

Supplementary Materials

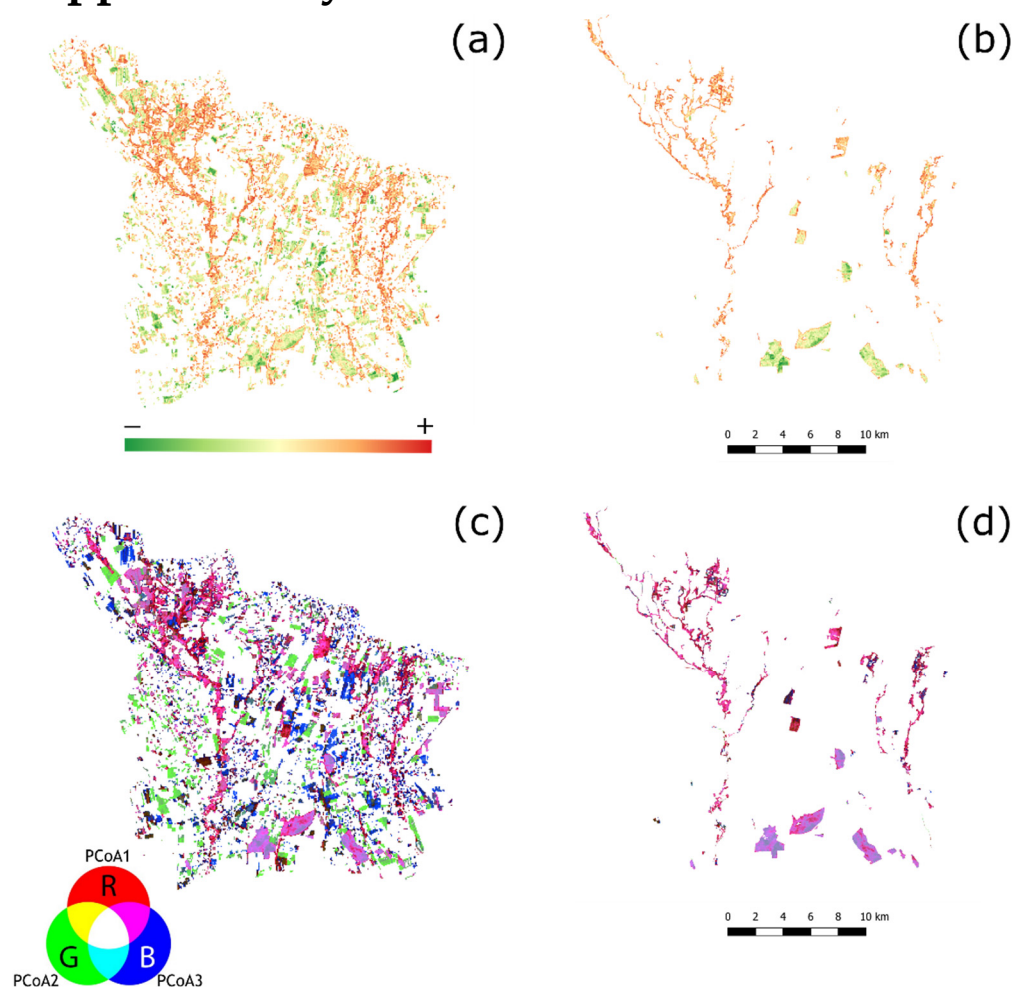


Figure S1. Spectral diversity maps obtained from the analysis of the satellite image of 03 June 2019. Spectral α diversity map, expressed as Shannon index, of the study area (a) and of the EN nodes (b). Spectral β diversity map, expressed as Bray-Curtis dissimilarity index, produced by the projection of the $n \times n$ dimensional space of the dissimilarity matrix into an $n \times 3$ dimensional space (PCoAs), of the study area (c) and of the EN nodes (d)

