Škornik S. & Pipenbaher N. (2025) Patterns in clonal traits in semi-dry calcareous grasslands in Slovenia. – Preslia 97: 567–588.

Supplementary Table S1. Synoptic table of three semi-dry grassland associations of the alliance *Bromion erecti*, order *Brometalia erecti*, class *Festuco-Brometea* (Natura 2000 habitat type 6210*) in Central European part of Slovenia: *Bromo-Danthonietum calycinae* (BrDa), *Scabioso hladnikianae-Caricetum humilis* (ScCa), *Onobrychido-Brometum* (OnBr); the classification is based on the agglomerative hierarchical clustering analysis. The frequency values of species within each association are shown. Diagnostic species of individual association are shaded and sorted by their decreasing fidelity to a particular vegetation type: dark shading indicates values of phi ≥ 0.5 and light shading those of phi ≥ 0.4; other species are sorted by decreasing frequencies within the dataset. Diagnostic species of the classes are indicated by superscript letters: ^{FB} *Festuco-Brometea*, ^{MA} *Molinio-Arrhenatheretea*, ^{CU} *Calluno-Ulicetea*, ^{ES} *Elyno-Seslerietea*, ^{TG} *Trifolio-Geranietea sanguinei*. The classification of species into phytosociological classes was based on the work of Kaligarič and Škornik (2002). Species with highest frequency per association (≥ 80%) are highlighted in bold.

Species name	Abbreviation (in DCA)	% frequency		
		BrDa	ScCa	OnBr
Number of relevés		86	30	108
Bromo–Danthonietum calycinae				
Danthonia alpina^{FB}	*DantAlpi*	**93**	-	-
Thymus longicaulis^{FB}	*ThymLong*	**91**	-	-
Globularia punctata^{FB}	*GlobPunc*	**80**	-	7
Chamaespartium sagittale^{CU}	*ChamSagi*	77	10	-
Gentiana tergestina^{FB}	*GentTerg*	51	-	-
Pseudolysimachion barrelieri subsp. barrelieri^{FB}	*PseuBarr*	45	-	-
Filipendula vulgaris^{FB}	*FiliVulg*	60	-	15
Cirsium acaule^{FB}	*CirsAcau*	35	-	-
Potentilla erecta^{CU}	*PoteErec*	64	27	5
Centaurea jacea subsp. *angustifolia*	*CentAngu*	44	10	-
Plantago holosteum^{FB}	*PlanHolo*	29	-	-
Allium carinatum^{FB}	*AlliCari*	44	-	12
Polygala vulgaris^{CU}	*PolyVulg*	45	13	-
Tragopogon tommasinii^{FB}	*TragTomm*	26	-	-
Potentilla alba	*PoteAlba*	24	-	-
Knautia illyrica^{FB}	*KnauIlly*	24	-	-
Scabioso hladnikianae–Caricetum humilis				
Acinos alpinus^{ES}	*AcinAlpi*	3	70	-
Genista januensis	*GeniJanu*	5	77	6
Leontodon incanus	*LeonInca*	8	73	-
Erigeron annuus	*ErigAnnu*	-	**80**	25

Veronica jacquinii[TG]	*VeroJacq*	5	63	3
Scabiosa hladnikiana[FB]	*ScabHlad*	-	53	-
Dianthus carthusianorum[FB]	*DianCart*	5	63	18
Thesium bavarum[TG]	*ThesBava*	23	60	-
Phyteuma orbiculare[ES]	*PhytOrbi*	-	30	-
Centaurea scabiosa s. l.[FB]	*CentScab*	62	**90**	24
Helianthemum ovatum[FB]	*HeliOvat*	67	**93**	27
Carex humilis[FB]	*CareHumi*	21	50	-
Onobrychido–Brometum				
Vicia cracca[MA]	*ViciCrac*	7	-	69
Poa angustifolia[FB]	*Poa Angu*	-	-	56
Onobrychis viciifolia[FB]	*OnobVici*	-	-	51
Daucus carota	*DaucCaro*	10	-	57
Arrhenatherum elatius[MA]	*ArrhElat*	21	13	74
Trisetum flavescens[MA]	*TrisFlav*	2	-	44
Achillea millefolium[MA]	*AchiMile*	15	-	57
Picris hieracioides	*PicrHier*	9	-	44
Lathyrus pratensis[MA]	*LathPrat*	7	-	40
Agrimonia eupatoria[TG]	*AgriEupa*	6	-	37
Medicago falcata[TG]	*MediFalc*	6	-	35
Galium mollugo[MA]	*GaliMoll*	13	13	55
Knautia arvensis[MA]	*KnauArve*	21	7	56
Pastinaca sativa[MA]	*PastSati*	-	-	24
Medicago lupulina[FB]	*MediLupu*	15	17	55
Other species				
Brachypodium pinnatum s.l. [FB]	*BracPinn*	**94**	**100**	60
Koeleria pyramidata[FB]	*KoelPyra*	**97**	**100**	35
Bromopsis erecta[FB]	*BromErec*	**90**	**83**	**100**
Briza media[FB]	*BrizMedi*	**93**	**80**	**97**
Salvia pratensis[FB]	*SalvPrat*	**87**	50	**94**
Lotus corniculatus[MA]	*LotuCorn*	**86**	77	**94**
Plantago lanceolata[MA]	*PlanLanc*	**81**	**83**	**89**
Dactylis glomerata[MA]	*DactGlom*	62	47	**88**
Carex caryophyllea[FB]	*CareCary*	63	87	**84**
Carex flacca	*CareFlac*	77	60	**82**
Centaurea jacea[MA]	*CentJace*	64	30	**80**
Sanguisorba minor[FB]	*SangMino*	79	**97**	75
Polygala comosa[FB]	*PolyComo*	41	**90**	72
Buphthalmum salicifolium[FB]	*BuphSali*	76	**93**	71
Linum catharticum[FB]	*LinuCath*	79	67	71

