

dos Santos Machado *et al.*, 2025. Driving factors of phytoplankton Reynolds functional groups (RFGs) in a subtropical reservoir (São Paulo, Brazil). *Limnetica* 44 (2), 2025

SUPPLEMENTARY MATERIAL

Table S2. Physical and chemical variables of water in the Itupararanga reservoir during the periods December 2016, March 2017, August 2017, October 2017, and December 2017. *Variáveis físicas e químicas da água no reservatório de Itupararanga durante os períodos de dezembro de 2016, março de 2017, outubro de 2017 e dezembro de 2017*

Data	Point	TN µg L ⁻¹	NO ₂ ⁻ µg L ⁻¹	NO ₃ ⁻ µg L ⁻¹	NH ₄ ⁺ µg L ⁻¹	TP µg L ⁻¹	PO ₄ ³⁻ µg L ⁻¹	N/P ratio	Limiting Nutrient	Chla µg L ⁻¹	Eup. Zon m	Depth m	T ° C	pH	DO mg L ⁻¹	EC µS cm ⁻¹	TURB NTU	Eh mV
dez/16	p1	688	7.7	38.3	6.3	44	<LQ	34.7	P	21.38	1.68	4	27.1	8.3	6.8	82	19.6	369
dez/16	p2	403	3.1	<LQ	9.2	24	<LQ	37.1	P	12.7	3.3	4	26.8	7.9	6.3	77	12.5	388
dez/16	p3	364	1.7	<LQ	4.4	19	<LQ	41.5	P	13.63	2.94	8	25.4	7.5	6.6	72	17.8	371
dez/16	p4	622	1.7	<LQ	13.4	19	<LQ	71	P	10.42	3	2.5	26.2	7.3	7.8	73	14.3	355
dez/16	p5	745	1.6	<LQ	<LQ	19	<LQ	86.4	P	8.29	2.91	10	24.3	7.9	6.5	72	19.5	414
dez/16	p6	416	2.1	<LQ	<LQ	17	<LQ	53.7	P	10.69	3.3	10	24.2	7.2	1	71	20.3	418
dez/16	p7	166	1.9	<LQ	<LQ	17	<LQ	21.5	P	8.29	3.39	14	23.4	6.8	10.2	70	16.7	325
mar/17	p1	642	6.1	141.1	87.5	40	21	35.5	P	21.25	2.76	5	22.4	6.7	5.6	81	12.2	471
mar/17	p2	515	1.5	ND	<LQ	34	<LQ	33.5	P	20.26	3.3	6	23.9	7.1	6.3	75	16.2	475
mar/17	p3	551	2.7	54.4	28.6	26	<LQ	46.9	P	20.85	2.88	7	24.3	7.4	7.6	71	13.9	463
mar/17	p4	531	1.3	7.9	<LQ	31	<LQ	37.9	P	14.61	3.45	4	24.9	7.2	6.4	71	9.2	414
mar/17	p5	580	1.7	ND	112.1	20	<LQ	64.2	P	11.08	3.6	11	24.1	7.1	6	67	8.5	416
mar/17	p6	566	1.6	<LQ	30.2	20	<LQ	62.7	P	12.49	3.48	14	24	7.2	6.72	68	12.6	391
mar/17	p7	544	1.4	<LQ	93.6	30	<LQ	40.2	P	12.68	2.82	14	24.1	6.8	8.3	66	8.9	413
ago/17	p1	532	10.8	295.8	<LQ	24	25.4	49.1	P	8.82	1.47	5	17.9	8.4	6.9	80	10.6	393
ago/17	p2	240	3.8	89.1	<LQ	12	<LQ	44.3	P	8.82	1.68	6	18.3	8.2	5.6	68	10.8	424
ago/17	p3	184	2.1	52	<LQ	12	<LQ	34	P	8.29	1.56	4	17.7	7.8	5.9	63	11.4	390
ago/17	p4	250	1.6	42	89.4	10	<LQ	55.4	P	8.82	1.65	10	19	7.4	5.4	66	6.3	440
ago/17	p5	223	1.7	29.6	104	12	<LQ	41.1	P	8.02	1.65	13	18.5	7.7	6.5	67	12.5	458
ago/17	p6	179	1.7	34.4	73.2	18	25.4	22	P	8.29	2.19	13	18.2	7.8	5.5	67	9.9	375
ago/17	p7	228	1	32.9	ND	11	<LQ	45.9	P	9.62	4.5	13	17.9	6.7	6.4	67	10.3	371
out/17	p1	687	7.2	230.5	<LQ	26	8.8	58.5	P	39.29	1.2	2.5	21.3	7.8	6.2	93	22.8	367
out/17	p2	378	2.5	17.9	18.5	17	<LQ	49.2	P	33.41	1.35	3	22.3	8.5	5.7	85	24.9	329
out/17	p3	381	ND	ND	<LQ	14	<LQ	60.3	P	18.71	1.2	1.7	22.7	8.9	5.7	74	23.9	310
out/17	p4	443	0.4	ND	<LQ	18	<LQ	54.5	P	20.05	1.35	6	22.2	8.4	5	73	22.9	320

