

SUPPLEMENTARY MATERIAL S1

TABLE S1 | List of fish species sampled in six headwater creeks surrounding the Muriaé Ornamental Aquaculture Center, in the historical and contemporary periods. The species names were checked in Fricke *et al.* (2020). Species status: N (native species), NNT (non-native translocated species = introduced from another river basin or freshwater ecoregion within Brazil), and NNE (non-native exotic species = introduced from other countries). Creeks: LO = Lopes; QU = Queiroga; BS = Boa Sorte; RO = Rochedo; VA = Varginha; SL = São Luís.*Native extirpated species. 1 = New occurrence to the study area, based on Magalhães *et al.* (2020a), 2 = First record in Minas Gerais State, 3 = First record in Brazil, 4 = First record in Latin America/Southern Hemisphere, 5^{RO, SL} = Species parasitized by the anchor worm *Lernaea cyprinacea*.

Species	Voucher – CIUFS Additional voucher – CIUFS (in parentheses)	First record Species parasitized	Status	Historical						Contemporary					
				LO	QU	BS	RO	VA	SL	LO	QU	BS	RO	VA	SL
<i>Astyanax cf. scabripinnis</i> (Jenyns, 1842)	2213		N					X						X	
<i>Deuterodon janeiroensis</i> (Eigenmann, 1908)	2215–2219		N	X*	X	X	X	X	X		X	X	X	X	X
<i>Psalidodon parahybae</i> (Eigenmann, 1908)	2214		N	X	X*	X*	X*	X*	X*	X					
<i>Hypessobrycon bifasciatus</i> Ellis, 1911	2211, 2212		N			X			X			X			X
<i>Oligosarcus hepsetus</i> (Cuvier, 1829)	2210 (2681)	5	N	X*	X*	X*	X*	X*	X*						X
<i>Hoplias malabaricus</i> (Bloch, 1794)	2220		N	X*	X*	X*	X*	X*	X*						X
<i>Gymnotus cf. carapo</i> Linnaeus, 1758	2221–2224		N		X	X	X		X		X	X	X		X
<i>Callichthys callichthys</i> (Linnaeus, 1758)	2233–2235	5 ^{SL}	N	X				X	X	X				X	X
<i>Hypostomus affinis</i> (Steindachner, 1877)	2229–2232		N	X	X	X		X		X	X	X			X
<i>Harttia loricariformis</i> Steindachner, 1877	2239		N					X							X
<i>Rineloricaria nigricauda</i> (Regan, 1904)	2240		N						X						X
<i>Trichomycterus auroguttatus</i> Costa, 1992	2241		N					X							X
<i>Trichomycterus</i> sp.	2242		N					X							X
<i>Poecilia vivipara</i> Bloch & Schneider, 1801	2236–2238		N	X			X		X	X			X		X
<i>Synbranchus marmoratus</i> Bloch, 1795	2243		N			X						X			
<i>Geophagus brasiliensis</i> (Quoy & Gaimard, 1824)	2225–2228		N		X	X		X	X		X	X		X	X
<i>Barbodes semifasciolatus</i> (Günther, 1868)	2283		NNE									X			
<i>Carassius auratus</i> (Linnaeus, 1758)	2286		NNE												X
<i>Cyprinus carpio</i> Linnaeus, 1758	2287–2289		NNE							X		X	X		
<i>Pethia conchonius</i> (Hamilton, 1822)	2280–2282 (2672)		NNE							X	X				X
<i>Puntigrus tetrazona</i> (Bleeker, 1855)	2284–2285		NNE							X	X				
<i>Tanichthys albomaculatus</i> Lin, 1932	2290–2291	1	NNE							X					X
<i>Danio rerio</i> Hamilton, 1822	2271–2274		NNE							X	X		X		X
<i>Danio rerio</i> (transgenic) Hamilton, 1822	2275–2277 (2654, 2656)	1, 4	NNE							X	X		X		
<i>Devario malabaricus</i> (Jerdon, 1849)	2278–2279		NNE								X				X
<i>Misgurnus anguillicaudatus</i> (Cantor, 1842)	2292–2296 (2674)		NNE							X	X	X	X		X
<i>Mimagoniates microlepis</i> (Steindachner, 1877)	2304 (2664)	1, 3	NNT												X
<i>Metynnis lippincottianus</i> (Cope, 1870)	2300	1	NNT												X
<i>Gymnocrymbus ternetzi</i> (Boulenger, 1895)	2299		NNT												X
<i>Hasemania cf. hansei</i> (Fowler, 1949)	2301 (2210a)	1, 3	NNT												X
<i>Hypessobrycon haraldschultzi</i> Travassos, 1960	2302 (2653)	1, 3	NNT												X
<i>Hypessobrycon herbertaxelrodi</i> Géry, 1961	2303	1	NNT												X
<i>Knodus moenkhausii</i> (Eigenmann & Kennedy, 1903)	2297–2298		NNT												X
<i>Moenkhausia costae</i> (Steindachner, 1907)	2305		NNT							X					
<i>Nannostomus beckfordi</i> Günther, 1872	2306 (2212a)		NNT									X			
<i>Pyrrhulina brevis</i> Steindachner, 1876	2307	1	NNT									X			
<i>Corydoras nattereri</i> Steindachner, 1876	2313	1	NNT									X			



