

SUPPLEMENTARY MATERIAL S2

TABLE S2 | Ecosystem functions (trait-states) assigned to fish species associated with macrophytes in Rosana Reservoir. The Energy Source function was quantified based on species diet (% volume), while other functions were assigned as presence (1) or absence (0). N = number of individuals sampled. Voucher: specimens deposited in the Coleção Ictiológica do Núcleo de Pesquisas em Limnologia, Ictiologia e Aquicultura (Nupélia), Universidade Estadual de Maringá, Maringá, PR.

Species	Vouchers	N	ENERGY SOURCE				
			Algae	Vegetal	Invertebrates	Vertebrates	Organic matter
<i>Astyanax lacustris</i> (Lütken, 1875)	NUP 6371	2	0.029	0.114	0.898	0	0
<i>Acestrorhynchus lacustris</i> (Lütken, 1875)	NUP 6236	4	0	0.0035	0.0001	0.9987	0.00012
<i>Cichla kelberi</i> Kullander & Ferreira, 2006	NUP 6322	11	0.0286	0.0286	0.543	0.2858	0.1143
<i>Crenicichla britskii</i> Kullander, 1982	NUP 6339	5	0.107	0	0.714	0.071	0.107
<i>Cichlasoma paranaense</i> Kullander, 1983	NUP 13288	4	0	0	0.4264	0	0.5735
<i>Ossancora eigenmanni</i> (Boulenger, 1895)	NUP 4450	2	0	0.354	0.6655	0.0365	0.26
<i>Eigenmannia trilineata</i> López & Castello, 1966	NUP 1733	20	0.0378	0	0.9616	0.0002	0.0004
<i>Gymnotus carapo</i> Linnaeus, 1758	NUP 2806	1	0.0024	0	0.9639	0.0336	0
<i>Hyphessobrycon eques</i> (Steindachner, 1882)	NUP 13869	105	0.0861	0.0683	0.8767	0.0007	0.0232
<i>Hoplias malabaricus</i> (Bloch, 1794)	NUP 14485	1	0	0	0	1	0
<i>Hemigrammus marginatus</i> Ellis, 1911	NUP 4825	62	0.0728	0.0248	0.891	0.0111	0
<i>Hyphessobrycon</i> sp.		0	0.4902	0.3623	0.1391	0	0.0084
<i>Leporinus</i> sp.		2	0	0	1	0	0
<i>Loricariichthys platymetopon</i> Isbrücker & Nijssen, 1979	NUP 2799	4	0	0	0	0	1
<i>Moenkhausia intermedia</i> Eigenmann, 1908	NUP 18715	0	0.001	0.183	0.149	0	0.667
<i>Metynnis lippincottianus</i> (Cope, 1870)	NUP 4522	27	0.1813	0.0164	0.7445	0.0451	0.0127
<i>Oreochromis niloticus</i> (Linnaeus, 1758)	NUP 3794	2	0.0503	0.0351	0.323	0.085	0.5829
<i>Oligosarcus pintoii</i> Amaral Campos, 1945	NUP 13839	3	0.0842	0.0009	0.9125	0.0014	0.0008
<i>Trachelyopterus galeatus</i> (Linnaeus, 1766)	NUP 6337	0	0	0.25	0.5	0.25	0
<i>Pimelodella gracilis</i> (Valenciennes, 1835)	NUP 6332	1	0	0.45	0.3125	0.0125	0.225
<i>Rhamphichthys hahni</i> (Meinken, 1937)	NUP 2987	1	0	0	1	0	0
<i>Roebooides descavadensis</i> Fowler, 1932	NUP 6310	169	0.0333	0.023	0.9168	0.0231	0.0024
<i>Schizodon altoparanae</i> Garavello & Britski, 1990	NUP 1717	0	0.5	0.5	0	0	0
<i>Steindachnerina brevipinna</i> (Eigenmann & Eigenmann, 1889)	NUP 6330	5	0	0	0	0	1
<i>Schizodon borellii</i> (Boulenger, 1900)	NUP 6372	1	0	1	0	0	0
<i>Serrasalmus marginatus</i> Valenciennes, 1837	NUP 6257	83	0.0043	0.0113	0.5087	0.4813	0.003
<i>Sternopygus macrurus</i> (Bloch & Schneider, 1801)	NUP 4721	2	0.1712	0	0.7216	0.1073	0
<i>Schizodon nasutus</i> Kner, 1858	NUP 3003	3	0.7623	0.2254	0.0122	0	0
<i>Serrapinnus notomelas</i> (Eigenmann, 1915)	NUP 6611	19	0.7272	0.0735	0.2138	0.024	0.0186
<i>Satanoperca pappaterra</i> (Heckel, 1840)	NUP 6305	38	0.2405	0.221	0.2309	0.1518	0.1559



