SUPPLEMENTARY MATERIAL

Filtering effect of large rivers on primate distribution in the Brazilian Amazonia

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TABELA S1 | Primate occurrence in the 10 major interfluves of the Brazilian Amazonia (BEL: Belém; XIN: Xingu; TAP: Tapajós; RO: Rondônia; INA: Inambari; JAU: Jau; NAP: Napo; IME: Imeri; PAN: Pantepui-Duida; GUI: Guiana).

Species	Species size	BEL	XIN	TAP	RON	INA	JAU	NAP	IME	PAN	GUI	Number of occurrences
Alouatta belzebul	Large	1	1	1	0	0	0	0	0	0	0	3
Alouatta discolor	Large	0	1	1	0	0	0	0	0	0	0	2
Alouatta macconnelli	Large	0	0	0	0	0	0	0	0	1	1	2
Aloautta nigerrima	Large	0	0	0	1	1	0	0	0	0	0	2
Alouatta seniculus	Large	0	0	0	1	1	1	1	1	0	0	5
Aotus azarae	Small	1	1	1	0	0	0	0	0	0	1	4
Aotus nancymaae	Small	0	0	0	0	1	0	0	0	0	0	1
Aotus nigriceps	Small	0	0	0	1	1	0	0	0	0	0	2
Aotus trivirgatus	Small	0	0	0	0	0	0	0	0	1	1	2
Aotus vociferans	Small	0	0	0	0	0	1	1	1	0	0	3
Ateles belzebuth	Large	0	0	0	0	0	0	0	1	1	0	2
Ateles chamek	Large	0	0	1	1	1	1	0	0	0	0	4
Ateles marginatus	Large	0	0	1	0	0	0	0	0	0	0	1
Ateles paniscus	Large	0	0	0	0	0	0	0	0	0	1	1
Cacajao hosomi	Mid	0	0	0	0	0	0	0	0	1	0	1
Cacajao calvus	Mid	0	0	0	0	1	1	1	0	0	0	3
Cacajao melanocephalus	Mid	0	0	0	0	0	1	1	1	0	0	3
Callibella humilis	Small	0	0	0	1	0	0	0	0	0	0	1
Callimico goeldii	Small	0	0	0	0	1	0	1	0	0	0	2

Species (cont.)	**Species size**	**BEL**	**XIN**	**TAP**	**RON**	**INA**	**JAU**	**NAP**	**IME**	**PAN**	**GUI**	**Number of occurrences**
Cebuella niveiventris	Small	0	0	0	0	1	0	0	0	0	0	1
Cebuella pygmaea	Small	0	0	0	0	0	1	1	0	0	0	2
Cebus albifrons	MId	0	0	0	0	0	0	0	0	1	0	1
Cebus castaneus	MId	0	0	0	0	0	0	0	0	0	1	1
Cebus kaapori	MId	1	0	0	0	0	0	0	0	0	0	1
Cebus olivaceus	MId	0	0	0	0	0	0	0	0	1	0	1
Cebus unicolor	MId	0	0	0	1	1	0	1	0	0	0	3
Cebus yuracus	MId	0	0	0	0	0	0	1	0	0	0	1
Cheracebus lucifer	Small	0	0	0	0	0	1	1	0	0	0	2
Cheracebus lugens	Small	0	0	0	0	0	0	0	1	1	0	2
Cheracebus purinus	Small	0	0	0	0	1	0	0	0	0	0	1
Cheracebus regulus	Small	0	0	0	0	1	0	0	0	0	0	1
Cheracebus torquatus	Small	0	0	0	0	0	1	1	0	0	0	2
Chiropotes albinasus	Mid	0	0	1	1	0	0	0	0	0	0	2
Chiropotes chiropotes	Mid	0	0	0	0	0	0	0	0	1	1	2
Chiropotes satanas	Mid	1	0	0	0	0	0	0	0	0	0	1
Chiropotes utahickae	Mid	0	1	0	0	0	0	0	0	0	0	1
Lagothrix lagotricha	Large	0	0	0	1	1	1	1	1	0	0	5
Leontocebus fuscicollis	Small	0	0	0	0	1	0	0	0	0	0	1
Leontocebus fuscus	Small	0	0	0	0	0	1	1	0	0	0	2

