Supplementary Material S3: Statistical analysis of alpha-diversity indexes

Statistical analyses were performed with the R packages: *stats* v4.2.1 [1] and *car* v3.1.1 [2]. The plots of the box-plots were made with the *ggplot2* v3.4.0 [3] package.

The Shannon (H), Dominance (D) and Equitability (J) alpha-diversity indices of the replicates of the APB, SRB, GANB, and ENV samples (Table 1) follow a normal distribution (Shapiro-Wilk) with the exception of the Dominance indices of the APB sample (Table 2). However, since it was very close to alpha ($\alpha = 0.05$), it was decided to analyze the possible differences in the indices using the ANOVA test. Additionally, the indexes of Table 1 are graphically presented in box-plots (Figures 1, 2 and 3).

Table 1: Values of the Shannon (H), Dominance (D) and Equitability (J) diversity indices of the replicates of the APB, SRB, GANB and ENV samples

Sample	Dominance (D)	Shannon (H)	Equitability (J)
APB-1-1	0.49	1.018	0.3292
APB-1-2	0.289	1.366	0.4639
APB-1-3	0.2599	1.606	0.482
APB-2.75-1	0.5395	0.7257	0.2511
APB-2.75-2	0.5047	0.7652	0.2272
APB-2.75-3	0.4873	0.7996	0.2516
SRB-1-1	0.2621	1.79	0.4338
SRB-1-2	0.3322	1.563	0.3759
SRB-1-3	0.4627	1.353	0.3332
SRB-2.75-1	0.355	1.307	0.3966
SRB-2.75-2	0.214	1.887	0.4731
SRB-2.75-3	0.1986	1.868	0.4582
GANB-1-1	0.3473	1.158	0.3934
GANB-1-2	0.3363	1.186	0.3958
GANB-1-3	0.6799	0.6152	0.2272
GANB-2.75-1	0.4717	0.8405	0.2908
GANB-2.75-2	0.462	0.8804	0.2939
GANB-2.75-3	0.3622	1.066	0.3399
ENV-1-1	0.1644	2.384	0.5248
ENV-1-2	0.162	2.34	0.505
ENV-1-3	0.1741	2.279	0.4887
ENV-2.75-1	0.1156	2.57	0.5522
ENV-2.75-2	0.1862	2.144	0.4687
ENV-2.75-3	0.1969	2.127	0.4788

Table 2: Normality test of alpha diversity indices by type of sample

Sample Type	Shannon (H) *p-value*	Dominance (D) *p-value*	Equitability (J) *p-value*
APB	0.1984	0.04769	0.1101
SRB	0.209	0.6428	0.8228
GANB	0.5532	0.1077	0.5334
ENV	0.6644	0.3796	0.7506

All the ANOVA tests suggested that there are statistically significant differences between the types of samples (Table 3), as well as the Levene tests indicated that these data groups have similar variances.

Table 3: ANOVA and Levene test of alpha-diversity indices by type of sample

	ANOVA ***p-value***	**Levene** ***p-value***
Shannon (H)	4.70E-08	0.3265
Dominance (D)	4.34E-04	0.2958
Equitability (J)	1.10E-03	0.07618

The *post-hoc* Tukey test was performed to observe these significant differences by pairs (Table 4). Shannon indexes of the ENV samples against the other types of samples are significantly different (ENV-APB: $p = 0.0000003$, ENV-SRB: $p = 0.0011662$ and ENV-GANB: $p = 0.0000001$). Additionally, there were also significant differences between ENV and the APB and GANB samples for the Dominance (ENV-APB: $p = 0.0014067$ and ENV-GANB: $p = 0.0007951$) and Equitability (ENV-APB: $p = 0.0032440$ and ENV-GANB: $p = 0.0018114$) indexes.

Table 4: Tukey Test

Pairs	**Shannon (H)** ***p-adj***		**Dominance (D)** ***p-adj***		**Equitability (J)** ***p-adj***	
ENV-APB	0.0000003	(*)	0.0014067	(*)	0.0032440	(*)
GANB-APB	0.9340887		0.9943321		0.9939472	
SRB-APB	0.0051133	(*)	0.1886823		0.2758206	
GANB-ENV	0.0000001	(*)	0.0007951	(*)	0.0018114	(*)
SRB-ENV	0.0011662	(*)	0.1271232		0.1610804	
SRB-GANB	0.0013365	(*)	0.1211039		0.1819608	

(*) There is significant difference

The same data were aggregated and are present below using Box-Plot graphics.