TABLE S2 | (Continued)

Species	HABITAT				REGIONAL FLOW (migration)			
	Terrestrial	Bottom	Column	Littoral	Prey	Herbivory	Predation	Genetic
<i>Astyanax lacustris</i>	1	0	1	1	1	0	1	1
<i>Acestrorhynchus lacustris</i>	0	0	1	1	0	0	0	0
<i>Cichla kelberi</i>	0	1	1	1	0	0	0	0
<i>Crenicichla britskii</i>	1	1	0	1	0	0	0	0
<i>Cichlasoma paranaense</i>	1	1	0	1	0	0	0	0
<i>Ossancora eigenmanni</i>	0	1	0	0	0	0	0	0
<i>Eigenmannia trilineata</i>	1	1	0	1	0	0	0	0
<i>Gymnotus carapo</i>	1	1	0	1	0	0	0	0
<i>Hyphessobrycon eques</i>	0	0	0	1	0	0	0	0
<i>Hoplias malabaricus</i>	0	1	0	1	0	0	0	0
<i>Hemigrammus marginatus</i>	1	0	1	1	0	0	0	0
<i>Hyphessobrycon</i> sp	0	0	0	1	0	0	0	0
<i>Leporinus</i> sp	0	1	1	1	1	0	1	1
<i>Loricariichthys platytopon</i>	0	1	1	0	0	0	0	0
<i>Moenkhausia intermedia</i>	0	0	0	1	1	0	1	1
<i>Metynnis lippincottianus</i>	0	1	0	1	1	1	0	1
<i>Oreochromis niloticus</i>	0	1	0	1	0	0	0	0
<i>Oligosarcus pintoii</i>	1	0	0	1	0	0	0	0
<i>Trachelyopterus galeatus</i>	0	1	0	0	0	0	0	0
<i>Pimelodella gracilis</i>	0	1	0	0	0	0	0	0
<i>Rhamphichthys hahni</i>	0	1	0	1	0	0	0	0
<i>Roeboides descavadensis</i>	0	0	0	1	0	0	0	0
<i>Schizodon altoparanae</i>	0	1	0	1	1	1	0	1
<i>Steindachnerina brevipinna</i>	0	1	0	1	0	0	0	0
<i>Schizodon borellii</i>	0	1	0	1	1	1	0	1
<i>Serrasalmus marginatus</i>	0	0	0	1	0	0	0	0
<i>Sternopygus macrurus</i>	0	1	0	1	0	0	0	0
<i>Schizodon nasutus</i>	0	1	0	1	1	1	0	1
<i>Serrapinnus notomelas</i>	0	0	0	1	0	0	0	0
<i>Satanoperca pappaterra</i>	0	1	0	1	0	0	0	0



TABLE S2 | (Continued)

