

Ferraz Sampaio et al., 2023. Temporal stability in beta diversity does not guarantee surrogacy or compositional stability in phytoplankton metacommunity.

Limnetica, 42-1: 127-141

SUPPLEMNTARY INFORMATION

Table S1. Comparison of taxa sampled after filtering c. 200 L of water in a net of 20 µm mesh size, and taxa sampled in 1 L of sub-surface water using a dark plastic bottle (see methods for sampling details). P1 to P16 are sampling sites 1 to 16 (see Fig 1 in the main text). *Comparação dos taxa amostrados após a filtragem de aprox. 200 L de água em rede de malha 20 µm, com os taxa amostrados em 1 L de água não filtrada sub-superficial em potes plásticos pretos (veja métodos para detalhes). Locais de amostragem P1 a P16 se referem aos locais 1 a 16 (veja a Fig 1 no texto principal).*

A) Taxa and abundances sampled using the net. Abundâncias e taxa usando a rede

A) Cont.1

A) Cont.2

A) Cont.2

	<i>Phacus_sp.</i>	<i>Mougeotia_sp.</i>	<i>Spirogyra_sp.</i>
P1	0	405	0
P2	0	0	0
P3	0	0	0
P4	0	0	34
P5	0	0	0
P6	0	0	0
P7	0	0	0
P8	0	0	0
P9	29	59	2149
P10	0	0	0
P11	0	0	0
P12	0	0	0
P13	48	0	0
P14	0	0	0
P15	0	0	0
P16	0	0	0

B) Taxa and abundances sampled using the dark plastic bottle. Abundâncias e taxa usando potes plásticos pretos

B) Cont.1

Detailed TBI results, see methods for description

Table S2. TBI results (see details in methods) comparing site dissimilarities in phytoplankton community of the Guaraguaçu River between Summer of 2017 and Winter of 2017. Significant changes after Bonferroni correction ($P < 0.01$) are highlighted in bold. *Resultados da análise TBI (veja detalhes em métodos) comparando a dissimilaridade da comunidade fitoplancônica dos locais do Rio Guaraguaçu entre o verão de 2017 e o inverno de 2017. Mudanças significativas após correção de Bonferroni ($P < 0.01$) são mostradas em negrito.*

Sites	Loss	Gain	Bray-Curtis dissimilarity	Net change	P
Site.1	0.16	0.45	0.61	+	0.83
Site.2	0.28	0.11	0.39	-	0.98
Site.3	0.47	0.14	0.61	-	0.82
Site.4	0.41	0.14	0.55	-	0.94
Site.5	0.25	0.16	0.41	-	0.98
Site.6	0.52	0.27	0.78	-	0.48
Site.7	0.52	0.48	1.00	-	0.18
Site.8	0.45	0.43	0.88	-	0.45
Site.9	0.34	0.53	0.87	+	0.43
Site.10	0.33	0.55	0.88	+	0.42
Site.11	0.51	0.49	1.00	-	0.20
Site.12	0.51	0.49	1.00	-	0.19
Site.13	0.36	0.52	0.88	+	0.49
Site.14	0.54	0.46	1.00	-	0.14
Site.15	0.58	0.42	1.00	-	0.19
Site.16	0.34	0.46	0.81	+	0.62

Table S3. TBI results (see details in methods) comparing site dissimilarities in phytoplankton community of the Guaraguaçu River between Summer of 2017 and Summer of 2018. Significant changes after Bonferroni correction ($P < 0.01$) are highlighted in bold. *Resultados da análise TBI (veja detalhes em métodos) comparando a dissimilaridade da comunidade fitoplancônica dos locais do Rio Guaraguaçu entre o verão de 2017 e o verão de 2018. Mudanças significativas após correção de Bonferroni ($P < 0.01$) são mostradas em negrito.*