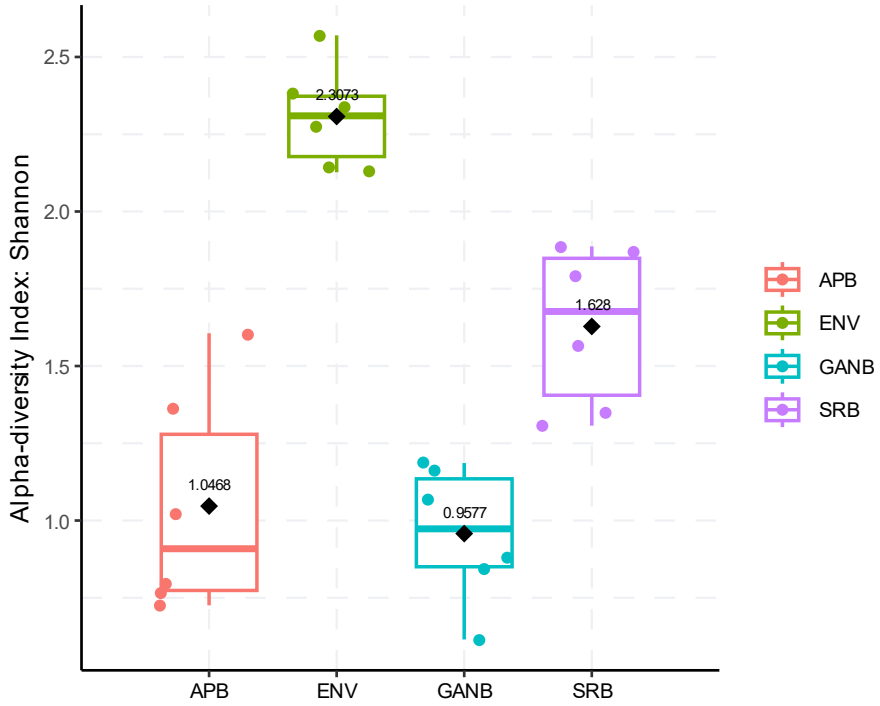

Figure 1: Box plot of the Shannon indices for the APB, SRB, GANB, and ENV samples

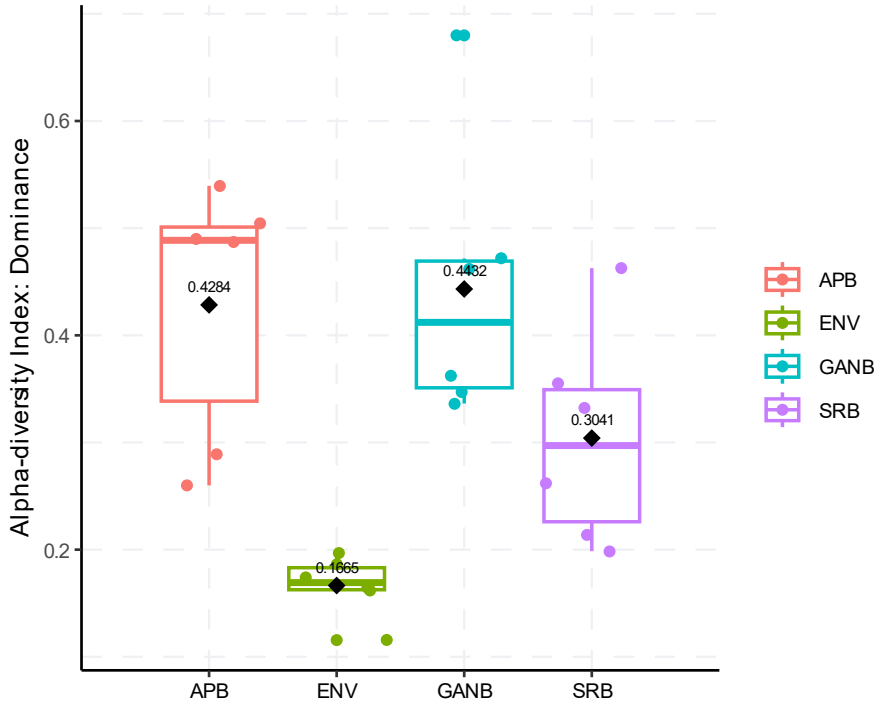

Figure 2: Box plot of the Dominance indices for the APB, SRB, GANB, and ENV samples

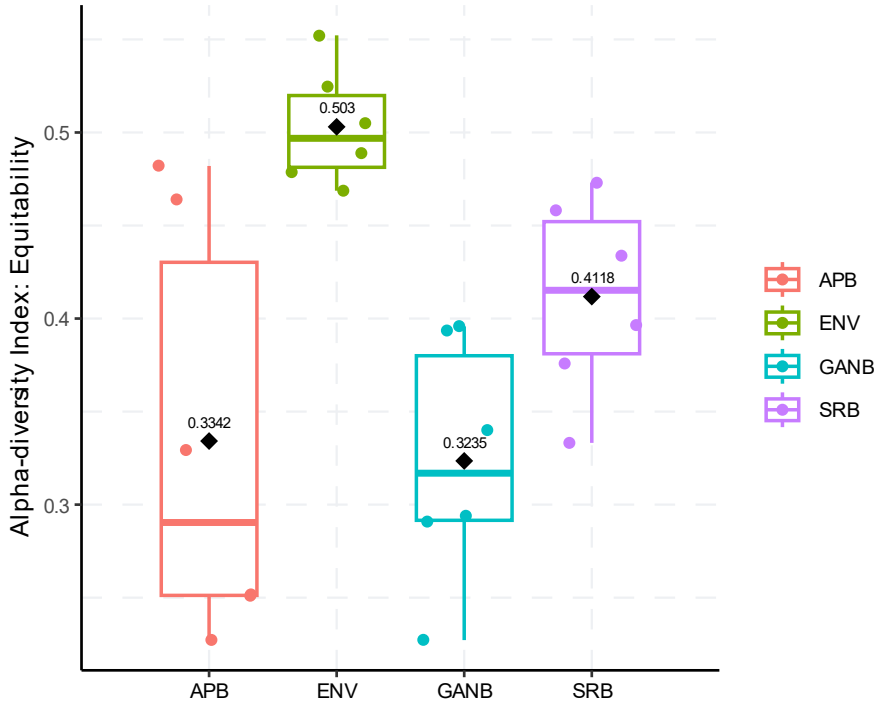

Figure 3: Box plot of the Equitability indices for the APB, SRB, GANB, and ENV samples

References

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3. Wickham, H. Ggplot2. *Wiley Interdiscip. Rev. Comput. Stat.* **2011**, *3*, 180–185, doi:10.1002/wics.147.