

Supplementary material

Reproductive biology of *Macrobrachium amazonicum* (Heller, 1862) populations with distinct phenotypes in Neotropical reservoirs during the ‘El Niño’ event

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Table S1. Average (\pm s.d.) values of limnological variables ($N = 15$ per station) from sampling sites inserted in reservoirs of Furnas (SJB and CRC) and Mascarenhas de Morais (CAS and SBG) hydroelectric power stations during October 2014 and December 2015

Chlorophyll-*a*, cadmium, chromium, copper, manganese, nickel and zinc are not represented owing to negligible concentrations. Al, aluminium; B, boron; Ca, calcium; CAS, Cássia; Cond., conductivity; CRC, Carmo do Rio Claro; Cu, copper; DO, dissolved oxygen; Fe, iron; K, potassium; Mg, magnesium; Mn, manganese; N, total nitrogen; Na, sodium; OM, organic matter; P, total phosphorus; (s), sediment; S, sulfur; SBG, São João Batista do Glória; SJB, São José da Barra; Tcol, total coliforms; (w), water; Zn, zinc

Variable	SJB	CRC	CAS	SBG
Alkalinity (mg L ⁻¹)	13.63 (\pm 7.67)	55.27 (\pm 28.30)	31.07 (\pm 13.52)	22.88 (\pm 7.44)
Hardness (mg L ⁻¹)	6.06 (\pm 6.97)	36.73 (\pm 12.61)	24.71 (\pm 6.74)	18.38 (\pm 9.52)
pH (w)	6.21 (\pm 0.72)	6.43 (\pm 0.58)	6.68 (\pm 0.53)	6.68 (\pm 0.77)
DO (mg L ⁻¹)	10.12 (\pm 2.54)	7.51 (\pm 2.80)	10.29 (\pm 2.74)	9.95 (\pm 2.75)
Cond. (mS L ⁻¹)	21.01 (\pm 4.06)	82.94 (\pm 13.69)	73.44 (\pm 17.59)	50.55 (\pm 8.42)
OM (w) (mg L ⁻¹)	5.50 (\pm 1.51)	6.89 (\pm 2.00)	6.36 (\pm 2.67)	4.63 (\pm 2.32)
Temperature (°C)	25.20 (\pm 2.83)	23.20 (\pm 2.91)	24.64 (\pm 2.24)	24.77 (\pm 2.09)
N (w) (mg L ⁻¹)	2.05 (\pm 1.50)	1.75 (\pm 1.88)	2.21 (\pm 2.26)	1.86 (\pm 1.34)
P (w) (μ g L ⁻¹)	32.46 (\pm 14.45)	43.13 (\pm 24.32)	130.06 (\pm 175.28)	27.75 (\pm 20.10)
Depth (cm)	170.67 (\pm 26.04)	118.33 (\pm 28.20)	97.86 (\pm 22.93)	73.85 (\pm 31.30)
Ca (w) (mg L ⁻¹)	1.13 (\pm 0.57)	9.80 (\pm 3.10)	4.69 (\pm 1.05)	2.84 (\pm 0.82)
Mg (w) (mg L ⁻¹)	0.48 (\pm 0.20)	1.57 (\pm 0.34)	1.92 (\pm 0.48)	1.14 (\pm 0.33)
Fe (w) (mg L ⁻¹)	1.21 (\pm 0.60)	1.44 (\pm 0.70)	1.64 (\pm 1.78)	0.29 (\pm 0.27)
K (w) (mg L ⁻¹)	2.18 (\pm 0.38)	2.92 (\pm 1.33)	3.03 (\pm 0.66)	2.10 (\pm 0.25)
Na (w) (mg L ⁻¹)	2.06 (\pm 1.28)	4.20 (\pm 1.41)	5.56 (\pm 2.14)	4.13 (\pm 1.54)