Species (cont.)	**Species size**	**BEL**	**XIN**	**TAP**	**RON**	**INA**	**JAU**	**NAP**	**IME**	**PAN**	**GUI**	**Number of occurrences**
Leontocebus nigricollis	Small	0	0	0	0	0	0	1	0	0	0	1
Leontocebus weddelli	Small	0	0	0	0	1	0	0	0	0	0	1
Mico argentatus	Small	0	1	1	0	0	0	0	0	0	0	2
Mico emiliae	Small	0	0	1	0	0	0	0	0	0	0	1
Mico humeralifer	Small	0	0	0	1	0	0	0	0	0	0	1
Mico leucippe	Small	0	0	1	0	0	0	0	0	0	0	1
Mico melanurus	Small	0	0	1	1	0	0	0	0	0	0	2
Mico munduruku	Small	0	0	1	0	0	0	0	0	0	0	1
Mico nigriceps	Small	0	0	0	1	0	0	0	0	0	0	1
Mico rondoni	Small	0	0	0	1	0	0	0	0	0	0	1
Pithecia albicans	Mid	0	0	0	0	1	0	0	0	0	0	1
Pithecia cazuzai	Mid	0	0	0	0	0	1	0	0	0	0	1
Pithecia chrysocephala	Mid	0	0	0	0	0	0	0	0	0	1	1
Pithecia hirsuta	Mid	0	0	0	0	0	0	1	0	0	0	1
Pithecia irrorata	Mid	0	0	1	1	1	0	0	0	0	0	3
Pithecia monachus	Mid	0	0	0	0	1	0	0	0	0	0	1
Pithecia pithecia	Mid	0	0	0	0	0	0	0	0	0	1	1
Plecturocebus baptista	Small	0	0	0	1	0	0	0	0	0	0	1
Plecturocebus bernhardi	Small	0	0	0	1	0	0	0	0	0	0	1
Plecturocebus brunneus	Small	0	0	0	1	0	0	0	0	0	0	1

Species (cont.)	**Species size**	**BEL**	**XIN**	**TAP**	**RON**	**INA**	**JAU**	**NAP**	**IME**	**PAN**	**GUI**	**Number of occurrences**
Plecturocebus caligatus	Small	0	0	0	0	1	0	0	0	0	0	1
Plecturocebus cinerascens	Small	0	0	0	1	0	0	0	0	0	0	1
Plecturocebus cupreus	Small	0	0	0	0	1	0	0	0	0	0	1
Plecturocebus dubius	Small	0	0	0	0	1	0	0	0	0	0	1
Plecturocebus hoffmannsi	Small	0	0	0	1	0	0	0	0	0	0	1
Plecturocebus moloch	Small	0	1	1	0	0	0	0	0	0	0	2
Plecturocebus vierai	Small	0	0	1	0	0	0	0	0	0	0	1
Saguinus bicolor	Small	0	0	0	0	0	0	0	0	0	1	1
Saguinus inustus	Small	0	0	0	0	0	1	1	1	0	0	3
Saguinus labiatus	Small	0	0	0	0	1	1	1	0	0	0	3
Saguinus martinsi	Small	0	0	0	0	0	0	0	0	0	1	1
Saguinus midas	Small	0	0	0	0	0	0	0	0	0	1	1
Saguinus mystax	Small	0	0	0	0	1	0	0	0	0	0	1
Saguinus niger	Small	0	1	0	0	0	0	0	0	0	0	1
Saguinus ursulus	Small	1	0	0	0	0	0	0	0	0	0	1
Saimiri boliviensis	Small	0	0	0	0	1	0	0	0	0	0	1
Saimiri cassiquiarensis	Small	0	0	0	0	0	1	1	1	1	0	4
Saimiri collinsi	Small	1	1	1	1	0	0	0	0	0	0	4
Saimiri sciureus	Small	0	0	0	1	0	0	0	0	0	1	2
Saimiri ustus	Small	0	0	0	1	1	1	0	0	0	0	3

Species (cont.)	**Species size**	**BEL**	**XIN**	**TAP**	**RON**	**INA**	**JAU**	**NAP**	**IME**	**PAN**	**GUI**	**Number of occurrences**
Sapajus apella	Mid	1	1	1	1	1	1	1	1	0	1	9
Species richness		7	9	16	22	25	17	18	9	9	13	

TABLE S2 | Characteristics of the rivers separating the 10 major interfluves in the Brazilian Amazonia.

Interfluves separated by rivers[a]	River ID	Water color[b]	Mean discharge (m^3/s/year)	Sediment load	Sinuosity index
IME-PAN	Negro	Black	5786	331.1	0.261
PAN-NAP	Negro	Black	12357	331.1	0.096
PAN-JAU	Negro	Black	17576	414.8	0.102
NAP-JAU	Uneiuxi-Pucabi-Juami	Black	1000	620.6	0.195
GUI-JAU	Negro	Black	32585	390.9	0.124
GUI-PAN	Branco	Clear	2969	916.3	0.064
NAP-IME	Uaupés	Black	2592	331.1	0.306
INA-JAU	Solimões	White	83067	1460.5	0.250
NAP-INA	Solimões	White	46619	1460.5	0.274
GUI-INA	Amazonas	White	125746	1352.4	0.109
RO-GUI	Amazonas	White	173711	1519.3	0.186
TAP-GUI	Amazonas	White	196897	1554.3	0.103
GUI-XIN	Amazonas	White	216726	1579.2	0.130
INA-RO	Madeira	White	22363	1444	0.231
RO-TAP	Tapajós	Clear	10480	728.1	0.166
XIN-TAP	Xingu	Clear	5846	720.8	0.301
BEL-XIN	Tocantins	Clear	6403	720.8	0.257

