i> sp.	0	0	0.09
<i>Kyllinga brevifolia</i> Rottb.	0.05	0.06	0.03
<i>Kyllinga odorata</i> Vahl	0.05	0.67	0.21
<i>Kyllinga vaginata</i> Lam.	0	0.01	0.22
<i>Pycnus polystachyos</i> (Rottb.) P.Beauv.	0	0.11	0.05



Table S2. Cont.

Families / Species	PGCA	SGCA	PGTM
<i>Rhynchospora barrosiana</i> Guagl.	0.29	0.12	0.09
<i>Rhynchospora megapotamica</i> (A. Spreng.) H. Pfeiff.	0.13	0	0.1
<i>Rhynchospora rugosa</i> (Vahl) Gale	0.03	0	0.02
<i>Rhynchospora setigera</i> (Kunth) Boeck.	0.33	0.05	0.22
<i>Rhynchospora tenuis</i> Link	0.11	0.21	0.15
<i>Scleria balansae</i> Maury ex Micheli	0	0	0.01
<i>Scleria distans</i> Poir.	0.03	0.06	0.01
Droseraceae			
<i>Drosera brevifolia</i> Pursh.	0	0	0.01
Euphorbiaceae			
<i>Bernardia multicaulis</i> Müll. Arg.	0.03	0	0.02
<i>Croton gnaphalii</i> Baill.	0.02	0	0.03
<i>Croton parvifolius</i> Müll.Arg.	0.02	0	0
<i>Euphorbia selloi</i> (Klotzsch & Garcke) Boiss.	0.02	0.01	0.02
<i>Euphorbia</i> sp.	0.01	0	0.01
<i>Euphorbia stenophylla</i> Boiss.	0.05	0.01	0
<i>Tragia bahiensis</i> Müll. Arg.	0.14	0	0.06
Fabaceae			
<i>Adesmia incana</i> Vogel	0.02	0	0.04
<i>Adesmia securigerifolia</i> Hert.	0	0	0.01
<i>Arachis burkartii</i> Handro	0.03	0	0.1
<i>Chamaecrista repens</i> (Vogel) H.S. Irwin & Barneby	0.01	0	0.01
<i>Clitoria nana</i> Benth.	0.02	0	0.01
<i>Collaea stenophylla</i> (Hook. & Arn.) Benth.	0.04	0	0
<i>Desmanthus tathuyensis</i> Hoehne	0.23	0.06	0.09
<i>Desmodium adscendens</i> (Sw.) DC.	0.01	0.02	0.03
<i>Desmodium barbatum</i> (L.) Benth.	0	0.02	0
<i>Desmodium incanum</i> DC.	1.03	1.12	1.58
<i>Desmodium uncinatum</i> (Jacq.) DC.	0	0.11	0
<i>Galactia gracillima</i> Benth.	0.1	0	0.04
<i>Galactia marginalis</i> Benth.	0.22	0	0.21
<i>Indigofera asperifolia</i> Bong. ex Benth.	0.01	0	0
<i>Lathyrus cuniculifolia</i> L.	0	0	0
<i>Lathyrus linearifolius</i> Vogel	0	0	0
<i>Lathyrus subulatus</i> Lam.	0.02	0.05	0
<i>Lotus corniculatus</i> L.*	0	0.17	0
<i>Lupinus bracteolaris</i> Desr.	0.01	0	0.01
<i>Macroptilium prostratum</i> (Benth.) Urb.	0.23	0.04	0.12
<i>Mimosa cruenta</i> Benth.	0.04	0	0
<i>Mimosa pudica</i> L.	0.04	0	0
<i>Mimosa rocae</i> Lorentz & Niederl.	0.01	0	0
<i>Mimosa sanguinolenta</i> Barneby	0.01	0	0
<i>Poiretia tetraphylla</i> (Poir.) Burkart	0.01	0	0
<i>Rhynchosia corylifolia</i> Mart. ex Benth.	0.01	0	0
<i>Rhynchosia diversifolia</i> Micheli	0.39	0.05	0.17
<i>Rhynchosia senna</i> Gillies ex Hook.	0.07	0.01	0.03
<i>Stylosanthes leiocarpa</i> Vogel	0.25	0	0.24
<i>Stylosanthes montevidensis</i> Vogel	0.24	0	0.22
<i>Trifolium polymorphum</i> Poir.	0.17	0.04	0.35
<i>Trifolium repens</i> L.*	0	0.06	0
<i>Ulex europaeus</i> L.*	0.31	0	0
<i>Vachellia caven</i> (Molina) Seigler & Ebinger	0.03	0.17	0
<i>Zornia orbiculata</i> Mohlenbr.	0.02	0	0.03
<i>Zornia sericea</i> Moric.	0.05	0	0.05
Gentianaceae			
<i>Centaurium pulchellum</i> (Sw.) Druce*	0	0.06	0