Tcol (NMP)	871.00 (\pm 734.67)	521.54 (\pm 645.70)	659.67 (\pm 737.15)	723.64 (\pm 734.86)
OM (s) (g kg ⁻¹)	29.67 (\pm 12.64)	64.20 (\pm 58.45)	26.79 (\pm 8.54)	9.23 (\pm 9.02)
pH (s)	4.55 (\pm 0.21)	5.11 (\pm 0.21)	5.89 (\pm 0.50)	5.83 (\pm 0.50)
P (s) (mg kg ⁻¹)	17.47 (\pm 14.59)	42.87 (\pm 19.79)	20.64 (\pm 11.39)	13.23 (\pm 6.39)
K (s) (mg kg ⁻¹)	72.99 (\pm 12.60)	58.65 (\pm 19.77)	51.11 (\pm 14.10)	21.66 (\pm 11.69)
Ca (s) (g kg ⁻¹)	0.25 (\pm 0.13)	0.94 (\pm 0.55)	0.93 (\pm 0.22)	0.37 (\pm 0.23)
Mg (s) (mg kg ⁻¹)	38.09 (\pm 12.04)	91.58 (\pm 75.34)	107.67 (\pm 43.66)	50.49 (\pm 34.33)
Al (s) (mg kg ⁻¹)	52.17 (\pm 21.01)	17.39 (\pm 11.51)	10.92 (\pm 7.21)	10.38 (\pm 4.99)
S (s) (mg kg ⁻¹)	4.53 (\pm 4.69)	10.00 (\pm 7.01)	7.71 (\pm 4.48)	5.77 (\pm 3.11)
B (s) (mg kg ⁻¹)	0.34 (\pm 0.19)	0.50 (\pm 0.50)	0.30 (\pm 0.23)	0.25 (\pm 0.13)
Cu (s) (mg kg ⁻¹)	4.83 (\pm 1.47)	2.27 (\pm 1.10)	2.63 (\pm 1.19)	0.91 (\pm 0.73)
Fe (s) (g kg ⁻¹)	28.11 (\pm 91.02)	58.31 (\pm 146.88)	6.58 (\pm 23.44)	24.55 (\pm 69.03)
Mn (s) (mg kg ⁻¹)	7.49 (\pm 3.32)	29.09 (\pm 12.36)	60.01 (\pm 17.69)	37.80 (\pm 25.57)
Zn (s) (mg kg ⁻¹)	2.04 (\pm 1.79)	2.31 (\pm 1.50)	1.70 (\pm 0.88)	1.18 (\pm 0.50)
Clay (g kg ⁻¹)	398.33 (\pm 49.72)	369.47 (\pm 69.12)	197.36 (\pm 162.57)	78.62 (\pm 63.89)
Silt (g kg ⁻¹)	287.60 (\pm 52.28)	375.53 (\pm 220.46)	111.00 (\pm 98.81)	112.62 (\pm 184.50)
Fine sand (g kg ⁻¹)	134.40 (\pm 26.45)	91.33 (\pm 63.06)	156.14 (\pm 66.39)	262.69 (\pm 250.42)
Coarse sand (g kg ⁻¹)	180.07 (\pm 47.77)	164.20 (\pm 120.91)	517.64 (\pm 263.82)	546.15 (\pm 341.92)

Table S2. Values obtained from canonical correspondence analysis (CCA) and coefficient of determination (r^2) for limnological variables (descriptors) of the sampling sites in reservoirs of Marechal Mascarenhas de Morais and Furnas hydroelectric power stations (Minas Gerais state, south-eastern Brazil), and significance of correlations obtained using the ENVFIT function (999 permutations)

Variables and values in bold (significant at 0.05) were used to generate Fig. 8 in the main paper. Al, aluminium; B, boron; Ca, calcium; Cond., conductivity; Cu, copper; DO, dissolved oxygen; Fe, iron; K, potassium; Mg, magnesium; Mn, manganese; N, total nitrogen; Na, sodium; OM, organic matter; P, total phosphorus; (s), sediment; S, sulfur; Tcol, total coliforms; (w), water; Zn, zinc