Thymus pulegioides[FB]	*ThymPule*	-	60	67
Pimpinella saxifraga[FB]	*PimpSaxi*	69	47	65
Leucanthemum vulgare[MA]	*LeucMumt*	71	40	65
Ranunculus bulbosus[FB]	*RanuBulb*	34	43	62
Hieracium bauhinii[FB]	*HierBauh*	37	30	61
Plantago media[FB]	*PlanMedi*	74	**90**	61
Festuca rupicola[FB]	*FestRupi*	**80**	**87**	60
Knautia drymeia	*KnauDrym*	27	50	55
Trifolium pratense[MA]	*TrifPrat*	43	17	51
Teucrium chamaedrys[FB]	*TeucCham*	53	63	50
Trifolium montanum[FB]	*TrifMont*	**86**	**83**	46
Carlina acaulis[FB]	*CarlAcaua*	58	67	44
Galium verum[FB]	*GaliVeru*	79	40	44
Cirsium pannonicum[FB]	*CirsPann*	57	70	41
Dorycnium germanicum[FB]	*DoryGerm*	40	17	38
Tragopogon orientalis[MA]	*TragOrie*	12	-	37
Anthoxanthum odoratum[CU]	*AnthOdor*	29	20	34
Euphorbia cyparissias[FB]	*EuphCypa*	49	60	31
Orobanche gracilis[FB]	*OrobGrac*	5	13	31
Arabis hirsuta[FB]	*ArabHirs*	-	7	31
Trifolium medium[MA]	*TrifMedi*	-	7	29
Sedum sexangulare	*SeduSexa*	15	-	29
Anthyllis vulneraria[FB]	*AnthVuln*	69	**80**	32
Silene nutans[TG]	*SileNuta*	20	40	28
Avenula pubescens[MA]	*AvenPube*	13	13	28
Peucedanum oreoselinum[TG]	*PeucOreo*	70	**83**	28
Hypericum peforatum[FB]	*HypePefo*	27	7	27
Scabiosa triandra[MA]	*ScabTria*	60	63	27
Carlina vulgaris[FB]	*CarlVulga*	6	13	27
Prunella vulgaris[MA]	*PrunVulg*	5	17	24
Luzula campestris[CU]	*LuzuCamp*	20	17	24
Euphorbia verrucosa[FB]	*EuphVerr*	78	63	24
Clinopodium vulgare[TG]	*ClinVulg*	2	-	23
Rumex acetosa[MA]	*RumeAcet*	2	-	23
Orchis tridentata[FB]	*OrchTrid*	16	33	22
Silene vulgaris	*SileVulg*	6	20	21
Peucedanum cervaria[TG]	*PeucCerv*	6	10	21
Betonica officinalis[FB]	*BetoOffi*	52	13	21
Veronica chamaedrys	*VeroCham*	3	10	21
Fragaria viridis[FB]	*FragViri*	9	7	21