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Table S2. Cont.

Families / Species	PGCA	SGCA	PGTM
<i>Zygodium australe</i> (Cham. & Schltdl.) Griseb.	0.02	0	0
Hypericaceae			
<i>Hypericum connatum</i> Lam.	0.03	0.01	0.01
<i>Hypericum pirai</i> Arechav.	0	0	0.01
<i>Hypericum polyanthemum</i> Klotzsch ex Reichenb.	0.01	0	0
Hypoxidaceae			
<i>Hypoxis decumbens</i> L.	0.3	0.75**	0.35
Iridaceae			
<i>Cypella falcata</i> Ravenna	0.03	0	0
<i>Cypella herbertii</i> Hook.	0.03	0	0.08
<i>Cypella pusilla</i> (Link & Otto) Benth. & Hook.f. ex B.D.Jacks.	0.02	0	0.03
<i>Herbertia lahue</i> (Molina) Goldblatt	0.09	0	0.26
<i>Herbertia pulchella</i> Sweet	0.15	0.04	0.1
<i>Kilissa brasiliensis</i> (Baker) Ravenna	0.01	0	0
<i>Onira unguiculata</i> (Baker) Ravenna	0.02	0.01	0
<i>Sisyrinchium megapotamicum</i> Malme	0.03	0	0.01
<i>Sisyrinchium micranthum</i> Cav.	0.16	0.90***	0.42
<i>Sisyrinchium palmifolium</i> L.	0.06	0	0
<i>Sisyrinchium scariosum</i> I.M.Johnst.	0.05	0	0.19
<i>Sisyrinchium sellowianum</i> Klatt	0.15	0.04	0.1
<i>Sisyrinchium vaginatum</i> Spreng.	0.19	0.02	0.08
Juncaceae			
<i>Juncus capillaceus</i> Lam.	0.1	0.05	0.44
<i>Juncus microcephalus</i> Kunth	0.31	0.05	0.01
<i>Juncus tenuis</i> Willd.	0.12	0.43	0.31
Lamiaceae			
<i>Glechom ciliata</i> Benth.	0.04	0	0.05
<i>Hyptis mutabilis</i> (Rich.) Briq.	0.01	0.28	0
<i>Hyptis</i> sp.	0.07	0	0
<i>Peltodon longipes</i> Kunth ex Benth.	0.01	0	0
<i>Salvia procurrens</i> Benth.	0.03	0.01	0.01
<i>Scutellaria racemosa</i> Pers.	0.02	0.04	0.1
Linaceae			
<i>Cliococca selaginoides</i> (Lam.) C. M. Rogers & Mild	0.22	0	0.2
<i>Linum erigeroides</i> A.St.-Hil.	0.01	0	0
Loganiaceae			
<i>Spigelia stenophylla</i> Progel	0	0	0.01
Lythraceae			
<i>Cuphea calophylla</i> Cham. & Schltdl.	0.01	0	0.01
<i>Cuphea glutinosa</i> Cham. & Schltdl.	0.21	0.16	0.28
<i>Heimia myrtifolia</i> Cham. & Schltdl.	0.07	0	0.02
Malpighiaceae			
<i>Aspicarpa pulchella</i> (Griseb.) O'Donell & Lourteig	0.24	0	0.12
<i>Galphimia australis</i> Chodat	0.01	0	0.01
<i>Janusia guaranitica</i> (A. St.-Hil.) A. Juss.	0.03	0.02	0
Malvaceae			
<i>Abutilon terminale</i> (Cav.) A.St.-Hil.	0.02	0	0
<i>Ayenia mansfeldiana</i> (Herter) Herter & Cristóbal	0.25	0	0.22
<i>Krapovickasia flavescens</i> (Cav.) Fryxell	0.26	0	0.23
<i>Melochia chamaedrys</i> var. <i>chamaedrys</i> A. St.-Hil.	0.03	0	0.01
<i>Pavonia friesi</i> Krapov.	0	0.04	0
<i>Pavonia glechomoides</i> A. St.-Hil.	0.03	0	0.01
<i>Pavonia orientalis</i> Krapov.	0.02	0	0
<i>Sida regnellii</i> R.E. Fr.	0	0.01	0.01
<i>Sida rhombifolia</i> L.	0.15	0.53	0.05
<i>Wissadula glechomifolium</i> (A. St.-Hil.) R.E. Fr.	0.02	0	0