Limnological variable	Axis 1	Axis 2	r^2	(Pr)
Alkalinity	-0.54	-0.84	0.52	0.09
Hardness	-0.38	-0.92	0.42	0.09
pH (w)	0.96	0.29	1.00	0.01
DO	0.62	0.79	0.59	0.09
Cond.	-0.27	-0.96	0.37	0.10
O.M. (w)	-0.75	-0.66	0.75	0.08
Temperature (w)	0.54	0.84	0.52	0.09
N (w)	-0.07	1.00	0.29	0.10
P (w)	-0.73	-0.68	0.72	0.08
Depth	-0.97	-0.24	0.98	0.02
Ca (w)	-0.56	-0.83	0.53	0.09
Mg (w)	-0.01	-1.00	0.30	0.10
Fe (w)	-0.84	-0.54	0.89	0.04
K (w)	-0.67	-0.74	0.65	0.08
Na (w)	0.89	-0.46	0.40	0.10
Tcol	0.35	0.93	0.41	0.09
O.M. (s)	-0.75	-0.66	0.75	0.08
pH (s)	0.95	0.31	1.00	0.01
P (s)	-0.69	-0.73	0.66	0.08
K (s)	-0.92	-0.39	0.99	0.02
Ca (s)	-0.57	-0.82	0.54	0.09
Mg (s)	-0.53	-0.85	0.52	0.09
Al (s)	-1.00	0.10	0.68	0.06
S (s)	-0.54	-0.84	0.52	0.09
B (s)	-0.75	-0.66	0.74	0.08
Cu (s)	-0.99	-0.13	0.91	0.04
Fe (s)	-0.68	-0.74	0.65	0.08
Mn (s)	1.00	0.07	0.84	0.04
Zn (s)	-0.84	-0.55	0.88	0.04
Clay	-0.89	-0.46	0.95	0.03
Silt	-0.82	-0.58	0.85	0.04
Fine sand	0.83	0.55	0.87	0.04
Coarse sand	0.87	0.50	0.93	0.04
Rainfall	0.77	-0.64	0.99	0.03
Water column	0.77	-0.64	0.99	0.03
Explained variation	64.10%	29.09%		

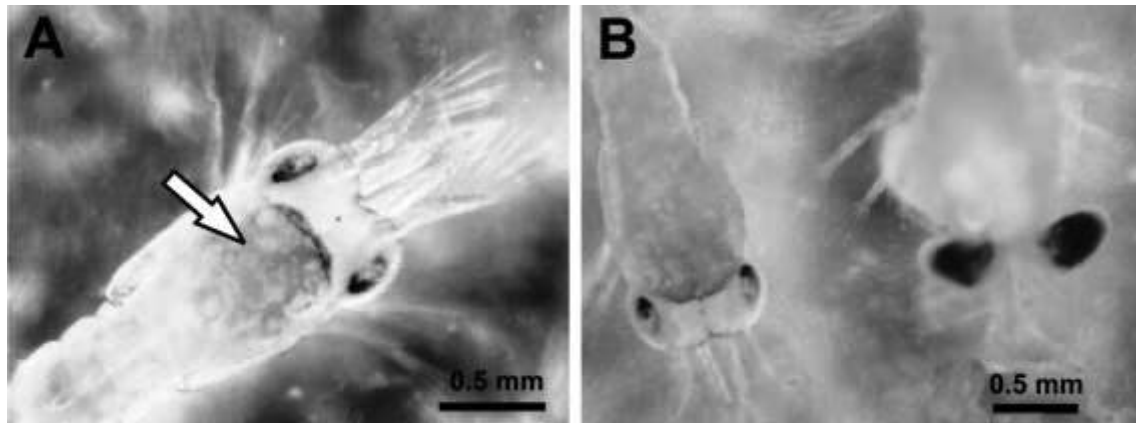


Fig. S1. (a) Larvae of *Macrobrachium amazonicum* from a hololimnetic population of a small-size phenotype at stage of Zoa I. Note the presence of many lipid droplets (white arrow) in the cephalothorax. (b) Zoa I (left) and II (right) in hololimnetic populations of a small-size phenotype.