

SUPPLEMENTARY MATERIAL S4

TABLE S4 | Traits matrix for fish species sampled in 24 streams in state of Paraná, Brazil. 1 identify the presence of trait: T01 = Carnivorous, T02 = Detritivorous, T03 = Omnivorous, T04 = Invertivorous, T05 = Herbivorous, T06 = Parental care, T07 = Internal fertilization, T08 = Total spawning, T09 = Without reproduction migration, T10 = Upper mouth, T11 = Terminal mouth, T12 = Subterminal mouth, T13 = Lower mouth, T14 = Tolerance to hypoxia. T15 = Standard length (cm).

Species	T01	T02	T03	T04	T05	T06	T07	T08	T09	T10	T11	T12	T13	T14	T15	Voucher
<i>Ancistrus mullerae</i>	0	1	0	0	1	1	0	1	1	0	0	0	1	1	3.48	MZUSP 104121
<i>Apareiodon ibitiensis</i>	0	1	0	0	1	0	0	0	0	0	0	1	0	0	7.93	NUP 8544
<i>Apareiodon piracicabae</i>	0	1	0	0	1	0	0	0	0	0	0	1	0	0	3.40	NUP 5760
<i>Apareiodon</i> sp.	0	1	0	0	1	0	0	0	0	0	0	1	0	0	4.80	NUP 6026
<i>Psalidodon bockmanni</i>	0	0	0	1	1	0	0	1	0	0	1	0	0	0	5.05	NUP 5626
<i>Psalidodon</i> aff. <i>fasciatus</i>	0	0	0	1	1	0	0	0	0	0	1	0	0	0	4.51	NUP 8548; NUP 5580
<i>Psalidodon</i> aff. <i>paranae</i>	0	0	0	1	1	0	0	1	0	0	1	0	0	0	4.07	NUP 14600; NUP 6037
<i>Psalidodon bifasciatus</i>	0	0	0	1	1	0	0	1	0	0	1	0	0	0	4.19	NUP 12092
<i>Astyanax lacustris</i>	0	0	0	1	1	0	0	1	0	0	1	0	0	0	5.66	NUP 14598; NUP 5615
<i>Astyanax minor</i>	0	0	0	1	1	0	0	1	0	0	1	0	0	0	6.40	NUP 7296; NUP 6873
<i>Astyanax dissimilis</i>	0	0	0	1	1	0	0	1	0	0	1	0	0	0	3.66	NUP 6872; NUP 1633
<i>Astyanax</i> sp. 1	0	0	0	1	1	0	0	1	0	0	1	0	0	0	4.21	CIG 2277
<i>Astyanax</i> sp. 2	0	0	0	1	1	0	0	1	0	0	1	0	0	0	5.26	CIG 2283; NUP 17010
<i>Astyanax</i> sp. 3	0	0	0	1	1	0	0	1	0	0	1	0	0	0	4.70	CIG 2284
<i>Bryconamericus</i> aff. <i>iheringii</i>	0	1	0	1	0	0	0	0	0	0	0	1	0	0	4.21	NUP 14917
<i>Bryconamericus ikaa</i>	0	0	1	0	0	0	0	0	0	0	0	1	0	0	4.41	NUP 14917
<i>Bryconamericus pyahu</i>	0	1	0	1	0	0	0	0	0	0	0	1	0	0	3.55	NUP 12091
<i>Callichthys callichthys</i>	0	0	1	0	0	1	0	1	0	0	0	1	0	1	6.64	NUP 14594; NUP 5633
<i>Cetopsorhamdia iheringi</i>	0	0	0	1	0	0	0	0	1	0	1	0	0	0	4.78	NUP 5556
<i>Characidium</i> aff. <i>zebra</i>	0	0	0	1	0	0	0	0	1	0	1	0	0	0	3.94	NUP 14609
<i>Characidium</i> sp.	0	0	0	1	0	0	0	0	1	0	1	0	0	0	4.07	CIG 1410; NUP 15876
<i>Characidium</i> sp. 1	0	0	0	1	0	0	0	0	1	0	1	0	0	0	5.03	NUP 21412
<i>Cichlasoma paranaense</i>	1	0	0	0	0	1	0	0	0	0	1	0	0	1	4.48	NUP 14597; NUP 14608
<i>Corydoras aeneus</i>	0	0	1	0	0	1	0	1	1	0	0	1	0	1	2.99	NUP 5559
<i>Corydoras carlae</i>	0	0	1	0	0	1	0	1	1	0	0	1	0	1	3.17	NUP 5559
<i>Corydoras</i> cf. <i>paleatus</i>	0	0	1	0	0	1	0	1	1	0	0	1	0	1	3.33	NUP 17885
<i>Crenicichla britskii</i>	0	0	0	1	0	1	0	1	0	0	1	0	0	0	6.75	NUP 6003
<i>Crenicichla iguassuensis</i>	1	0	0	0	0	1	0	1	0	0	1	0	0	0	9.56	NUP 11849