Table S2. Cont.

Families / Species	PGCA	SGCA	PGTM
Melastomataceae			
<i>Chaetogastra gracilis</i> (Bonpl.) DC.	0.02	0.04	0.03
<i>Miconia hyemalis</i> A. St.-Hil. & Naudin	0	0	0.02
Moraceae			
<i>Dorstenia brasiliensis</i> Lam.	0.09	0	0.06
Myrtaceae			
<i>Blepharocalyx salicifolius</i> (Kunth) O.Berg	0.01	0	0
<i>Campomanesia aurea</i> O.Berg	0.2	0.01	0.32
<i>Eugenia uniflora</i> L.	0.01	0.04	0
<i>Psidium salutare</i> var. <i>mucronatum</i> (Cambess.) Landrum	0.2	0	0.18
<i>Psidium salutare</i> var. <i>sericeum</i> (Cambess.) Landrum	0.11	0	0.05
Onagraceae			
<i>Ludwigia peploides</i> (Kunth) P.H.Raven	0.02	0.02	0
<i>Oenothera indecora</i> Cambess.	0	0	0.01
Orchidaceae			
<i>Brachystele camporum</i> (Lindl.) Schltr.	0.03	0	0.02
<i>Habenaria parviflora</i> Lindl.	0.01	0	0.03
Orobanchaceae			
<i>Agalinis communis</i> (Cham. & Schltld.) D'Arcy	0.02	0.09	0.28
<i>Buchnera integrifolia</i> Larrañaga	0.05	0	0.03
<i>Buchnera longifolia</i> Kunth	0.01	0	0
<i>Castilleja arvensis</i> Schltld. & Cham.	0	0.01	0
Oxalidaceae			
<i>Oxalis articulata</i> Savigny	0.02	0.05	0.01
<i>Oxalis bifrons</i> Progel	0.05	0.06	0.01
<i>Oxalis bipartida</i> A. St.-Hil.	0.01	0.14	0.01
<i>Oxalis brasiliensis</i> G. Lodd.	0.02	0.16	0.01
<i>Oxalis conorrhiza</i> Jacq.	0.09	0	0.08
<i>Oxalis debilis</i> var. <i>corymbosa</i> (DC.) Lourteig	0.02	0	0
<i>Oxalis eriocarpa</i> DC.	0.33**	0.06	0.36**
<i>Oxalis floribunda</i> Lehm.	0.01	0.05	0.01
<i>Oxalis lasiopetala</i> Zuccarini	0.1	0.07	0.05
<i>Oxalis myriophylla</i> A. St.-Hil.	0.01	0	0
<i>Oxalis perdicaria</i> (Molina) Bertero	0.02	0	0.01
<i>Oxalis sellowiana</i> Zucc.	0.09	0.02	0.03
Passifloraceae			
<i>Passiflora caerulea</i> L.	0.02	0	0
<i>Passiflora misera</i> Kunth	0.01	0	0
Plantaginaceae			
<i>Angelonia integerrima</i> Spreng.	0.01	0	0
<i>Gratiola peruviana</i> L.	0	0	0.08
<i>Mecardonia procumbens</i> (Mill.) Small	0.01	0	0.02
<i>Mecardonia tenella</i> (Cham. & Schltld.) Pennell	0.01	0.05	0.16
<i>Plantago brasiliensis</i> Sims	0.08	0.01	0.02
<i>Plantago myosuroides</i> Lam.	0	0.02	0
<i>Plantago tomentosa</i> Lam.	0.14	0.43	0.34
<i>Scoparia ericacea</i> Cham. & Schltld.	0.03	0	0.05
<i>Scoparia montevidensis</i> (Spreng.) R.E. Fr.	0.02	0	0.1
<i>Stemodia palustris</i> A. St.-Hil.	0	0	0.01
<i>Stemodia verticillata</i> (Mill.) Hassl.	0	0	0.01
<i>Veronica arvensis</i> L.*	0	0.05	0
Poaceae			
<i>Agenium villosum</i> (Nees) Pilg.	0.21	0	0.08
<i>Agrostis montevidensis</i> Spreng. ex Nees	0.14	0.23	0.12
<i>Agrostis</i> sp.	0	0	0
<i>Aira caryophyllea</i> L.*	0	0.01	0