Sites	Loss	Gain	Bray-Curtis dissimilarity	Net change	P
Site.1	0.33	0.48	0.81	+	0.41
Site.2	0.15	0.27	0.42	+	0.95
Site.3	0.40	0.26	0.66	-	0.71
Site.4	0.36	0.28	0.63	-	0.68
Site.5	0.19	0.18	0.37	-	0.98
Site.6	0.27	0.23	0.50	-	0.90
Site.7	0.30	0.24	0.54	-	0.86
Site.8	0.45	0.43	0.88	-	0.31
Site.9	0.34	0.53	0.87	+	0.24
Site.10	0.30	0.59	0.89	+	0.27
Site.11	0.16	0.30	0.46	+	0.93
Site.12	0.51	0.49	1.00	-	0.08
Site.13	0.36	0.52	0.88	+	0.22
Site.14	0.54	0.46	1.00	-	0.09
Site.15	0.58	0.42	1.00	-	0.13
Site.16	0.34	0.46	0.81	+	0.45

Table S4. TBI results (see details in methods) comparing site dissimilarities in phytoplankton community of the Guaraguaçu River between Summer of 2017 and Winter of 2018. Significant changes after Bonferroni correction ($P < 0.01$) are highlighted in bold. *Resultados da análise TBI (veja detalhes em métodos) comparando a dissimilaridade da comunidade fitoplancônica dos locais do Rio Guaraguaçu entre o verão de 2017 e o inverno de 2018. Mudanças significativas após correção de Bonferroni ($P < 0.01$) são mostradas em negrito.*

Sites	Loss	Gain	Bray-Curtis dissimilarity	Net change	P
Site.1	0.45	0.46	0.91	+	0.32
Site.2	0.30	0.06	0.36	-	0.99
Site.3	0.47	0.16	0.62	-	0.78
Site.4	0.54	0.14	0.68	-	0.67
Site.5	0.26	0.21	0.47	-	0.97
Site.6	0.35	0.28	0.63	-	0.79
Site.7	0.15	0.30	0.44	+	0.98
Site.8	0.56	0.44	1.00	-	0.12
Site.9	0.26	0.44	0.70	+	0.59
Site.10	0.16	0.50	0.66	+	0.78
Site.11	0.25	0.56	0.81	+	0.43
Site.12	0.47	0.53	1.00	+	0.20
Site.13	0.52	0.45	0.98	-	0.18
Site.14	0.58	0.42	1.00	-	0.24
Site.15	0.47	0.53	1.00	+	0.29
Site.16	0.41	0.36	0.77	-	0.50

Table S5. TBI results (see details in methods) comparing site dissimilarities in phytoplankton community of the Guaraguaçu River between Summer of 2017 and Summer of 2019. Significant changes after Bonferroni correction ($P < 0.01$) are highlighted in bold. *Resultados da análise TBI (veja detalhes em métodos) comparando a dissimilaridade da comunidade fitoplancônica dos locais do Rio Guaraguaçu entre o verão de 2017 e o verão de 2019. Mudanças significativas após correção de Bonferroni ($P < 0.01$) são mostradas em negrito.*

Sites	Loss	Gain	Bray-Curtis dissimilarity	Net change	P
Site.1	0.52	0.39	0.91	-	0.43
Site.2	0.57	0.38	0.95	-	0.41
Site.3	0.45	0.35	0.80	-	0.66
Site.4	0.49	0.31	0.80	-	0.63
Site.5	0.56	0.44	1.00	-	0.36
Site.6	0.75	0.23	0.97	-	0.32
Site.7	0.38	0.39	0.76	+	0.77
Site.8	0.38	0.27	0.65	-	0.82
Site.9	0.44	0.56	1.00	+	0.26
Site.10	0.16	0.20	0.36	+	1.00
Site.11	0.41	0.48	0.89	+	0.57
Site.12	0.38	0.54	0.92	+	0.55
Site.13	0.39	0.33	0.72	-	0.81
Site.14	0.33	0.46	0.79	+	0.72
Site.15	0.46	0.54	1.00	+	0.29
Site.16	0.49	0.51	1.00	+	0.31

Table S6. TBI results (see details in methods) comparing site dissimilarities in phytoplankton community of the Guaraguaçu River between Summer of 2017 and Winter of 2019. Significant changes after Bonferroni correction ($P < 0.01$) are highlighted in bold. *Resultados da análise TBI (veja detalhes em métodos) comparando a dissimilaridade da comunidade fitoplancônica dos locais do Rio Guaraguaçu entre o verão de 2017 e o inverno de 2019. Mudanças significativas após correção de Bonferroni ($P < 0.01$) são mostradas em negrito.*