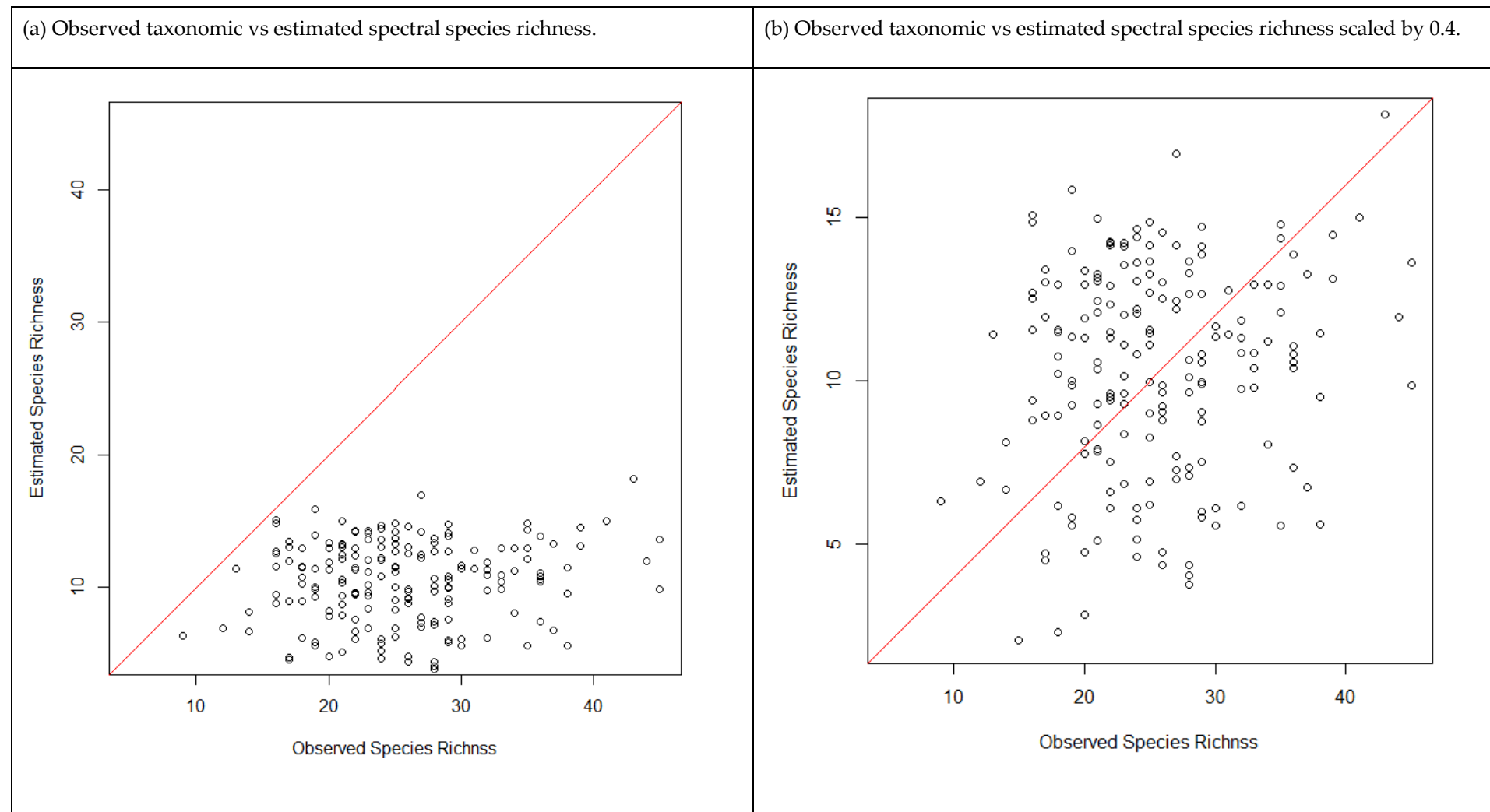


Figure S2. Relationship between observed taxonomic and estimated spectral species richness unscaled (a) and scaled by 0.4 (b), using the single image (3 June 2019). The red line represents the relationship of 1 to 1.