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Table S2. Cont.

Families / Species	PGCA	SGCA	PGTM
<i>Andropogon lateralis</i> Nees	0.85	0.4	1.2
<i>Andropogon macrothrix</i> (Spreng.) Nees	0.03	0	0.03
<i>Andropogon selloanus</i> (Hack.) Hack.	0.21	0.02	0.4
<i>Andropogon ternatus</i> (Spreng.) Nees	0.56	0.32	0.41
<i>Anthoxanthum odoratum</i> L.*	0.01	0	0
<i>Aristida circinalis</i> Lindm.	0.17	0	0.16
<i>Aristida filifolia</i> (Arechav.) Herter	0.19	0.74	0.16
<i>Aristida laevis</i> (Nees) Kunth	1.15	0.47	0.62
<i>Aristida murina</i> Cav.	0.31	0	0.27
<i>Aristida spegazini</i> Arechav.	0.01	0	0.06
<i>Aristida venustula</i> Arechav.	1.05*	0	1.18*
<i>Avena strigosa</i> Schreb. *	0	0.05	0
<i>Axonopus affinis</i> (Raddi) Kuhlm.	6.29	5.9	11.04
<i>Axonopus compressus</i> (Sw.) P. Beauv.	0.14	0	0
<i>Axonopus siccus</i> (Nees) Kuhlm.	0.03	0	0
<i>Axonopus suffultus</i> (J.C.Mikan ex Trin.) Parodi	4.03*	0	1.25
<i>Bothriochloa laguroides</i> (DC.) Herter	0.15	0	0.42
<i>Bouteloua megapotamica</i> (Spreng) Kuntze	0.02	0	0
<i>Briza minor</i> L.*	0.05	0.11	0.07
<i>Bromus auleticus</i> Trin. ex Nees	0.06	0	0
<i>Bromus brachyanthera</i> Döll	0.03	0	0
<i>Bromus catharticus</i> Vahl	0.1	0.28	0
<i>Calamagrostis alba</i> (J. Presl) Steud.	0.03	0	0.07
<i>Calamagrostis viridiflavescens</i> (Poir.) Steud.	0.07	0.06	0.03
<i>Cenchrus clandestinus</i> (Hochst. ex Chiov.) Morrone*	0.01	0	0
<i>Chascolytrum bulbosum</i> (Parodi) Essi, Longhi-Wagner & Souza-Chies	0.31	0	0.08
<i>Chascolytrum calotheca</i> (Trin.) Essi, Longhi-Wagner & Souza-Chies	0.01	0	0
<i>Chascolytrum lamarckianum</i> (Nees) Matthei	0.1	0	0.03
<i>Chascolytrum poomorphum</i> (J. Presl) Essi, Longhi-Wagner & Souza-Chies	0.14	0.02	0.09
<i>Chascolytrum rufum</i> J. Presl	0.01	0.02	0.01
<i>Chascolytrum scabrum</i> (Nees ex Steud.) Matthei	0	0	0
<i>Chascolytrum subaristatum</i> (Lam.) Desv.	0.85	0.47	0.74
<i>Chascolytrum uniolae</i> (Nees) Essi, Longhi-Wagner & Souza-Chies	0.02	0.02	0
<i>Cynodon dactylon</i> (L.) Pers.*	1.35	9.95***	0.31
<i>Danthonia cirrata</i> Hack. & Arechav.	1.30**	0	0.56
<i>Danthonia secundiflora</i> J.Presl	0.04	0	0.01
<i>Dichantherium sabulorum</i> (Lam.) Gould & C.A. Clark	1.4	0.9	1.02
<i>Digitaria ciliaris</i> (Retz.) Koeler	0	0	0.01
<i>Eleusine tristachya</i> (Lam.) Lam.	0.02	0.25	0.05
<i>Eragrostis airoides</i> Nees.	0.29	0.07	0.05
<i>Eragrostis bahiensis</i> Schrad. ex Schult.	0.17	0.12	0.08
<i>Eragrostis cataclasta</i> Nicora	0.08	0	0.1
<i>Eragrostis lugens</i> Nees	0.33	0	0.34
<i>Eragrostis neesii</i> Trin.	0.25	0.27	1.18**
<i>Eragrostis plana</i> Nees*	0.96	3.22	0.23
<i>Eragrostis polytricha</i> Nees	0.03	0.02	0.02
<i>Eragrostis</i> sp.	0.42	0	0
<i>Eustachys brevipila</i> (Roseng. & Izag.) Caro & E.A.Sánchez	0	0	0.01
<i>Eustachys retusa</i> (Lag.) Kunth	0.01	0.05	0
<i>Eustachys uliginosa</i> (Hack.) Herter	0.03	0.07	0
<i>Holcus lanatus</i> L.*	0	0.03	0
<i>Ischaemum minus</i> J. Presl	0.03	0	0
<i>Jarava plumosa</i> (Spreng.) S.W.L. Jacobs & J. Everett	0.2	0	0.18
<i>Leptocoryphium lanatum</i> (Kunth) Nees	0.28	0.02	0.05
<i>Lolium multiflorum</i> Lam. *	1.05	1.94	1.31
<i>Melica brasiliana</i> Ard.	0.06	0.04	0.16