Sites	Loss	Gain	Bray-Curtis dissimilarity	Net change	P
Site.1	0.53	0.47	1.00	-	0.23
Site.2	0.28	0.10	0.38	-	0.99
Site.3	0.41	0.14	0.55	-	0.94
Site.4	0.40	0.32	0.72	-	0.70
Site.5	0.31	0.06	0.37	-	1.00
Site.6	0.41	0.30	0.71	-	0.76
Site.7	0.26	0.50	0.76	+	0.66
Site.8	0.45	0.43	0.88	-	0.55
Site.9	0.41	0.59	1.00	+	0.26
Site.10	0.43	0.57	1.00	+	0.28
Site.11	0.42	0.52	0.95	+	0.36
Site.12	0.48	0.52	1.00	+	0.24
Site.13	0.55	0.45	1.00	-	0.26
Site.14	0.55	0.45	1.00	-	0.33
Site.15	0.53	0.41	0.94	-	0.37
Site.16	0.37	0.42	0.79	+	0.74

Table S7. TBI results (see details in methods) comparing site dissimilarities in phytoplankton community of the Guaraguaçu River between Winter of 2017 and Summer of 2018. Significant changes after Bonferroni correction ($P < 0.01$) are highlighted in bold. *Resultados da análise TBI (veja detalhes em métodos) comparando a dissimilaridade da comunidade fitoplancônica dos locais do Rio Guaraguaçu entre o inverno de 2017 e o verão de 2018. Mudanças significativas após correção de Bonferroni ($P < 0.01$) são mostradas em negrito.*

Sites	Loss	Gain	Bray-Curtis dissimilarity	Net change	P
Site.1	0.47	0.32	0.80	-	0.06
Site.2	0.09	0.37	0.45	+	0.41
Site.3	0.10	0.30	0.39	+	0.57
Site.4	0.13	0.32	0.46	+	0.37
Site.5	0.13	0.22	0.35	+	0.53
Site.6	0.27	0.49	0.76	+	0.12
Site.7	0.51	0.49	1.00	-	0.01
Site.8	0.00	0.00	0.00	0.00	1.00
Site.9	0.00	0.00	0.00	0.00	1.00
Site.10	0.16	0.23	0.39	+	0.42
Site.11	0.43	0.57	1.00	+	0.03
Site.12	0.00	0.00	0.00	0.00	1.00
Site.13	0.00	0.00	0.00	0.00	1.00
Site.14	0.00	0.00	0.00	0.00	1.00
Site.15	0.00	0.00	0.00	0.00	1.00
Site.16	0.00	0.00	0.00	0.00	1.00

Table S8. TBI results (see details in methods) comparing site dissimilarities in phytoplankton community of the Guaraguaçu River between Winter of 2017 and Winter of 2018. Significant changes after Bonferroni correction ($P < 0.01$) are highlighted in bold. *Resultados da análise TBI (veja detalhes em métodos) comparando a dissimilaridade da comunidade fitoplanctônica dos locais do Rio Guaraguaçu entre o inverno de 2017 e o inverno de 2018. Mudanças significativas após correção de Bonferroni ($P < 0.01$) são mostradas em negrito.*

Sites	Loss	Gain	Bray-Curtis dissimilarity	Net change	P
Site.1	0.49	0.21	0.70	-	0.55
Site.2	0.07	0.00	0.08	-	1.00
Site.3	0.05	0.07	0.12	+	1.00
Site.4	0.17	0.02	0.18	-	1.00
Site.5	0.15	0.19	0.35	+	0.97
Site.6	0.27	0.46	0.73	+	0.50
Site.7	0.41	0.59	1.00	+	0.20
Site.8	0.50	0.40	0.89	-	0.34
Site.9	0.36	0.34	0.70	-	0.46
Site.10	0.30	0.43	0.73	+	0.57
Site.11	0.34	0.66	1.00	+	0.13
Site.12	0.20	0.28	0.49	+	0.78
Site.13	0.50	0.26	0.76	-	0.47
Site.14	0.54	0.46	1.00	-	0.21
Site.15	0.30	0.52	0.82	+	0.42
Site.16	0.29	0.12	0.41	-	0.94