Leontodon hispidus^{MA}	*LeonHisp*	58	37	20
Festuca pratensis^{MA}	*FestPrat*	-	-	19
Chamaecytisus hirsutus	*ChamHirs*	-	-	18
Anacamptis pyramidalis^{FB}	*AnacPyra*	9	20	18
Holcus lanatus^{MA}	*HolcLana*	12	-	17
Viola hirta^{TG}	*ViolHirt*	38	7	17
Prunella laciniata^{FB}	*PrunLaci*	29	27	17
Geranium sanguineum^{TG}	*GeraSang*	9	33	16
Coronilla varia^{TG}	*CoroVari*	-	-	16
Trifolium campestre	*TrifCamp*	-	-	16
Cruciata glabra	*CrucGlab*	41	23	14
Hieracium pilosella^{CU}	*HierPilo*	47	17	14
Orchis morio^{FB}	*OrchMori*	31	13	13
Hippocrepis comosa^{FB}	*HippComo*	76	73	13
Erigeron acris^{FB}	*ErigAcri*	-	-	13
Crepis biennis^{MA}	*CrepBien*	-	-	13
Dianthus barbatus	*DianBarb*	-	-	12
Medicago sativa	*MediSati*	-	-	12
Primula vulgaris	*PrimVulg*	15	33	11
Ononis arvensis^{FB}	*OnonArve*	-	-	11
Prunella grandiflora^{FB}	*PrunGran*	60	43	10
Echium vulgare	*EchiVulg*	6	-	10
Ophrys holoserica^{FB}	*OphrHolo*	-	-	10
Campanula patula^{MA}	*CampPatu*	-	-	10
Festuca rubra^{MA}	*FestRubr*	12	-	9
Ranunculus acris^{MA}	*RanuAcri*	3	-	9
Salvia verticillata^{FB}	*SalvVert*	-	-	9
Vicia lathyroides	*ViciLath*	-	-	9
Genista sagittalis^{CU}	*GeniSagi*	-	-	9
Potentilla recta	*PoteRect*	27	7	8
Convolvulus arvensis	*ConvArve*	-	-	8
Ajuga reptans^{MA}	*AjugRept*	-	-	8
Veronica arvensis	*VeroArve*	-	-	7
Astragalus glycyphyllos^{TG}	*AstrGlyc*	-	-	7
Cerastium holosteoides^{MA}	*CeraHolo*	-	-	7
Veronica teucrium^{TG}	*VeroTeuc*	-	-	6
Ornithogalum pyrenaicum	*OrniPyre*	-	-	6
Danthonia decumbens^{CU}	*DantDecu*	26	-	6
Cruciata laevipes	*CrucLaev*	-	-	6
Rhinanthus alectorolophus^{MA}	*RhinAlec*	-	-	6

Lathyrus sylvestris[TG]	*LathSylv*	-	-	6
Cerinthe minor	*CeriMino*	-	-	5
Rhinanthus minor[MA]	*RhinMino*	8	10	5
Carex spicata[CU]	*CareSpic*	-	-	5
Petrorhagia saxifraga	*PetrSaxi*	-	-	5
Vicia tetrasperma	*ViciTetr*	-	-	5
Genista tinctoria[FB]	*GeniTinc*	3	7	5
Gymnadenia conopsea[FB]	*GymnCono*	53	40	5
Verbascum austriacum	*VerbAust*	-	-	5
Rhinanthus glacialis[ES]	*RhinGlac*	57	57	5
Origanum vulgare[TG]	*OrigVulg*	-	-	5
Veronica officinalis	*VeroOffi*	9	-	4
Thlaspi praecox [FB]	*ThlaPrae*	21	33	4
Cerastium brachypetalum	*CeraBrac*	2	-	4
Cerastium strictum	*CeraStri*	-	-	4
Solidago virgaurea	*SoliVirg*	-	-	4
Scabiosa columbaria[FB]	*ScabColu*	10	17	4
Inula salicina	*InulSali*	-	17	4
Trifolium repens[MA]	*TrifRepe*	-	-	3
Lathyrus tuberosus	*LathTube*	-	-	3
Hypochoeris maculata[FB]	*HypoMacu*	40	53	3
Colchicum autumnale[MA]	*ColcAutu*	-	-	3
Ophrys apifera[FB]	*OphrApif*	-	-	3
Taraxacum officinale[MA]	*TaraOffi*	-	-	3
Linum flavum[FB]	*LinuFlav*	-	-	3
Aster amellus[TG]	*AsteAmel*	3	-	3
Ononis spinosa[FB]	*OnonSpin*	3	-	3
Pulsatilla pratensis[FB]	*PulsPrat*	-	-	2
Cardaminopsis arenosa	*CardAren*	-	-	2
Ranunculus nemorosus	*RanuNemo*	36	33	2
Ornithogalum umbellatum	*OrniUmbe*	-	-	2
Cynosurus cristatus[MA]	*CynoCris*	-	-	2
Melilotus officinalis	*MeliOffi*	-	-	2
Orchis militaris[FB]	*OrchMili*	-	-	2
Hypochoeris radicata[FB]	*HypoRadi*	-	-	2
Stachys recta[TG]	*StacRect*	33	37	2
Ophrys insectifera[FB]	*OphrInse*	-	7	2
Myosotis arvensis	*MyosArve*	-	-	2
Vicia sepium[MA]	*ViciSepi*	-	-	2
Agrostis capillaris[CU]	*AgroCapi*	24	-	2

