Supplementary materials to the paper

Spatial patterns of coastal dune plant diversity reveal conservation priority hotspots in and out a network of protected areas. *Global Ecology and Conservation*

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Table S1. List of the species found in the study area, assigned to the dune (D), synanthropic (S) and alien (A) groups.

Species name	Abbreviation	Species group
Achillea maritima	Ach_mar	D
Ambrosia psilostachya	Amb_psi	A
Anisantha rigida	Ani_rig	S
Anisantha rubens	Ani_rub	S
Anisantha sterilis	Ani_ste	S
Anisantha tectorum	Ani_tec	S
Anthemis maritima	Ant_mar	D
Arbutus unedo	Arb_une	D
Arenaria serpyllifolia	Are_ser	S
Arundo donax	Aru_don	A
Asparagus acutifolius	Asp_acu	D

Atriplex sp.	Atr_sp.	
Avena barbata	Ave_bar	S
Avena fatua	Ave_fat	A
Avena sterilis	Ave_ste	A
Blackstonia perfoliata	Bla_per	
Bolboschoenus maritimus	Bol_mar	S
Brachypodium distachyon	Bra_dis	D
Brachypodium sylvaticum	Bra_syl	S
Cakile maritima	Cak_mar	D
Calamagrostis arenaria subsp. arundinacea	Cal_aru	D
Campanula rapunculus	Cam_rap	
Carex flacca	Car_fla	
Carex sp.	Car_sp.	
Catapodium balearicum	Cat_bal	
Catapodium hemipoa	Cat_hem	D
Centaurea aplolepa subsp. subciliata	Cen_sub	D
Centaurea sphaerocephala	Cen_sph	D
Centaurium erythraea	Cen_ery	S
Centaurium maritimum	Cen_mar	
Cerastium diffusum subsp. diffusum	Cer_dif	
Cerastium glomeratum	Cer_glo	S
Cerastium sp.	Cer_sp.	
Chamaerops humilis	Cha_hum	
Chenopodium sp.	Che_sp.	S
Cichorium intybus	Cic_int	S
Cistus creticus subsp. eriocephalus	Cis_eri	D
Clematis flammula	Cle_fla	D

Clematis vitalba	Cle_vit	S
Clinopodium nepeta	Cli_nep	
Convolvulus soldanella	Con_sol	D
Convolvulus sp.	Con_sp.	S
Crepis foetida	Cre_foe	S
Crepis sp.	Cre_sp.	S
Crithmum maritimum	Cri_mar	D
Crucianella maritima	Cru_mar	D
Cuscuta sp.	Cus_sp.	
Cutandia maritima	Cut_mar	D
Cynanchica pyrenaica subsp. cynanchica	Cyn_cyn	D
Cynodon dactylon	Cyn_dac	S
Cyperus capitatus	Cyp_cap	D
Dactylis glomerata	Dac_glo	S
Daphne gnidium	Dap_gni	D
Daphne sericea	Dap_ser	D
Daucus pumilus	Dau_pum	D
Daucus sp.	Dau_sp.	S
Dittrichia viscosa	Dit_vis	S
Echinophora spinosa	Ech_spi	D
Elymus repens	Ely_rep	S
Equisetum ramosissimum	Equ_ram	S
Erica multiflora	Eri_mul	D
Erigeron canadensis	Eri_can	A
Erigeron sumatrensis	Eri_sum	A
Eryngium maritimum	Ery_mar	D
Euphorbia barrelieri	Eup_bar	D