Table S9. TBI results (see details in methods) comparing site dissimilarities in phytoplankton community of the Guaraguaçu River between Winter of 2017 and Summer of 2019. Significant changes after Bonferroni correction ($P < 0.01$) are highlighted in bold. *Resultados da análise TBI (veja detalhes em métodos) comparando a dissimilaridade da comunidade fitoplancônica dos locais do Rio Guaraguaçu entre o inverno de 2017 e o verão de 2019. Mudanças significativas após correção de Bonferroni ($P < 0.01$) são mostradas em negrito.*

Sites	Loss	Gain	Bray-Curtis dissimilarity	Net change	P
Site.1	0.69	0.29	0.98	-	0.71
Site.2	0.51	0.49	1.00	-	0.64
Site.3	0.36	0.61	0.97	+	0.84
Site.4	0.31	0.41	0.73	+	0.99
Site.5	0.51	0.47	0.97	-	0.71
Site.6	0.66	0.34	1.00	-	0.62
Site.7	0.48	0.52	1.00	+	0.65
Site.8	0.54	0.46	1.00	-	0.67
Site.9	0.51	0.44	0.95	-	0.89
Site.10	0.59	0.41	1.00	-	0.75
Site.11	0.46	0.54	1.00	+	0.67
Site.12	0.41	0.59	1.00	+	0.73
Site.13	0.59	0.38	0.97	-	0.75
Site.14	0.39	0.61	1.00	+	0.72
Site.15	0.38	0.62	1.00	+	0.76
Site.16	0.55	0.45	1.00	-	0.61

Table S10. TBI results (see details in methods) comparing site dissimilarities in phytoplankton community of the Guaraguaçu River between Winter of 2017 and Winter of 2019. Significant changes after Bonferroni correction ($P < 0.01$) are highlighted in bold. *Resultados da análise TBI (veja detalhes em métodos) comparando a dissimilaridade da comunidade fitoplancônica dos locais do Rio Guaraguaçu entre o inverno de 2017 e o inverno de 2019. Mudanças significativas após correção de Bonferroni ($P < 0.01$) são mostradas em negrito.*

Sites	Loss	Gain	Bray-Curtis dissimilarity	Net change	P
Site.1	0.61	0.25	0.86	-	0.44
Site.2	0.05	0.04	0.09	-	1.00
Site.3	0.04	0.12	0.16	+	1.00
Site.4	0.10	0.30	0.40	+	0.93
Site.5	0.18	0.01	0.19	-	1.00
Site.6	0.23	0.37	0.60	+	0.63
Site.7	0.36	0.64	1.00	+	0.15
Site.8	0.44	0.45	0.89	+	0.30
Site.9	0.44	0.44	0.88	-	0.39
Site.10	0.53	0.43	0.96	-	0.19
Site.11	0.45	0.55	1.00	+	0.13
Site.12	0.37	0.43	0.79	+	0.47
Site.13	0.41	0.15	0.56	-	0.75
Site.14	0.51	0.49	1.00	-	0.10
Site.15	0.41	0.45	0.85	+	0.41
Site.16	0.21	0.14	0.35	-	0.97

Table S11. TBI results (see details in methods) comparing site dissimilarities in phytoplankton community of the Guaraguaçu River between Summer of 2018 and Winter of 2018. Significant changes after Bonferroni correction ($P < 0.01$) are highlighted in bold. *Resultados da análise TBI (veja detalhes em métodos) comparando a dissimilaridade da comunidade fitoplancônica dos locais do Rio Guaraguaçu entre o verão de 2018 e o inverno de 2018. Mudanças significativas após correção de Bonferroni ($P < 0.01$) são mostradas em negrito.*