Species	REGIONAL FLOW (local)			DISPERSER	ECOSYSTEM-ENGINEERING		
	Aquatic prey	Predator	Terrestrial prey	Disperser	Predation	Bio./Cicl.	Herbivory
<i>Astyanax lacustris</i>	1	0	1	1	0	0	0
<i>Acestrorhynchus lacustris</i>	0	1	0	0	0	0	0
<i>Cichla kelberi</i>	0	1	0	0	1	0	0
<i>Crenicichla britskii</i>	0	1	0	0	0	0	0
<i>Cichlasoma paranaense</i>	0	1	0	0	0	0	0
<i>Ossancora eigenmanni</i>	0	0	0	0	0	0	0
<i>Eigenmannia trilineata</i>	1	0	0	0	0	0	0
<i>Gymnotus carapo</i>	1	0	0	0	0	0	0
<i>Hyphessobrycon eques</i>	1	0	1	1	0	0	0
<i>Hoplias malabaricus</i>	0	1	1	0	1	0	0
<i>Hemigrammus marginatus</i>	1	0	1	1	0	0	0
<i>Hyphessobrycon</i> sp	1	0	1	1	0	0	0
<i>Leporinus</i> sp	1	0	1	1	0	0	0
<i>Loricariichthys platymetopon</i>	0	0	0	0	0	0	0
<i>Moenkhausia intermedia</i>	1	0	1	1	0	0	0
<i>Metynnis lippincottianus</i>	1	0	0	1	0	0	1
<i>Oreochromis niloticus</i>	1	0	1	0	0	1	0
<i>Oligosarcus pintoii</i>	1	1	1	0	0	0	0
<i>Trachelyopterus galeatus</i>	0	0	0	1	0	0	0
<i>Pimelodella gracilis</i>	0	0	0	0	0	0	0
<i>Rhamphichthys hahni</i>	1	0	0	0	0	0	0
<i>Roeboides descavadensis</i>	1	1	1	1	0	0	0
<i>Schizodon altoparanae</i>	1	0	1	1	0	0	0
<i>Steindachnerina brevipinna</i>	1	0	1	0	0	1	0
<i>Schizodon borellii</i>	1	0	1	1	0	0	0
<i>Serrasalmus marginatus</i>	1	1	0	1	0	0	0
<i>Sternopygus macrurus</i>	1	0	0	1	0	0	0
<i>Schizodon nasutus</i>	1	0	1	1	0	0	0
<i>Serrapinnus notomelas</i>	1	0	1	0	0	0	0
<i>Satanoperca pappaterra</i>	1	0	1	1	0	1	0



TABLE S2 | (Continued)

Species	SERVICES				
	Food	Sport fishing	Bait	Ornamental	Aquaculture
<i>Astyanax lacustris</i>	1	0	1	1	1
<i>Acestrorhynchus lacustris</i>	1	0	0	0	0
<i>Cichla kelberi</i>	1	1	0	1	1
<i>Crenicichla britskii</i>	0	0	0	1	0
<i>Cichlasoma paranaense</i>	0	0	0	1	0
<i>Ossancora eigenmanni</i>	0	0	0	0	0
<i>Eigenmannia trilineata</i>	0	0	1	1	0
<i>Gymnotus carapo</i>	0	0	1	1	0
<i>Hyphessobrycon eques</i>	0	0	0	1	0
<i>Hoplias malabaricus</i>	1	1	0	0	0
<i>Hemigrammus marginatus</i>	0	0	0	1	0
<i>Hyphessobrycon</i> sp	0	0	0	1	0
<i>Leporinus</i> sp	1	0	1	0	0
<i>Loricariichthys platymetopon</i>	0	0	0	0	0
<i>Moenkhausia intermedia</i>	0	0	0	1	0
<i>Metynnis lippincottianus</i>	1	0	0	1	1
<i>Oreochromis niloticus</i>	1	0	0	0	1
<i>Oligosarcus pintoii</i>	0	0	0	0	0
<i>Trachelyopterus galeatus</i>	0	0	0	0	0
<i>Pimelodella gracilis</i>	0	0	0	0	0
<i>Rhamphichthys hahni</i>	0	0	1	1	0
<i>Roeboides descavadensis</i>	0	0	0	1	0
<i>Schizodon altoparanae</i>	1	0	1	0	0
<i>Steindachnerina brevipinna</i>	1	0	1	0	0
<i>Schizodon borellii</i>	1	0	1	0	0
<i>Serrasalmus marginatus</i>	1	0	0	0	0
<i>Sternopygus macrurus</i>	0	0	1	1	0
<i>Schizodon nasutus</i>	1	0	1	0	0
<i>Serrapinnus notomelas</i>	0	0	0	1	0
<i>Satanoperca pappaterra</i>	1	0	0	1	0

Neotropical Ichthyology



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