out/17	p5	401	0.6	<LQ	<LQ	7	<LQ	126.8	P	17.91	1.5	10	22	7.9	5.5	70	18.9	291
out/17	p6	355	0.6	<LQ	ND	11	<LQ	71.5	P	18.18	1.5	13	21.8	7.9	5.7	70	16.8	281
out/17	p7	240	0.4	<LQ	<LQ	<LQ	<LQ	ND	ND	5.17	1.65	14	21.5	6.3	5.6	70	19.3	436
dez/17	p1	715	3.5	116.4	<LQ	47	60.4	33.7	P	42.77	1.71	2.5	23.5	6.8	5.3	88	16.7	402
dez/17	p2	708	0.6	<LQ	<LQ	25	12.7	62.7	P	42.39	1.8	4	26.1	8.7	6.7	85	24.1	328
dez/17	p3	679	0.8	ND	23.4	18	3.8	83.5	P	20.79	2.19	2	27.9	8.2	5.3	79	20.1	319
dez/17	p4	585	0.7	34.1	ND	18	<LQ	72	P	20.31	2.7	7	24.6	8.8	7.5	78	19.6	314
dez/17	p5	558	0.5	ND	<LQ	13	<LQ	95	P	15.77	2	11	24.6	7.3	6.7	74	19.5	408
dez/17	p6	1210	3.9	<LQ	25.3	12	<LQ	223.3	P	16.57	2.94	13	24.4	7.2	5.5	73	23	407
dez/17	p7	454		ND	ND	11	<LQ	91.4	P	15.5	2.76	13	24.2	6.9	5.9	72	16.9	375

Legend: total nitrogen (TN), total phosphorus (TP), nitrite (NO_2^-), nitrate (NO_3^-), ammonium (NH_4^+), orthophosphate (PO_4^{3-}), nitrogen and phosphorus ratio (N/P), chlorophyll-a (Chl-a), euphotic zone (Euf.Zon), depth (Depth), pH, electrical conductivity (EC), turbidity (TURB) and redox potential (Eh).

Table S3. Classification of Functional Groups (RFGs) was based on the methodology proposed by Reynolds et al. (2002) considering contributions made by Padisák et al. (2009). *Classificação dos Grupos Funcionais (RFGs) baseada na metodologia proposta por Reynolds et al. (2002), considerando as contribuições feitas por Padisák et al. (2009).*

Codon	Taxa	Habitat
C	<i>Aulacoseira ambigua</i> <i>Aulacoseira granulata</i>	Eutrophic small and medium sized lakes with species sensitive to the onset of stratification.
D	<i>Synedra rumpens</i>	Shallow turbid waters including rivers.
F	<i>Ankistrodesmus bibraianus</i> <i>Dictyosphaerium ehrenbergianum</i> <i>Dictyosphaerium pulchellum</i> <i>Nephrocytium agardhianum</i>	Clear, deeply mixed meso-eutrophic lakes.
G	<i>Chlamydomonas epibiotica</i> <i>Chlamydomonas globosa</i>	Nutrient-rich conditions in stagnating water columns; small eutrophic lakes and very stable phases in larger river-fed basins and storage reservoirs.
H1	<i>Aphanizomenon gracile</i> <i>Dolichospermum mendotae</i> <i>Dolichospermum planctonicum</i> <i>Dolichospermum solitarium</i> <i>Dolichospermum spiroides</i>	Eutrophic, both stratified and shallow lakes with low nitrogen content.
J	<i>Closteriopsis</i> sp <i>Coelastrum</i> sp <i>Coelastrum microporum</i> <i>Coelastrum reticulatum</i> <i>Pediastrum tetras</i>	Shallow, mixed, highly enriched systems (including many low-gradient rivers).
K	<i>Aphanocapsa delicatissima</i> <i>Aphanocapsa holsatica</i> <i>Aphanocapsa incerta</i>	Shallow, nutrient-rich water columns.
L ₀	<i>Snowella lacustris</i> <i>Ceratium furcoides</i> <i>Peridinium</i> sp	Deep and shallow, oligo to eutrophic, medium to large lakes.

	<i>Peridinium gatunense</i> <i>Peridinium pusillum</i> <i>Peridinium umbonatum</i>	
L _M	<i>Microcystis aeruginosa</i> <i>Microcystis protocystis</i>	Eutrophic to hypertrophic, small- to medium-sized lakes.
Mp	<i>Fragilaria sp1</i> <i>Fragilaria sp 2</i>	Frequently stirred up, inorganically turbid shallow lakes.
P	<i>Closterium sp</i> <i>Staurastrum sp</i>	Similar to that of codon N but at higher trophic states.
S1	<i>Geitlerinema amphibium</i> <i>Geitlerinema unigranulatum</i> <i>Planktolyngbya limnetica</i> <i>Planktothrix agardhii</i> <i>Planktothrix isothrix</i> <i>Pseudanabaena catenata</i> <i>Pseudanabaena galeata</i>	Turbid mixed environments. This codon includes only shade-adapted cyanoprokaryotes.
Sn	<i>Cuspidothrix issatschenkoi</i> <i>Raphidiopsis raciborskii</i>	Warm mixed environments
Tb	<i>Nitzschia acicularis</i>	highly lotic environments (streams and rivulets).
Tc	<i>Phormidium aerugineo-caeruleum</i>	eutrophic standing waters, or slowflowing rivers with emergent macrophytes.
Td	<i>Gonatozygon sp</i>	mesotrophic standing waters, or slow-flowing rivers with emergent macrophytes.
W1	<i>Euglena acus</i> <i>Phacus sp</i>	Ponds, even temporary, rich in organic matter from husbandry or sewages.
W2	<i>Trachelomonas hispida</i> <i>Trachelomonas verrucosa</i> <i>Trachelomonas volvocina</i>	Meso-eutrophic ponds, even temporary, shallow lakes.
X1	<i>Monoraphidium contortum</i> <i>Monoraphidium setiforme</i>	Shallow, eu-hypertrophic environments.

Y	<i>Cryptomonas brasiliensis</i> <i>Cryptomonas erosa</i>	Wide range of habitats, which reflect the ability of its representative species to live in almost all lentic ecosystems when grazing pressure is low.
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