Table S2. Cont.

Families / Species	PGCA	SGCA	PGTM
<i>Melica eremophila</i> Torres	0.01	0	0.01
<i>Melica hialina</i> Döll	0.21	0	0.12
<i>Melica macra</i> Nees	0.06	0	0.01
<i>Melica rigida</i> Cav.	0.08	0.02	0.05
<i>Mnesithea selloana</i> (Hack.) de Koning & Sosef	1.15*	0.23	1.50*
<i>Nassella charruana</i> (Arechav.) Barkworth	0.06	0	0.05
<i>Nassella juergensii</i> (Hack.) Barkworth	0.05	0	0.02
<i>Nassella megapotamia</i> (Spreng. ex Trin.) Barkworth	0.09	0	0.02
<i>Nassella melanosperma</i> (J. Presl) Barkworth	0.01	0	0
<i>Nassella neesiana</i> (Trin. & Rupr.) Barkworth	0.43	0.2	0.21
<i>Nassella nutans</i> (Hack.) Barkworth	0.05	0.01	0.03
<i>Panicum bergii</i> var. <i>pilosissimum</i> Zuloaga	0.11	0	0.02
<i>Panicum gouinii</i> E. Fourn.	0.01	0	0
<i>Paspalum corcovadense</i> Raddi	0	0	0.72
<i>Paspalum dilatatum</i> Poir.	0.34	0.26	0.29
<i>Paspalum leptum</i> Schult.	0.06	0	0.3
<i>Paspalum notatum</i> Alain ex Flügge	11.35	2.94	24.75***
<i>Paspalum paniculatum</i> L.	0	0	0.01
<i>Paspalum paucifolium</i> Swallen	0	0.01	0
<i>Paspalum plicatum</i> Michx.	1.95**	0.51	1.15
<i>Paspalum polyphyllum</i> Nees ex Trin.	0.23	0	0.03
<i>Paspalum pumilum</i> Nees	0.03	0.2	0.6
<i>Paspalum</i> sp.	0.03	0.02	0
<i>Paspalum umbrosum</i> Trin.	0.02	0.2	0
<i>Paspalum urvillei</i> Steud.	0.13	0.2	0.05
<i>Piptochaetium lasianthum</i> Griseb.	0.48	0.05	0.2
<i>Piptochaetium montevidense</i> (Spreng.) Parodi	3.19	3.46	3.84
<i>Piptochaetium ruprechtianum</i> Desv.	0.14	0.07	0.15
<i>Piptochaetium stipoides</i> (Trin. & Rupr.) Hack.	0.71**	0.07	0.44**
<i>Piptochaetium uruguense</i> Griseb.	0.03	0	0
<i>Poa lanigera</i> Nees	0.15	0	0.07
Poaceae 1	0	0	0.01
Poaceae 2	0	0	0.01
<i>Saccharum angustifolium</i> (Nees) Trin.	1.69	2.47	0.85
<i>Schizachyrium imberbe</i> (Hack.) A. Camus	0.24	0	0.09
<i>Schizachyrium microstachyum</i> (Desv. ex Ham.) Roseng.	0.39	0.11	0.05
<i>Schizachyrium spicatum</i> (Spreng.) Herter	0.03	0	0.01
<i>Schizachyrium tenerum</i> Nees	1.41	0.19	0.22
<i>Setaria parviflora</i> (Poir.) Kerguelen	0.62	0.81	0.79
<i>Setaria vaginata</i> Spreng.	0.09	0.26	0.04
<i>Sorghastrum pellitum</i> (Hack.) Parodi	0.11	0	0
<i>Sporobolus indicus</i> (L.) R.Br.	0.11	0.67	0.38
<i>Steinchisma decipiens</i> (Nees ex Trin.) W.V. Br.	0	0	0.12
<i>Stenichmia hians</i> (Elliott) Nash	0.45	0.22	0.78**
<i>Trachypogon montufari</i> (L. f.) Kuntze	0.29	0	0.16
<i>Trachypogon spicatus</i> (L.f.) Kuntze	0	0	0.03
<i>Tripogon spicatus</i> (Nees) Ekman	0.02	0	0
<i>Vulpia australis</i> (Nees ex Steud.) C.H. Blom	0.06	0	0
<i>Vulpia bromoides</i> (L.) Gray*	0.04	0.44	0.37
Polygalaceae			
<i>Monnina oblongifolia</i> Arechav.	0.02	0	0.01
<i>Polygala adenophylla</i> A. St.-Hil. & Moq.	0.03	0	0.01
<i>Polygala australis</i> A. W. Benn.	0.06	0	0.04
<i>Polygala bonariensis</i> Grond.	0.01	0.02	0.07
<i>Polygala brasiliensis</i> L.	0	0.02	0.09
<i>Polygala molluginifolia</i> A. St.-Hil.	0.03	0.01	0.01



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Table S2. Cont.