Sites	Loss	Gain	Bray-Curtis dissimilarity	Net change	P
Site.1	0.49	0.35	0.84	-	0.37
Site.2	0.41	0.07	0.48	-	0.89
Site.3	0.29	0.11	0.41	-	0.93
Site.4	0.38	0.05	0.43	-	0.94
Site.5	0.23	0.19	0.42	-	0.91
Site.6	0.32	0.28	0.60	-	0.63
Site.7	0.31	0.52	0.83	+	0.33
Site.8	0.50	0.40	0.89	-	0.28
Site.9	0.36	0.34	0.70	-	0.41
Site.10	0.37	0.43	0.80	+	0.42
Site.11	0.22	0.40	0.62	+	0.70
Site.12	0.20	0.28	0.49	+	0.81
Site.13	0.50	0.26	0.76	-	0.44
Site.14	0.54	0.46	1.00	-	0.12
Site.15	0.30	0.52	0.82	+	0.31
Site.16	0.29	0.12	0.41	-	0.96

Table S12. TBI results (see details in methods) comparing site dissimilarities in phytoplankton community of the Guaraguaçu River between Summer of 2018 and Summer of 2019. Significant changes after Bonferroni correction ($P < 0.01$) are highlighted in bold. *Resultados da análise TBI (veja detalhes em métodos) comparando a dissimilaridade da comunidade fitoplancônica dos locais do Rio Guaraguaçu entre o verão de 2018 e o verão de 2019. Mudanças significativas após correção de Bonferroni ($P < 0.01$) são mostradas em negrito.*

Sites	Loss	Gain	Bray-Curtis dissimilarity	Net change	P
Site.1	0.54	0.27	0.81	-	0.66
Site.2	0.56	0.26	0.82	-	0.81
Site.3	0.40	0.44	0.85	+	0.75
Site.4	0.27	0.18	0.45	-	1.00
Site.5	0.49	0.37	0.85	-	0.68
Site.6	0.73	0.23	0.96	-	0.32
Site.7	0.24	0.31	0.56	+	0.99
Site.8	0.54	0.46	1.00	-	0.39
Site.9	0.51	0.44	0.95	-	0.40
Site.10	0.63	0.37	1.00	-	0.33
Site.11	0.53	0.47	1.00	-	0.37
Site.12	0.41	0.59	1.00	+	0.30
Site.13	0.59	0.38	0.97	-	0.35
Site.14	0.39	0.61	1.00	+	0.43
Site.15	0.38	0.62	1.00	+	0.33
Site.16	0.55	0.45	1.00	-	0.38

Table S13. TBI results (see details in methods) comparing site dissimilarities in phytoplankton community of the Guaraguaçu River between Summer of 2018 and Winter of 2019. Significant changes after Bonferroni correction ($P < 0.01$) are highlighted in bold. *Resultados da análise TBI (veja detalhes em métodos) comparando a dissimilaridade da comunidade fitoplancônica dos locais do Rio Guaraguaçu entre o verão de 2018 e o inverno de 2019. Mudanças significativas após correção de Bonferroni ($P < 0,01$) são mostradas em negrito.*

Sites	Loss	Gain	Bray-Curtis dissimilarity	Net change	P
Site.1	0.53	0.31	0.84	-	0.40
Site.2	0.37	0.07	0.45	-	0.93
Site.3	0.27	0.14	0.41	-	0.93
Site.4	0.15	0.16	0.31	+	0.98
Site.5	0.28	0.02	0.30	-	1.00
Site.6	0.33	0.25	0.58	-	0.78
Site.7	0.33	0.63	0.96	+	0.15
Site.8	0.44	0.45	0.89	+	0.23
Site.9	0.44	0.44	0.88	-	0.33
Site.10	0.55	0.38	0.93	-	0.19
Site.11	0.52	0.48	1.00	-	0.12
Site.12	0.37	0.43	0.79	+	0.42
Site.13	0.41	0.15	0.56	-	0.84
Site.14	0.51	0.49	1.00	-	0.14
Site.15	0.41	0.45	0.85	+	0.26
Site.16	0.21	0.14	0.35	-	0.97

Table S14. TBI results (see details in methods) comparing site dissimilarities in phytoplankton community of the Guaraguaçu River between Winter of 2018 and Summer of 2019. Significant changes after Bonferroni correction ($P < 0.01$) are highlighted in bold. *Resultados da análise TBI (veja detalhes em métodos) comparando a dissimilaridade da comunidade fitoplancônica dos locais do Rio Guaraguaçu entre o inverno de 2018 e o verão de 2019. Mudanças significativas após correção de Bonferroni ($P < 0.01$) são mostradas em negrito.*