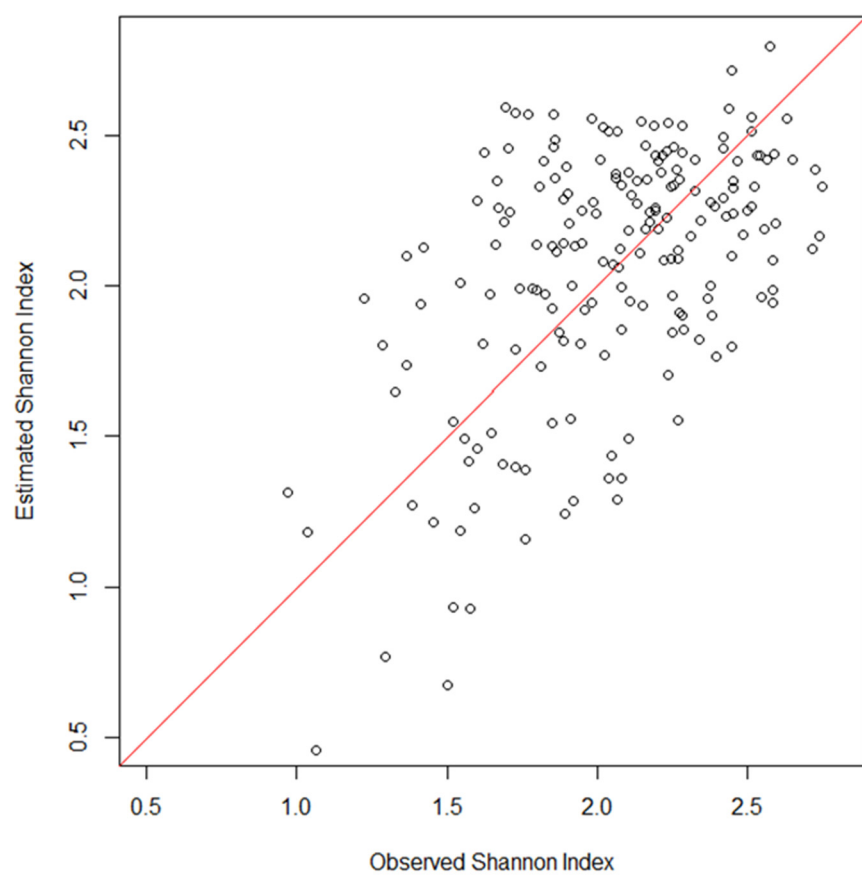


Figure S3. Relationship between observed taxonomic Shannon index (H') and estimated spectral Shannon index (H'), using the single image (3 June 2019). The red line represents the relationship of 1 to 1.

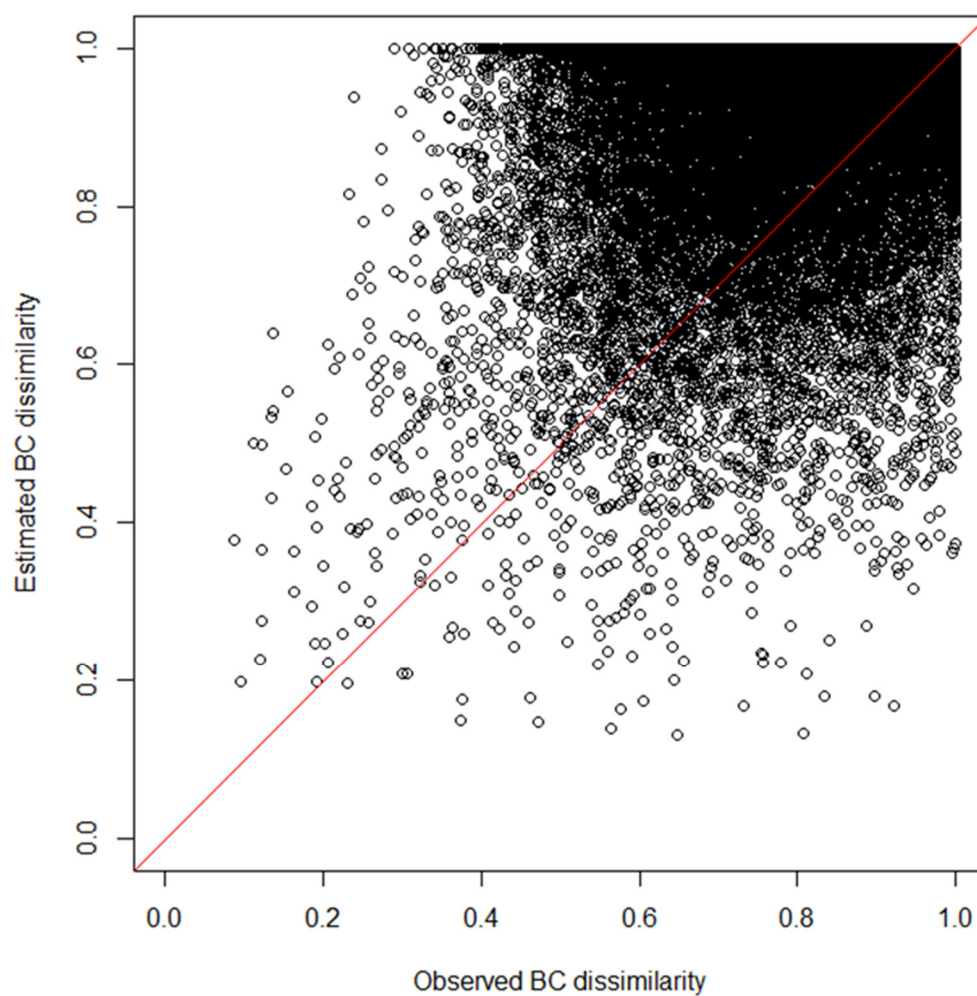


Figure S4. Relationship between observed taxonomic Bray-Curtis dissimilarity index (BC) and estimated spectral Bray-Curtis dissimilarity index (BC), using the single image (3 June 2019). The red line represents the relationship of 1 to 1.