Euphorbia paralias	Eup_par	D
Euphorbia peplis	Eup_pep	D
Euphorbia peplus	Eup_pep1	S
Festuca fasciculata	Fes_fas	D
Fumaria bicolor	Fum_bic	S
Galatella tripolium	Gal_tri	D
Galium murale	Gal_mur	S
Geranium purpureum	Ger_pur	S
Geranium pusillum	Ger_pus	S
Glaucium flavum	Gla_fla	D
Hedera helix	Hed_hel	
Hedypnois rhagadioloides	Hed_rha	S
Helichrysum stoechas	Hel_sto	D
Hypochaeris achyrophorus	Hyp_ach	
Hypochaeris glabra	Hyp_gla	
Hypochaeris radicata	Hyp_rad	D
Imperata cylindrica	Imp_cyl	
Jacobaea maritima	Jac_mar	D
Juncus acutus	Jun_acu	D
Juncus bufonius	Jun_buf	S
Juncus inflexus	Jun_inf	
Juncus tenageia	Jun_ten	
Juniperus macrocarpa	Jun_mac	D
Juniperus turbinata	Jun_tur	D
Lagurus ovatus	Lag_ova	D
Lamium purpureum	Lam_pur	S
Lamium sp.	Lam_sp.	

Limbarda crithmoides subsp. longifolia	Lim_lon	
Limonium multiforme	Lim_mul	
Linum corymbulosum	Lin_cor	
Linum sp.	Lin_sp.	
Linum strictum	Lin_str	
Linum tenuifolium	Lin_ten	
Lomelosia rutifolia	Lom_rut	D
Lonicera implexa	Lon_imp	D
Lotus cytisoides	Lot_cyt	D
Lotus hirsutus	Lot_hir	D
Lysimachia arvensis	Lys_arv	S
Marcus-kochia ramosissima	Mar_ram	D
Maresia nana	Mar_nan	D
Matthiola sinuata	Mat_sin	D
Medicago littoralis	Med_lit	D
Medicago lupulina	Med_lup	S
Medicago marina	Med_mar	D
Medicago minima	Med_min	
Medicago rigidula	Med_rig	S
Medicago sp.	Med_sp.	S
Mentha suaveolens subsp. suaveolens	Men_sua	
Myosotis arvensis	Myo_arv	S
Myrtus communis	Myr_com	D
Odontites luteus	Odo_lut	
Oenothera sp.	Oen_sp.	A
Onobrychis caput-galli	Ono_cap	
Ononis reclinata	Ono_rec	

Ononis variegata	Ono_var	D
Orobanche minor	Oro_min	S
Orobanche sp.	Oro_sp.	
Osyris alba	Osy_alb	
Pancratium maritimum	Pan_mar	D
Papaver rhoeas	Pap_rho	S
Parapholis incurva	Par_inc	D
Paspalum vaginatum	Pas_vag	A
Petrorhagia prolifera	Pet_pro	
Phalaris canariensis	Pha_can	A
Phillyrea angustifolia	Phi_ang	D
Phleum arenarium subsp. caesium	Phl_cae	D
Phragmites australis	Phr_aus	
Pinus pinaster	Pin_pina	D
Pinus pinea	Pin_pin	A
Pistacia lentiscus	Pis_len	D
Pittosporum tobira	Pit_tob	A
Plantago coronopus	Pla_cor	D
Poa bulbosa	Poa_bul	
Polycarpon sp.	Pol_sp.	S
Polygonum maritimum	Pol_mar	D
Polypogon subspathaceus	Pol_sub	D
Quercus ilex	Que_ile	D
Quercus suber	Que_sub	
Raphanus raphanistrum	Rap_rap	S
Raphanus sp.	Rap_sp.	S
Reichardia picroides	Rei_pic	S

Reseda alba	Res_alb	S
Rhamnus alaternus	Rha_ala	D
Rubia peregrina	Rub_per	D
Rubus ulmifolius	Rub_ulm	S
Ruscus aculeatus	Rus_acu	
Sabulina tenuifolia	Sab_ten	D
Salsola tragus	Sal_tra	D
Salvia rosmarinus	Sal_ros	D
Samolus valerandi	Sam_val	
Schoenus nigricans	Sch_nig	
Scirpoides holoschoenus	Sci_hol	
Seseli tortuosum	Ses_tor	D
Sherardia arvensis	She_arv	S
Silene canescens	Sil_can	D
Silene otites	Sil_oti	
Silene sp.	Sil_sp.	
Smilax aspera	Smi_asp	D
Solanum nigrum	Sol_nig	S
Solanum sp.	Sol_sp.	S
Solidago virgaurea subsp. litoralis	Sol_lit	D
Sonchus asper	Son_asp	S
Sonchus bulbosus	Son_bul	D
Sonchus oleraceus	Son_ole	S
Sonchus sp.	Son_sp.	S
Sporobolus pumilus	Spo_pum	A
Sporobolus virginicus	Spo_vir	D
Stachys arvensis	Sta_arv	S