Sites	Loss	Gain	Bray-Curtis dissimilarity	Net change	P
Site.1	0.57	0.43	1.00	-	0.75
Site.2	0.48	0.52	1.00	+	0.73
Site.3	0.36	0.58	0.94	+	0.82
Site.4	0.22	0.47	0.69	+	0.98
Site.5	0.54	0.46	1.00	-	0.75
Site.6	0.73	0.27	1.00	-	0.83
Site.7	0.50	0.36	0.87	-	0.78
Site.8	0.49	0.51	1.00	+	0.73
Site.9	0.52	0.48	1.00	-	0.84
Site.10	0.54	0.23	0.77	-	0.94
Site.11	0.62	0.38	1.00	-	0.77
Site.12	0.44	0.56	1.00	+	0.73
Site.13	0.49	0.51	1.00	+	0.88
Site.14	0.36	0.64	1.00	+	0.73
Site.15	0.49	0.51	1.00	+	0.78
Site.16	0.47	0.53	1.00	+	0.74

Table S15. TBI results (see details in methods) comparing site dissimilarities in phytoplankton community of the Guaraguaçu River between Winter of 2018 and Winter of 2019. Significant changes after Bonferroni correction ($P < 0.01$) are highlighted in bold. *Resultados da análise TBI (veja detalhes em métodos) comparando a dissimilaridade da comunidade fitoplancônica dos locais do Rio Guaraguaçu entre o inverno de 2018 e o inverno de 2019. Mudanças significativas após correção de Bonferroni ($P < 0.01$) são mostradas em negrito.*

Sites	Loss	Gain	Bray-Curtis dissimilarity	Net change	P
Site.1	0.50	0.42	0.92	-	0.25
Site.2	0.00	0.05	0.05	+	1.00
Site.3	0.09	0.14	0.24	+	0.97
Site.4	0.05	0.38	0.43	+	0.91
Site.5	0.25	0.04	0.29	-	0.98
Site.6	0.29	0.24	0.53	-	0.77
Site.7	0.32	0.42	0.74	+	0.48
Site.8	0.35	0.46	0.81	+	0.51
Site.9	0.35	0.37	0.71	+	0.52
Site.10	0.50	0.27	0.77	-	0.50
Site.11	0.61	0.39	1.00	-	0.26
Site.12	0.51	0.49	1.00	-	0.24
Site.13	0.32	0.29	0.61	-	0.71
Site.14	0.47	0.53	1.00	+	0.24
Site.15	0.53	0.36	0.88	-	0.33
Site.16	0.10	0.19	0.29	+	0.99

Table S16. TBI results (see details in methods) comparing site dissimilarities in phytoplankton community of the Guaraguaçu River between Summer of 2019 and Winter of 2019. Significant changes after Bonferroni correction ($P < 0.01$) are highlighted in bold. *Resultados da análise TBI (veja detalhes em métodos) comparando a dissimilaridade da comunidade fitoplancônica dos locais do Rio Guaraguaçu entre o verão de 2019 e o inverno de 2019. Mudanças significativas após correção de Bonferroni ($P < 0.01$) são mostradas em negrito.*

Sites	Loss	Gain	Bray-Curtis dissimilarity	Net change	P
Site.1	0.42	0.48	0.89	+	0.72
Site.2	0.48	0.49	0.97	+	0.64
Site.3	0.57	0.40	0.98	-	0.57
Site.4	0.26	0.36	0.62	+	1.00
Site.5	0.55	0.41	0.96	-	0.79
Site.6	0.26	0.70	0.96	+	0.71
Site.7	0.31	0.54	0.85	+	0.85
Site.8	0.45	0.55	1.00	+	0.58
Site.9	0.47	0.53	1.00	+	0.50
Site.10	0.45	0.55	1.00	+	0.53
Site.11	0.49	0.51	1.00	+	0.49
Site.12	0.56	0.44	1.00	-	0.53
Site.13	0.53	0.47	1.00	-	0.58
Site.14	0.61	0.39	1.00	-	0.53
Site.15	0.60	0.40	1.00	-	0.50
Site.16	0.48	0.52	1.00	+	0.52