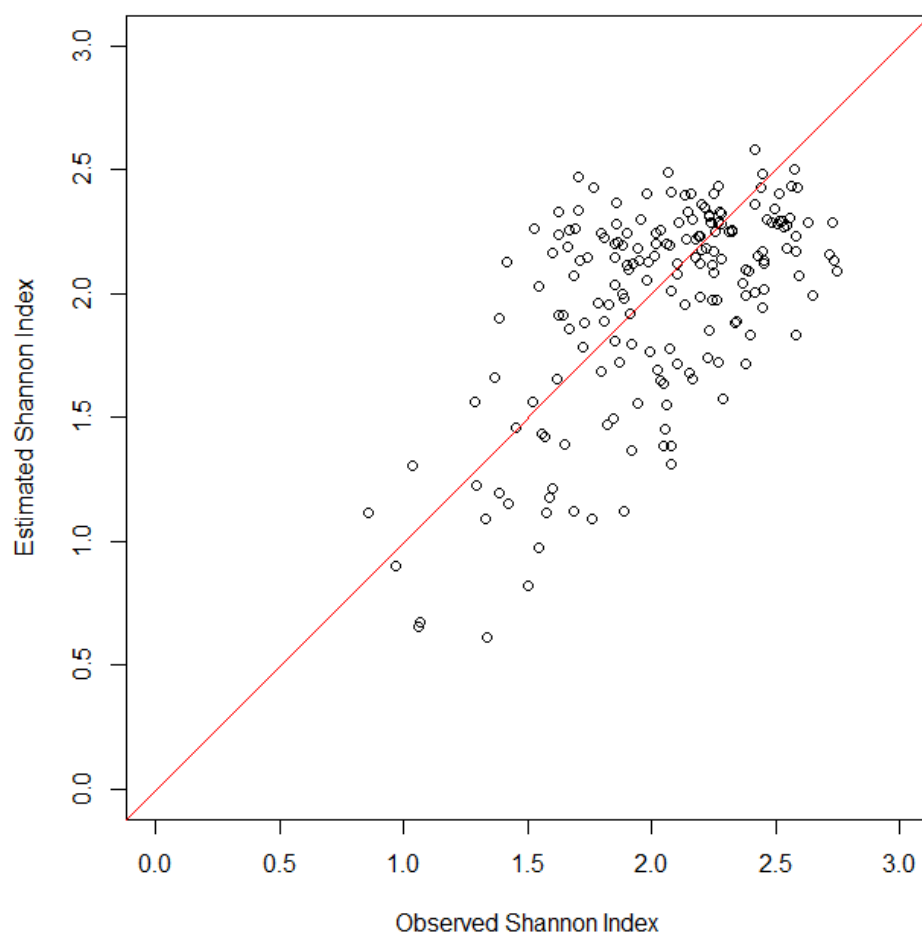


Figure S5. Relationship between observed taxonomic Shannon index (H') and estimated spectral Shannon index (H'). The red line represents the relationship of 1 to 1.