TABLE S4 | (Continued)

Species	T01	T02	T03	T04	T05	T06	T07	T08	T09	T10	T11	T12	T13	T14	T15	Voucher
<i>Crenicichla niederleinii</i>	1	0	0	0	0	1	0	1	0	0	1	0	0	0	8.70	NUP10718
<i>Erythrinus erythrinus</i>	1	0	0	0	0	1	0	0	0	0	1	0	0	1	9.17	NUP 6032
<i>Geophagus iporangensis</i>	0	0	1	0	0	1	0	0	0	0	1	0	0	1	7.68	NUP 14610; NUP 6002
<i>Gymnotus inaequilabiatus</i>	1	0	0	0	0	1	0	0	1	1	0	0	0	1	7.31	NUP 6043
<i>Gymnotus pantanal</i>	1	0	0	0	0	1	0	0	1	1	0	0	0	1	11.02	NUP 9290
<i>Gymnotus</i> sp.	1	0	0	0	0	1	0	0	1	1	0	0	0	1	13.94	NUP 6044
<i>Gymnotus sylvius</i>	1	0	0	0	0	1	0	0	1	1	0	0	0	1	11.41	NUP 14593; NUP 14602
<i>Heptapterus</i> aff. <i>mustelinus</i>	0	0	0	1	0	0	0	0	1	0	1	0	0	0	7.48	NUP 8547
<i>Heptapterus stewarti</i>	0	0	0	1	0	0	0	0	1	0	1	0	0	0	8.75	MHNCI 10343
<i>Hisonotus</i> sp.	0	1	0	0	1	1	0	0	1	0	0	0	1	0	2.91	NUP 3950
<i>Hisonotus yasi</i>	0	1	0	0	1	1	0	0	1	0	0	0	1	0	2.78	NUP 2545
<i>Hoplias malabaricus</i>	1	0	0	0	0	1	0	0	0	0	1	0	0	1	11.01	NUP 6042
<i>Hoplias</i> sp. 1	1	0	0	0	0	1	0	0	0	0	1	0	0	1	12.23	NUP 8528
<i>Hoplias</i> sp. 2	1	0	0	0	0	1	0	0	0	0	1	0	0	1	12.44	NUP 8510
<i>Hoplias</i> sp. 3	1	0	0	0	0	1	0	0	0	0	1	0	0	1	8.70	NUP 8509
<i>Deuterodon</i> cf. <i>luetkenii</i>	0	0	0	1	1	0	0	0	1	0	1	0	0	1	3.40	NUP 2621
<i>Hypostomus</i> aff. <i>strigaticeps</i>	0	1	0	0	1	1	0	1	1	0	0	0	1	1	9.58	NUP 5283
<i>Hypostomus albopunctatus</i>	0	1	0	0	1	1	0	1	1	0	0	0	1	0	6.09	NUP 5432
<i>Hypostomus ancistroides</i>	0	1	0	0	1	1	0	1	1	0	0	0	1	1	4.99	NUP 14611; NUP 6047
<i>Hypostomus commersoni</i>	0	1	0	0	1	1	0	1	1	0	0	0	1	1	5.19	NUP 12631
<i>Hypostomus derbyi</i>	0	1	0	0	1	1	0	1	1	0	0	0	1	1	5.51	NUP 12628
<i>Hypostomus myersi</i>	0	1	0	0	1	1	0	1	1	0	0	0	1	0	10.97	NUP 5561
<i>Hypostomus nigromaculatus</i>	0	1	0	0	1	1	0	1	1	0	0	0	1	0	3.74	NUP 5561
<i>Hypostomus</i> sp.	0	1	0	0	1	1	0	1	1	0	0	0	1	0	3.55	NUP 5759
<i>Imparfinis borodini</i>	0	0	0	1	1	1	0	0	1	0	1	0	0	0	10.48	NUP 6010
<i>Imparfinis mirini</i>	0	0	0	1	1	1	0	0	1	0	1	0	0	0	4.25	NUP 14592; NUP 5628
<i>Imparfinis schubarti</i>	0	0	0	1	1	1	0	0	1	0	1	0	0	0	4.18	NUP 16651
<i>Neoplecostomus</i> sp.	0	1	0	0	1	1	0	0	1	0	0	0	1	0	4.50	NUP 5577
<i>Oreochromis niloticus</i>	0	0	1	0	0	1	0	0	1	0	1	0	0	1	6.86	NUP 8544; NUP 5316
<i>Phalloceros harpagos</i>	0	1	0	1	0	1	1	0	1	0	1	0	0	1	1.94	NUP 14614
<i>Phenacorhamdia tenebrosa</i>	0	0	0	1	0	0	0	0	1	0	1	0	0	0	5.09	NUP 5607