Fragaria vesca	*FragVesc*	-	-	2
Carex montana[FB]	*CareMont*	67	70	2
Globularia cordifolia[ES]	*GlobCord*	8	10	-
Festuca filiformis[FB]	*FestFili*	20	-	-
Aquilegia nigricans	*AquiNigr*	20	-	-
Linum tenuifolium	*LinuTenu*	2	-	-
Ajuga genevensis[FB]	*AjugGene*	3	-	-
Campanula glomerata[FB]	*CampGlom*	21	-	-
Inula hirta[TG]	*InulHirt*	22	-	-
Arnica montana[CU]	*ArniMont*	3	-	-
Listera ovata	*ListOvat*	3	-	-
Senecio jacobaea[FB]	*SeneJaco*	8	-	-
Traunsteinera globosa[MA]	*TrauGlob*	2	-	-
Scorzonera villosa[FB]	*ScorVill*	6	-	-
Chrysopogon gryllus[FB]	*ChryGryl*	3	-	-
Plantago argentea[FB]	*PlanArge*	5	-	-
Coronilla vaginalis	*CoroVagi*	8	-	-
Crocus vernus subsp. albiflorus	*CrocVern*	8	-	-
Molinia caerulea[MA]	*MoliCaer*	5	-	-
Platanthera bifolia[ES]	*PlatBifo*	-	10	-
Pulsatilla grandis[FB]	*PulsGran*	-	10	-
Astrantia major subsp. major	*AstraMajo*	6	-	-
Pulsatilla montana[ES]	*PulsMont*	8	-	-
Betonica alopecuros[ES]	*BetoAlop*	2	-	-
Foeniculum vulgare	*FoenVulg*	3	-	-
Molinia arundinacea[MA]	*MoliArun*	2	-	-
Lilium martagon	*LiliMart*	-	10	-
Thesium linophyllon[FB]	*ThesLino*	2	-	-
Cuscuta epithymum[FB]	*CuscEpit*	6	-	-
Trifolium rubens[TG]	*TrifRube*	8	-	-
Carex liparocarpos	*CareLipa*	6	-	-
Succisa pratensis[MA]	*SuccPrat*	7	-	-
Asperula cynanchica[FB]	*AspeCyna*	69	63	-
Tanacetum corymbosum[TG]	*TanaCory*	5	13	-
Carex ornithopodoides	*CareOrni*	5	27	-
Polygonatum odoratum[TG]	*PolyOdor*	8	13	-
Thalictrum minus[FB]	*ThalMinu*	10	13	-
Viola canina[CU]	*ViolCani*	13	13	-
Carex ornithopoda	*CareOrni*	2	7	-
Dianthus monspessulanus	*DianMons*	21	7	-

Linum viscosum^{FB}	*LinuVisc*	10	10	-
Tofieldia calyculata	*TofiCaly*	2	13	-
Antennaria dioica^{CU}	*AnteDioi*	13	17	-
Carex pulicaris	*CarePuli*	2	-	-
Gentianella germanica^{FB}	*GentGerm*	15	20	-
Nardus stricta^{CU}	*NardStri*	2	-	-
Teucrium montanum^{FB}	*TeucMont*	35	20	-
Centaurea triumfettii^{FB}	*CentTriu*	-	20	-
Gentiana verna^{ES}	*GentVern*	-	20	-
Laserpitium siler^{FB}	*LaseSile*	5	23	-
Orchis ustulata^{FB}	*OrchUstu*	28	23	-
Polygala chamaebuxus	*PolyCham*	43	23	-
Gentiana utriculosa^{ES}	*GentUtri*	5	20	-
Gentianella ciliata^{FB}	*GentCili*	2	20	-
Aster bellidiastrum^{ES}	*AsteBell*	-	10	-
Seseli annuum^{FB}	*SeseAnnu*	10	-	-
Calluna vulgaris^{CU}	*CallVulg*	12	-	-
Lilium carniolicum^{MA}	*LiliCarn*	-	7	-
Anthericum ramosum^{FB}	*AnthRamo*	43	57	-
Lilium bulbiferum	*LiliBulb*	9	-	-
Thalictrum simplex subsp. galioides^{MA}	*ThalSimp*	19	-	-
Carex pallescens^{CU}	*CarePall*	15	-	-
Erica herbacea^{CU}	*EricHerb*	20	7	-
Chamaecytisus supinus	*ChamSupi*	13	33	-
Alchemilla glaucescens^{CU}	*AlchGlau*	7	7	-
Euphrasia stricta	*EuphStri*	8	-	-
Potentilla tommasiniana^{FB}	*PoteTomm*	9	-	-
Galium boreale^{MA}	*GaliBore*	19	-	-
Genista germanica	*GeniGerm*	9	-	-