[a]IME: Imeri; PAN: Pantepui-Duida; NAP: Napo; JAU: Jaú; GUI: Guiana; INA: Inambari; RO: Rondônia; TAP: Tapajós; XIN: Xingu; BEL: Belém. [b]Water color followed Ayres & Clutton-Brock (1992).

TABLE S3 | List of phylogenies used to build the phylogenetic tree of the primate species included in this study.

Family	Genus*	References	Observation
Atelidae	*Alouatta*	Cortés-Ortiz et al. (2003, 2015)	
	Ateles	Morales-Jimenez et al. (2015)	
Cebidae	*Aotus*	Menezes et al. (2010) Ruiz-Garcia et al. (2010) Plautz et al. (2009)	Phylogenies did not agree
	Cebus	Martins-Junior et al. (2018) Lima et al. (2017)	Inconsistencies regarding *C. yuracus*, *C. unicolor*, and *C. albifrons*
	Saimiri	Lynch-Alfaro et al. (2015)	
	Leontocebus	Sampaio et al. (2015) Cropp et al. (1999)	
	Mico	Costa-Araújo et al. (2019) Garbino (2015)	Inconsistencies regarding *M. acariensis*, *M. melanurus*, *M. marcai*, and *M. chrysoleucus*
	Saguinus	Cunha et al. (2011) Rylands et al. (2016)	
Pitheciidae	*Cacajao*	Boubli et al. (2008)	
	Chiropotes	Bonvicino et al. (2003)	
	Cheracebus	Carneiro et al. (2020)	
	Plecturocebus	Byrne et al. (2018)	*P. dubius*, *P. baptista*, *P. toppini*, and *P. stephennashi* were not included in the phylogenies and were positioned in the tree according to Byrne et al. (2016) and van Roosmalen et al. (2002)

**Lagothrix*, *Callibella*, *Cebuella*, *Callimico*, and *Sapajus* were represented by ≤2 species.

TABLE S4 | Jaccard dissimilarity matrix of primate communities in the 10 major interfluves in the Brazilian Amazonia.

Interfluves	Belém	Xingu	Tapajós	Rondônia	Inambari	Jaú	Napo	Imeri	Pantepui-Duida
Xingu	0.667								
Tapajós	0.789	0.611							
Rondônia	0.926	0.931	0.813						
Inambari	0.968	0.970	0.921	0.763					
Jaú	0.957	0.960	0.935	0.818	0.765				
Napo	0.958	0.962	0.970	0.889	0.806	0.333			
Imeri	0.933	0.941	0.958	0.893	0.903	0.632	0.650		
Pantepui-Duida	1.000	1.000	1.000	1.000	1.000	0.960	0.962	0.800	
Guiana	0.889	0.900	0.926	0.939	0.973	0.966	0.967	0.952	0.842

TABLE S5 | Summary of river characteristics by watercolor (mean ± sd).

River characteristics	Black water	Clear water	White water
Sinuosity index	0.819 ± 0.1	0.803 ± 0.1	0.817 ± 0.1
Sediment load	403.3 ± 112.4	771.5 ± 96.6	1,481.5 ± 76.6
Annual mean discharge	11,982.7 ± 11,858.2	6,424.5 ± 3,094.2	123,589.9 ± 75,695.2

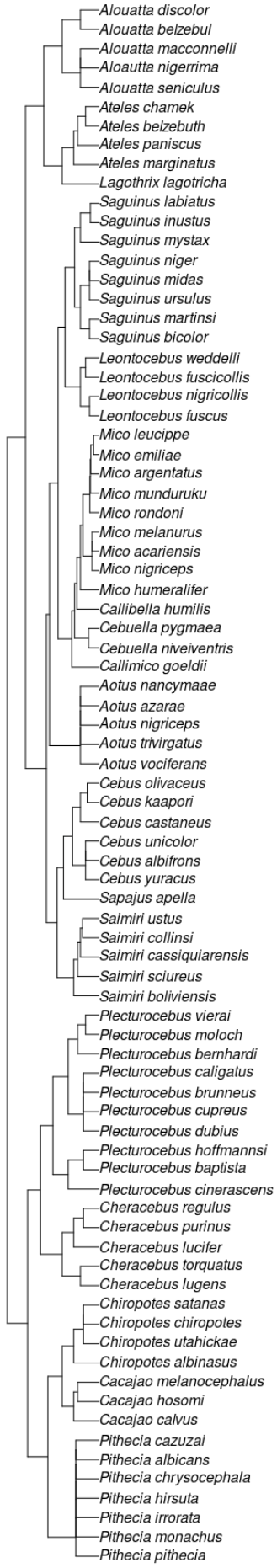

FIGURE S1 | Phylogenetic tree of the primate species of the Brazilian Amazonia used in this study.