TABLE S4 | (Continued)

Species	T01	T02	T03	T04	T05	T06	T07	T08	T09	T10	T11	T12	T13	T14	T15	Voucher
<i>Piabarchus stramineus</i>	0	0	0	1	1	0	0	0	0	0	0	1	0	0	4.26	NUP 16614
<i>Piabina</i> sp.	0	1	0	0	1	0	0	0	0	0	0	1	0	1	4.24	NUP 5578
<i>Pimelodella gracilis</i>	0	0	0	1	0	0	0	0	1	0	1	0	0	0	5.63	NUP 14590
<i>Pimelodella avanhandavae</i>	0	0	0	1	0	0	0	0	1	0	1	0	0	0	6.99	NUP 5632
<i>Poecilia reticulata</i>	0	1	0	1	0	1	1	0	1	1	0	0	0	1	2.12	NUP 14615; NUP 3452
<i>Prochilodus lineatus</i>	0	1	0	0	1	0	0	1	0	0	1	0	0	1	12.41	NUP 14606
<i>Rhamdia branneri</i>	1	0	0	0	0	0	0	0	0	0	1	0	0	0	8.80	NUP 12633
<i>Rhamdia quelen</i>	1	0	0	0	0	0	0	0	0	0	1	0	0	1	7.92	NUP 14603; NUP 6048
<i>Rhamdia voulezi</i>	1	0	0	0	0	0	0	0	0	0	1	0	0	0	8.77	NUP 12634
<i>Rineloricaria</i> sp.	0	1	0	1	0	1	0	0	0	0	0	0	1	0	4.36	NUP 5761
<i>Serrapinnus notomelas</i>	0	0	1	0	0	0	0	0	0	0	1	0	0	1	2.85	NUP 14596; NUP 6025
<i>Synbranchus marmoratus</i>	1	0	0	0	0	1	0	0	0	0	1	0	0	1	15.84	NUP 14605; NUP 6041
<i>Coptodon rendalli</i>	0	0	1	0	0	1	0	0	1	0	1	0	0	1	2.10	NUP 22562
<i>Cambeva davisii</i>	0	0	0	1	0	0	0	0	0	0	0	1	0	0	5.63	NUP 4008
<i>Cambeva diabola</i>	0	0	0	1	0	0	0	0	0	0	0	1	0	0	3.60	NUP 5579
<i>Trichomycterus</i> sp.	0	0	0	1	0	0	0	0	0	0	0	1	0	0	4.17	NUP 14591
<i>Cambeva stawiariski</i>	0	0	0	1	0	0	0	0	0	0	0	1	0	0	5.59	NUP 10830
<i>Cambeva taroba</i>	0	0	0	1	0	0	0	0	0	0	0	1	0	0	4.25	NUP 1616
<i>Xiphophorus helleri</i>	0	0	1	0	0	1	1	0	1	0	1	0	0	1	4.29	NUP 6030

Neotropical Ichthyology



This is an open access article under the terms of the Creative Commons Attribution License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited.

Distributed under Creative Commons CC-BY 4.0

© 2021 The Authors.
Diversity and Distributions Published by SBI



Official Journal of the
Sociedade Brasileira de Ictiologia

HOW TO CITE THIS ARTICLE

- Müller NOR, Cunico AM, Gubiani ÉA, Piana PA. Functional responses of stream fish communities to rural and urban land uses. *Neotrop Ichthyol.* 2021; 19(3):e200134. <https://doi.org/10.1590/1982-0224-2020-0134>