Families / Species	PGCA	SGCA	PGTM
<i>Polygala pulchella</i> A. St.-Hil. & Moq.	0	0	0.02
<i>Polygala riograndensis</i> Lüdtké & Miotto	0.01	0	0.02
Polygonaceae			
<i>Rumex acetosella</i> L.*	0.01	0.16	0
Primulaceae			
<i>Anagallis arvensis</i> L.*	0.05	0.16	0.02
Pteridophita			
<i>Pteridophita</i> sp.	0.1	0.1	0
Ophioglossaceae			
<i>Ophioglossum reticulatum</i> L.	0.01	0	0
Rhamnaceae			
<i>Discaria americana</i> Gillies & Hook.	0.08	0	0
<i>Scutia buxifolia</i> Reissek	0.01	0.05	0
Rubiaceae			
<i>Borreria capitata</i> (Ruiz & Pav.) DC.	0.15	0.01	0.14
<i>Borreria dasycephala</i> (Cham. & Schltdl.) Bacigalupo & E.L. Cabral	0.04	0.04	0.03
<i>Borreria eryngioides</i> Cham. & Schltdl.	0.09	0	0.13
<i>Borreria verticillata</i> (L.) G.Mey.	0.09	0.11	0.05
<i>Coococypselum lanceolatum</i> (Ruiz & Pav.) Pers.	0	0.02	0
<i>Diodella radula</i> (Willd. ex Roem. & Schult.) Delprete	0	0.01	0.01
<i>Galianthe centranthoides</i> (Cham. & Schltdl.) E.L. Cabral	0.06	0	0.02
<i>Galianthe fastigiata</i> Griseb.	0.43	0.01	0.08
<i>Galium hirtum</i> Lam.	0.06	0.11	0.05
<i>Galium hypocarpium</i> (L.) Endl. ex Griseb.	0.01	0.05	0
<i>Galium richardianum</i> (Gillies ex Hook. & Arn.) Endl. ex Walp.	0.26	0.16	0.29
<i>Galium uruguayense</i> Bacigalupo	0.01	0	0.01
<i>Oldenlandia salzmannii</i> (DC.) Benth. & Hook. f. ex B.D. Jacks.	0	0.02	0.03
<i>Richardia brasiliensis</i> Gomes	0.08	0.15	0.04
<i>Richardia humistrata</i> (Cham. et Schlecht.) Steud.	0.43	0.58	1.18***
<i>Richardia stellaris</i> (Cham. & Schltdl.) Steud.	0.04	0	0.02
Salicaceae			
<i>Xylosma tweediana</i> (Clos) Eichler	0.08	0	0
Sapindaceae			
<i>Allophylus edulis</i> (A.St.-Hil., A.Juss. & Cambess.) Radlk.	0	0.01	0
<i>Dodonaea viscosa</i> (L.) Jacq.	0.16	0.01	0
Selaginellaceae			
<i>Selaginella</i> sp.	0	0	0
Smilacaceae			