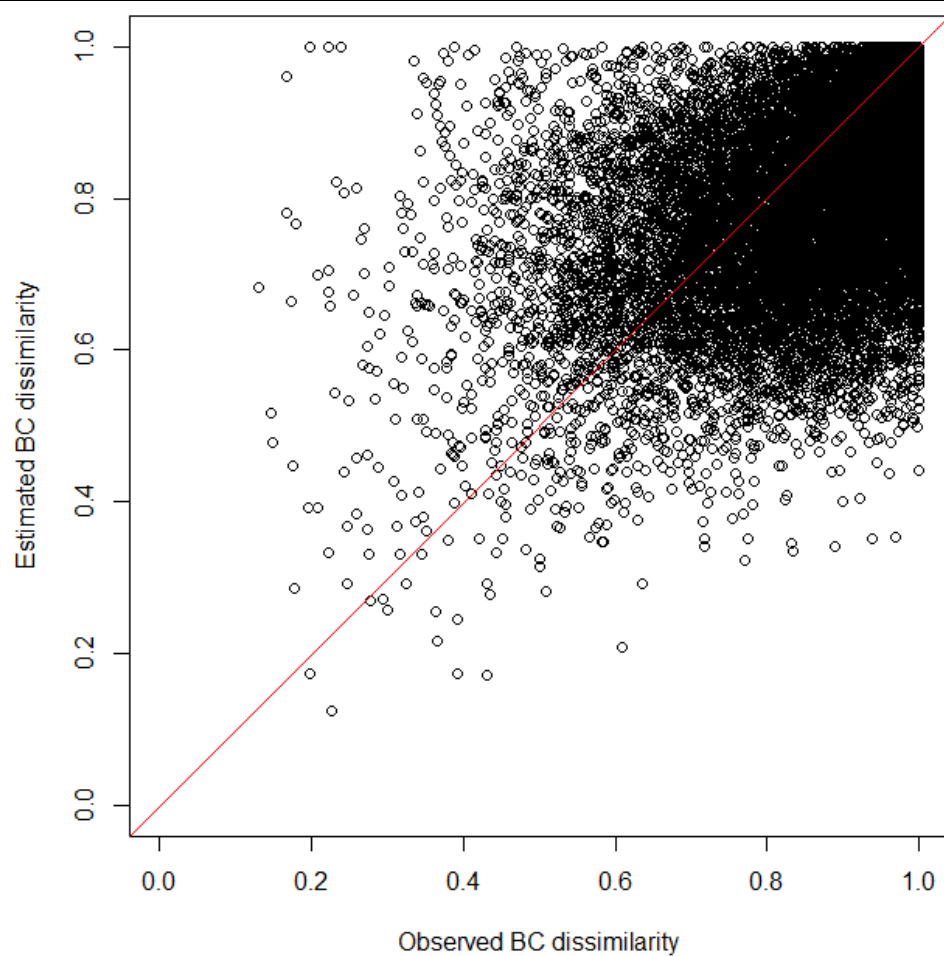
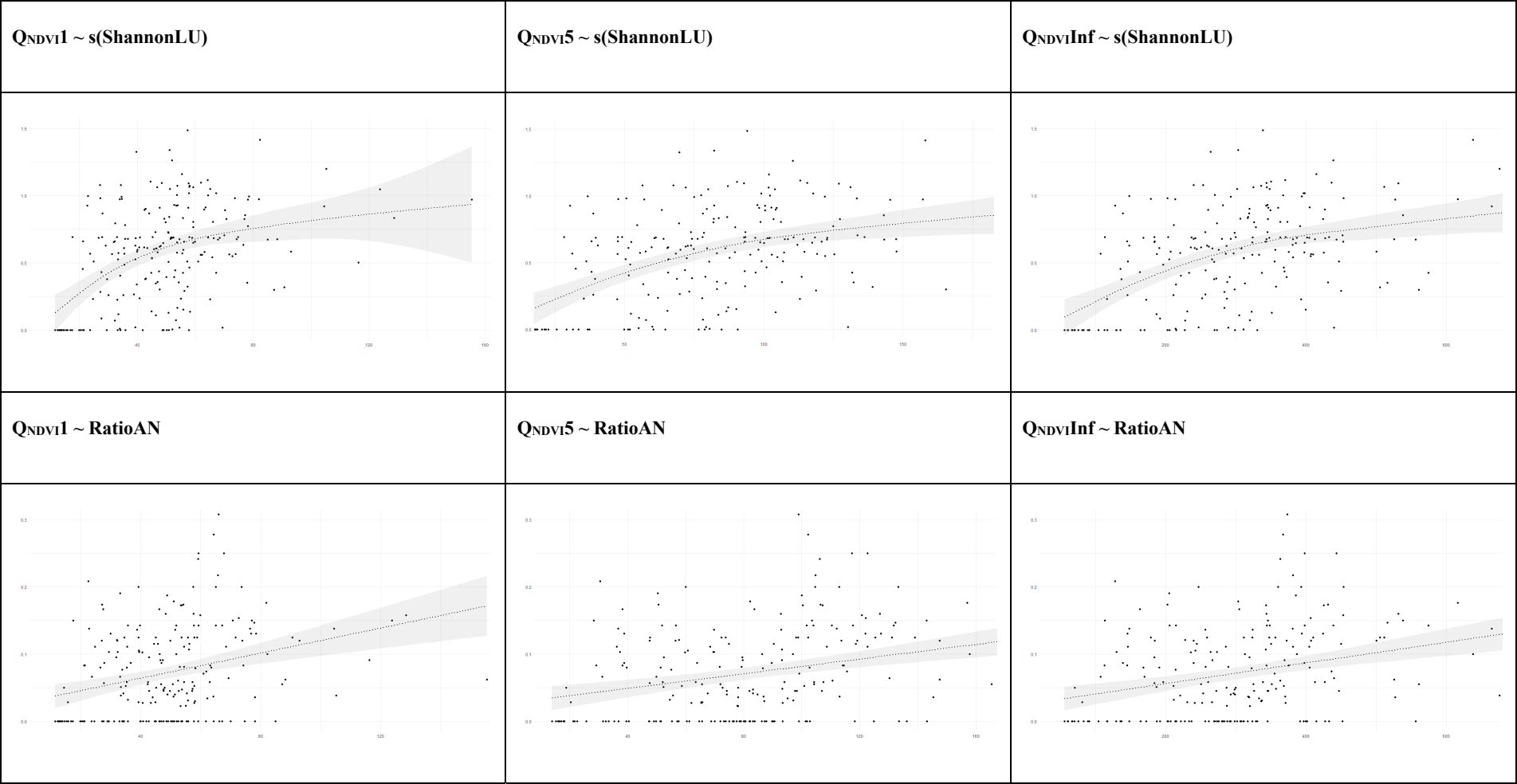