Stachys major	Sta_maj	D
Stachys maritima	Sta_mar	D
Tamarix gallica	Tam_gal	
Tamarix sp.	Tam_sp.	
Teucrium capitatum	Teu_cap	
Teucrium flavum subsp. flavum	Teu_fla	
Thinopyrum junceum	Thi_jun	D
Trifolium campestre	Tri_cam	S
Trifolium dubium	Tri_dub	S
Trifolium sp.	Tri_sp.	S
Trifolium striatum	Tri_str	
Tripidium ravennae	Tri_rav	
Tuberaria guttata	Tub_gut	D
Urospermum dalechampii	Uro_dal	S
Verbascum sinuatum	Ver_sin	S
Vicia bithynica	Vic_bit	S
Vicia narbonensis	Vic_nar	
Xanthium orientale	Xan_ori	A
Yucca gloriosa	Yuc_glo	A

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Table S2. Results of beta regression analysis of LCBD with landscape variables, performed separately for the North (pseudo-R^2 = 0.29) and the South (pseudo-R^2 = 0.06) of the region.

		Estimate	Std. Error	z value	Pr(>|z|)
North					
	(Intercept)	-5.59	0.02	-368.28	< 0.01
	Sea distance	-0.01	0.01	-9.81	< 0.01
	Slope	-0.01	0.01	-2.71	< 0.01
	%ART	0.01	0.01	2.34	0.02
	%WTC	0.09	0.03	2.91	< 0.01
	Distance to ART	0.01	0.01	2.96	< 0.01
South					
	(Intercept)	-5.33	0.01	-485.08	< 0.01
	Slope	-0.01	0.01	-2.21	0.03
	Distance to ART	0.01	0.01	2.78	< 0.01

Fig. S1. Local Contributions to Beta Diversity for the plots in the study area, computed separately for the North and the South of the region, and colored according to the protection status. Only plots with a significant LCBD value ($p < 0.05$) are shown. Image source: Google Earth 2024.