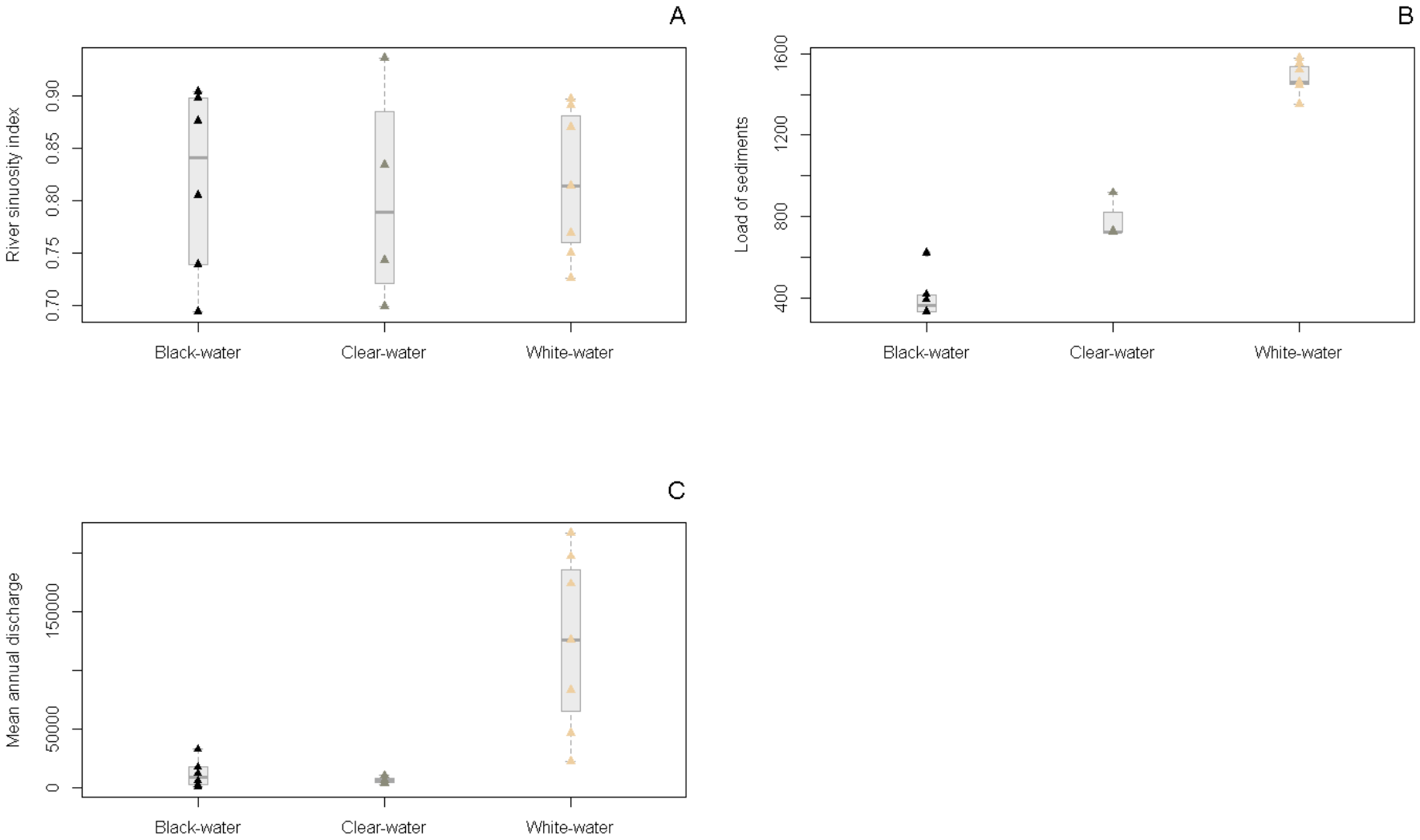

FIGURE S2 | River characteristics by watercolor: A) Sinuosity index, B) Load of sediments, and C) Mean annual discharge. Colored triangles represent actual river data shown in Table S2. Boxplots are shown as reference (the line represents the median, lower and upper hinges represent the 25% and 75% interquartile, and lower and upper whiskers extend to the most extreme data point which is no more than 1.5 times the interquartile range from the box).

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