Figure S6. Relationship between observed taxonomic Bray-Curtis dissimilarity index (BC) and estimated spectral Bray-Curtis dissimilarity index (BC). The red line represents the relationship of 1 to 1.



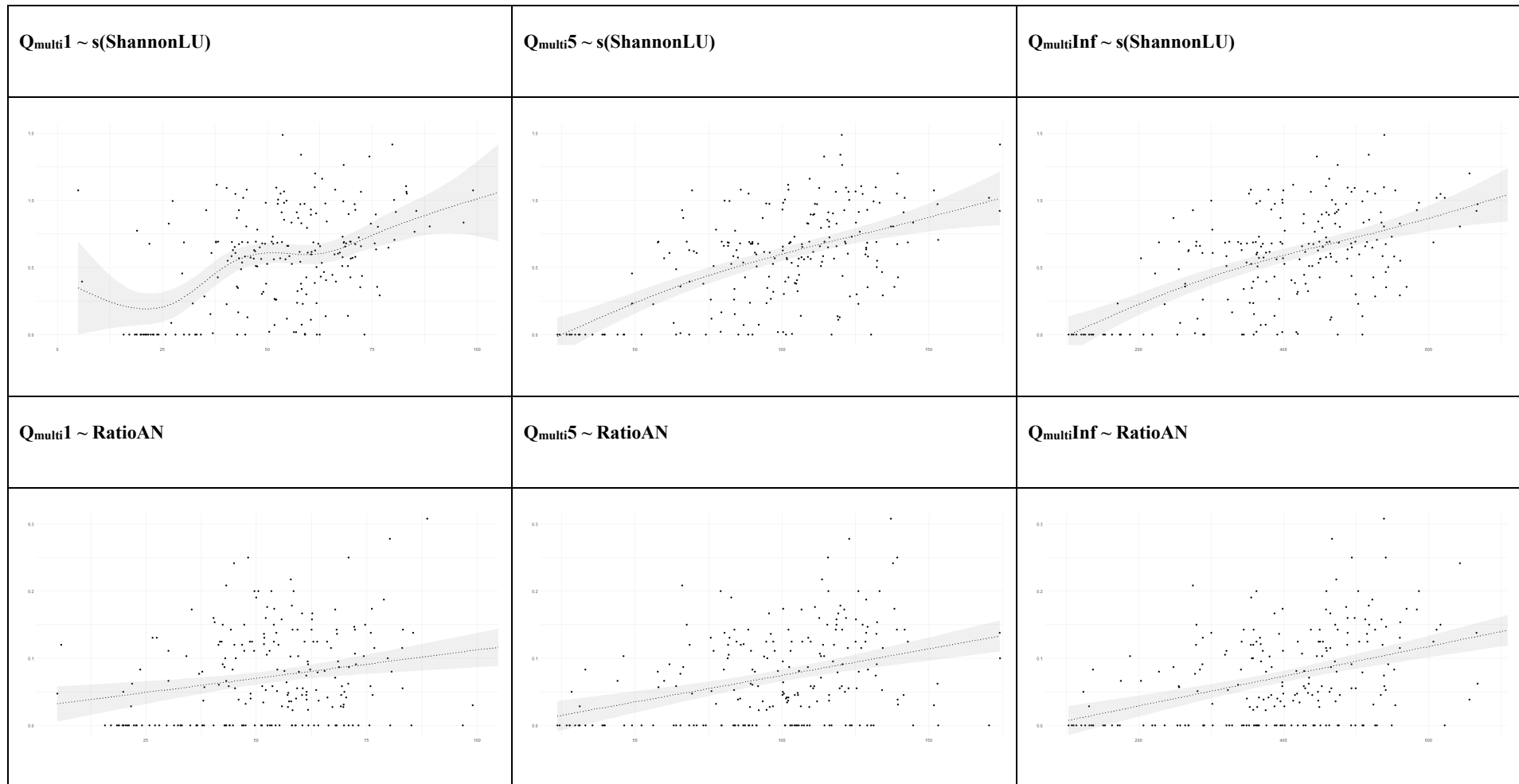


Figure S7. Relationships between spectral heterogeneity (Q), land use diversity (ShannonLU; smooth term), and alien to native species richness ratio (RatioAN; linear term), resulting from the six GAMs. Rao's Q values derived from the NDVI time series (Q_{NDVI}) and the multispectral single image (Q_{multi}) and the weight for the distance matrix was set to 1, 5 and infinite.