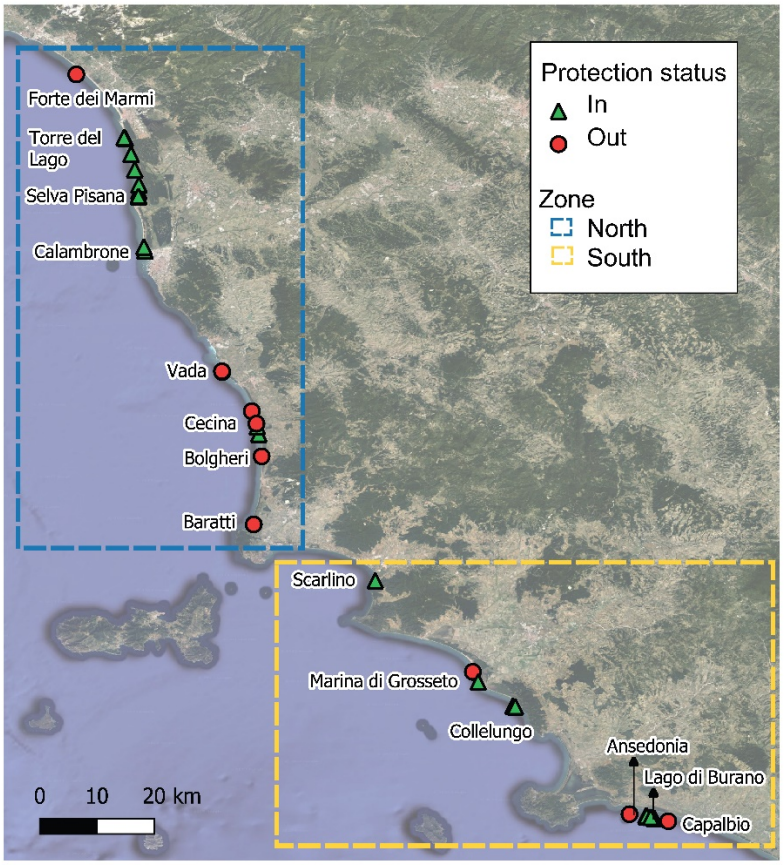

Fig. S2. Output of NMDS ordination, derived from Bray-Curtis similarity matrix based on log-transformed species abundances (stress = 0.18). Sites were colored according to the significance of their LCBD values. Site n. 472 was removed from the plot for graphical reasons.

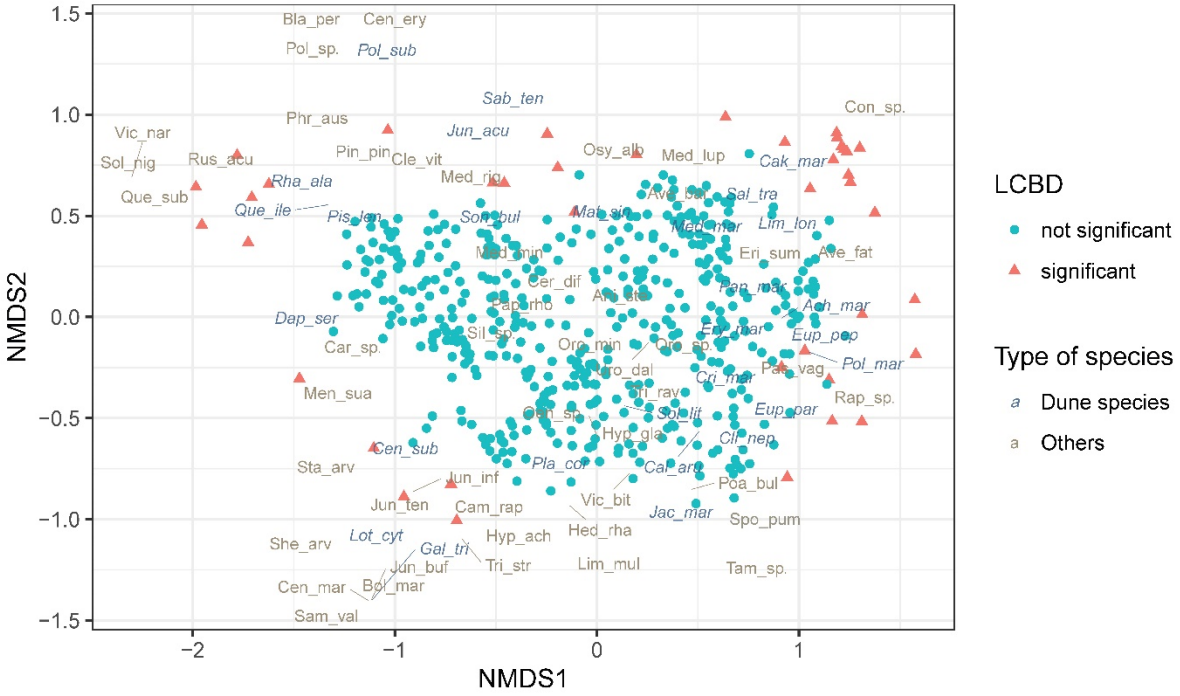

Fig. S3. Output of NMDS ordination, derived from Bray-Curtis similarity matrix based on log-transformed species abundances, for the plots with significant LCBD values computed separately for the Northern (a; stress = 0.09) and Southern (b; stress = 0.25) parts of the region. Plots are colored according to the protection status. Species names were abbreviated as reported in Table S1.