<i>Smilax campestris</i> Griseb.	0.04	0.02	0
Solanaceae			
<i>Calibrachoa ovalifolia</i> (Miers) Stehmann & Semir	0	0	0.04
<i>Neiremburgia riograndense</i> Hunz. & A.A. Cocucci	0.02	0	0.08
<i>Neiremburgia</i> sp.	0	0	0.01
<i>Nicotiana longiflora</i> Cav.	0.01	0	0
<i>Petunia axillaris</i> (Lam.) Britton et al.	0	0.02	0
<i>Petunia integrifolia</i> (Hook.) Schinz & Thell.	0	0	0.01
<i>Petunia linearis</i> Hook	0	0.04	0
Solanaceae 1	0.01	0.07	0
<i>Solanum americanum</i> Mill.	0	0.42	0.2
<i>Solanum reflexum</i> Schrank	0.03	0.14	0
<i>Solanum sisymbriifolium</i> Lam.	0.03	0.09	0.01
Thymelaeaceae			
<i>Daphnopsis racemosa</i> Griseb.	0.08	0.42	0.2
Turneraceae			
<i>Piriqueta suborbicularis</i> (A. St.-Hil. & Naudin) Arbo	0.03	0.01	0.01
<i>Turnera sidoides</i> L.	0.09	0	0.03



Table S2. Cont.

Families / Species	PGCA	SGCA	PGTM
Verbenaceae			
<i>Aloysia chamaedryfolia</i> Cham.	0.06	0.01	0
<i>Glandularia marrubioides</i> (Cham.) Tronc.	0.11	0	0.04
<i>Glandularia peruviana</i> (L.) Small	0.02	0	0
<i>Glandularia selloi</i> (Spreng.) Tronc.	0.18	0.53	0.26
<i>Glandularia thymoides</i> (Cham.) N. O' Leary	0.01	0	0.01
<i>Lantana montevidensis</i> (Spreng.) Briq.	0.12	0	0
<i>Lippia hieraciifolia</i> Cham.	0.06	0	0.04
<i>Lippia romboi</i> Moldenke	0.01	0	0
<i>Verbena bonariensis</i> L.	0.02	0.05	0.01
<i>Verbena intermedia</i> Gillies & Hook. ex Hook.	0	0	0
<i>Verbena montevidensis</i> Spreng.	0.01	0.33	0.06
<i>Verbena rigida</i> Spreng.	0.01	0.2	0
Violaceae			
<i>Hybanthus bicolor</i> (Saint-Hilaire) Baill.	0.01	0.05	0
Vitaceae			
<i>Cissus palmata</i> Poir.	0.02	0	0
<i>Cissus striata</i> Ruiz & Pav.	0	0.05	0
Unidentified species			
Plant 1	0.01	0	0
Plant 2	0.01	0	0
Plant 3	0	0	0.01
Plant 4	0	0	0.01
Plant 5	0	0.01	0

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