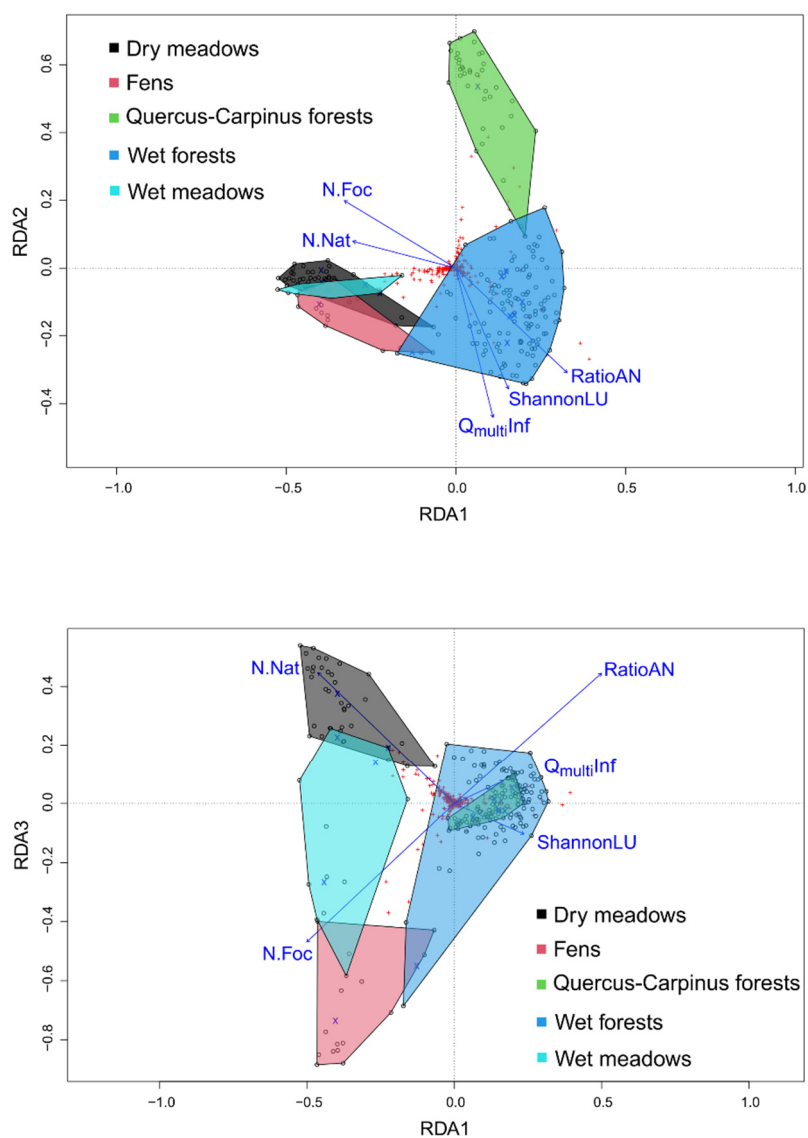


Figure S8. tb-RDA ordination based on Hellinger pre-transformed species composition matrix, with site grouped per habitat and displaying the following variables: focal species richness (N.Foc), native species richness (N.Nat), Rao's Q index, calculated from the 10 bands of the Sentinel 2 image of 03 June 2019 with the weight for the distance matrix set to infinite ($Q_{multiInf}$), and ratio of alien to native species richness (RatioAN), Shannon index on land use diversity (ShannonLU).