TABLE S1 | (Continued)

Species	Voucher – CIUFS Additional voucher – CIUFS (in parentheses)	First record Species parasitized	Status	Historical						Contemporary					
				LO	QU	BS	RO	VA	SL	LO	QU	BS	RO	VA	SL
<i>Scleromystax barbatus</i> (Quoy & Gaimard, 1824)	2312 (2661)		NNT											X	
<i>Ancistrus multispinis</i> (Regan, 1912)	2314 (2663)	1	NNT											X	
<i>Hisonotus notatus</i> Eigenmann & Eigenmann, 1889	2318 (2683)	1, 3	NNT												X
<i>Pterygoplichthys cf. disjunctivus</i> (Weber, 1991)	2315 (2696)	1, 2	NNT												X
<i>Pterygoplichthys cf. pardalis</i> (Castelnau, 1855)	2316–2317	1, 3	NNT								X				X
<i>Poecilia reticulata</i> Peters, 1859	2244–2249 (2668, 2673)	5 ^{SL}	NNE							X	X	X	X	X	X
<i>Poecilia sphenops</i> Valenciennes, 1846	2250–2252		NNE							X			X		X
<i>Poecilia velifera</i> (Regan, 1914)	2253–2256		NNE							X	X		X		X
<i>Xiphophorus variatus</i> (Meek, 1904)	2265	1, 3	NNE							X					
<i>Xiphophorus helleri</i> Heckel, 1848	2257–2259 (2669)	5 ^{SL}	NNE							X			X		X
<i>Xiphophorus maculatus</i> (Günther, 1866)	2260–2264 (2665, 2671)	5 ^{RO}	NNE							X	X	X	X		X
<i>Xiphophorus variatus</i> (Meek, 1904)	2266–2270		NNE							X	X	X	X		X
<i>Amatitlania nigrofasciata</i> (Günther, 1867)	2319 (2700)	1, 2	NNE											X	
<i>Andinoacara rivulatus</i> (Günther, 1860)	2320–2321 (2697)	1, 3	NNE											X	X
<i>Astronotus ocellatus</i> (Agassiz, 1831)	2322 (2651)	1	NNT										X		
<i>Cichlasoma dimidiatum</i> (Heckel, 1840)	2329–2330 (2698)	1, 2	NNT							X			X		
<i>Hemichromis bimaculatus</i> Gill, 1862	2323–2324	1	NNE										X		X
<i>Laetacara curviceps</i> (Ahl, 1923)	2325 (2675)	1	NNT										X		
<i>Mikrogeophagus altispinosus</i> (Haseman, 1911)	2327–2328	1	NNE										X		X
<i>Mikrogeophagus ramirezi</i> (Myers & Harry, 1948)	2326	1	NNE												X
<i>Trichogaster lalius</i> (Hamilton, 1822)	2308–2309		NNE							X	X				
<i>Trichopodus leerii</i> (Bleeker, 1852)	2310 (2652)	1, 3	NNE										X		
<i>Trichopodus trichopterus</i> (Pallas, 1770)	2311		NNE										X		

REFERENCES

- Fricke R, Eschmeyer WN, Van der Laan R. Eschmeyer's catalog of fishes: genera, species, references [Internet]. San Francisco: California Academy of Science; 2020. Available from: <http://researcharchive.calacademy.org/research/ichthyology/catalog/fishcatmain.asp>.
- Magalhães ALB, Daga VS, Bezerra LAV, Vitule JRS, Jacobi CM, Silva LGM. All the colors of the world: biotic homogenization-differentiation dynamics of freshwater fish communities on demand of the Brazilian aquarium trade. Hydrobiologia. 2020a; 847:3897–915. <https://doi.org/10.1007/s10750-020-04307-w>.

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