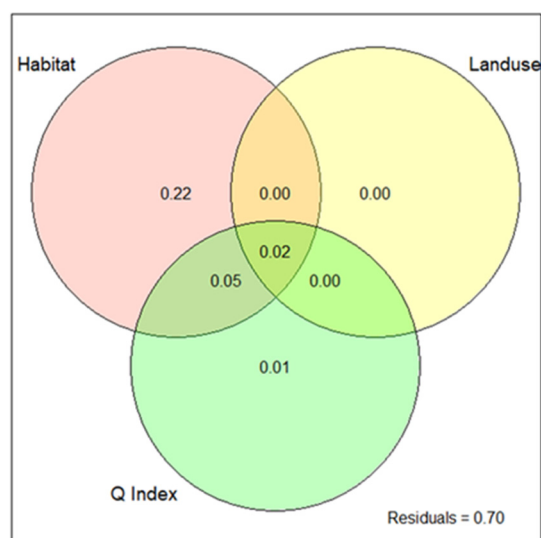


Figure S9. Partition of the variation of the community matrix according to the three explanatory variable groups, namely habitat, land use heterogeneity, and spectral heterogeneity (Rao's Q index).

Table S1. Habitat of the area according to EUNIS habitat classification along with descriptive statistics of the study area (i.e., total area, mean area \pm standard deviation, number of patches, number of plots and average total, native and alien richness).

EUNIS Habitat	Total area (ha)	Mean area \pm SD (ha)	N. Patches	N. Plots	Average richness (\pm SD)	Average native richness (\pm SD)	Average alien richness (\pm SD)
C3.21 - <i>Phragmites australis</i> beds	3.7	3.7	1	1	21.0	20.0	1.0
D4.11 - <i>Schoenus nigricans</i> fens	77.5	2.8 \pm 2.0	28	12	15.1 \pm 5.7	15.0 \pm 5.5	0.1 \pm 0.3
D5.24 - Fen <i>Cladium mariscus</i> beds	9.9	5.0 \pm 5.6	2	3	14.3 \pm 4.2	14.3 \pm 4.2	0.0 \pm 0.0
E1.55 - Eastern sub-Mediterranean dry grassland	33.6	11.2 \pm 12.9	3	4	34.8 \pm 7.3	34.8 \pm 7.3	0.0 \pm 0.0
E2.2 - Low and medium altitude hay meadows	149.2	3.7 \pm 3.6	40	30	32.0 \pm 7.7	29.7 \pm 8.1	2.3 \pm 1.5
E3.4 - Moist or wet eutrophic and mesotrophic grassland	8.5	4.3 \pm 0.2	2	3	17.0 \pm 13.2	17.0 \pm 13.2	0.0 \pm 0.0
E3.51 - <i>Molinia caerulea</i> meadows and related communities	50.4	3.7 \pm 5.6	19	8	33.9 \pm 7.4	33.5 \pm 7.0	0.4 \pm 0.5
F3.23 - Tyrrhenian sub-Mediterranean deciduous thickets	186.2	3.6 \pm 3.4	46	30	22.4 \pm 5.0	19.9 \pm 5.2	2.5 \pm 1.3
F9.2 - <i>Salix</i> carr and fen scrub	46.6	5.2 \pm 4.9	9	12	25.0 \pm 5.2	23.0 \pm 4.9	2.0 \pm 1.3
G1.A1A - Illyrian <i>Quercus</i> - <i>Carpinus betulus</i> forests	603.4	31.8 \pm 56.2	19	36	23.2 \pm 5.6	22.9 \pm 5.7	0.3 \pm 0.7
G1.11 - Riverine <i>Salix</i> woodland	199.2	6.0 \pm 7.9	34	40	23.4 \pm 6.9	20.7 \pm 6.3	2.7 \pm 1.3
G1.223 - Southeast European <i>Fraxinus</i> - <i>Quercus</i> - <i>Alnus</i> forests	112.5	5.6 \pm 4.7	20	9	26.1 \pm 4.6	23.0 \pm 4.9	3.1 \pm 2.5
G1.224 - Po <i>Quercus</i> - <i>Fraxinus</i> - <i>Alnus</i> forests	1.9	1.9	1	1	18.0	15.0	3.0
G1.41 - <i>Alnus</i> swamp woods not on acid peat	416.4	11.0 \pm 15.2	38	30	22.6 \pm 5.7	20.7 \pm 5.7	1.9 \pm 1.5