

SUPPLEMENTARY MATERIAL

TABLE S1 | List of species with accession number per gene used to reconstruct phylogeny.

ID	Family	Subfamily	Tribe (Mirande/Teran)	Species	COI	Cyt-b	S16	Myh6	RAG1	RAG2	number of genes	Comments	
1	Alestidae			<i>Arnoldichthys spilopterus</i>	JF800934.1	AY791364.1	AY787968.1	JF801040.1		AY804032.1	5		
2	Alestidae			<i>Alestes grandisquamis</i>	MK073999.1	JF801004.1	MN255645.1	JF801082.1			4		
3	Alestidae			<i>Hydrocynus goliath</i>	JF800978.1	JF703772.1	AY788025.1	JF801069.1			4		
4	Alestidae			<i>Micralestes acutidens</i>	MK074483.1	AY791418.1	MN255698.1	JF801044.1		AY804098.1	5		
5	Hepsetidae			<i>Hepsetus odoe</i>	AP011991.1	AP011991.1	AP011991.1	JF801041.1	KX911904.1	AY804086.1	6	Mito genome AP011991.1	x
6	Erythrinidae			<i>Hoplias microlepis</i>	MG937000.1	HQ289555.1	HQ171264.1	HQ288974.1	HQ289171.1		5		
7	Erythrinidae			<i>Hoplias malabaricus</i>	AP011992.1	AP011992.1	AP011992.1	JF801077.1	JX470044.1	JX848728.1	6	Mito genome AP011992.1	x
8	Erythrinidae			<i>Erythrinus erythrinus</i>	JN988856.1	KR491714.1	HQ171340.1	HQ289049.1	HQ289242.1		5		
9	Erythrinidae			<i>Hoplerethrinus unitaeniatus</i>	MG911833.1	HQ289695.1	HQ171408.1	HQ289116.1	HQ289309.1	HQ289501.1	6		
10	Cynodontidae			<i>Cynodon gibbus</i>		HQ289532.1	HQ171241.1	HQ288951.1	HQ289148.1	HQ289339.1	5		
11	Cynodontidae			<i>Hydrolycus scomberoides</i>	MH411369.1	HQ289558.1	HQ171269.1	HQ288979.1	HQ289176.1	HQ289366.1	6		
12	Cynodontidae			<i>Rhaphiodon vulpinus</i>	GU701528.1	HQ289592.1	HQ171303.1		HQ289205.1	HQ289399.1	5		
13	Serrasalminae			<i>Piaractus mesopotamicus</i>	KM245046.1	KM245046.1	KM245046.1	HQ289024.1			4	Mito genome KM245046.1	x
14	Serrasalminae			<i>Colossoma macropomum</i>	KP188830.1	KP188830.1	KP188830.1	HQ289052.1			4	Mito genome KP188830.1	x
15	Serrasalminae			<i>Serrasalmus rhombeus</i>	KR491523.1	KR491716.1	AY788081.1	MT372746.1			4		
16	Serrasalminae			<i>Myloplus rubripinnis</i>	MG752367.1	HQ289543.1	HQ171252.1	HQ288962.1	HQ289159.1	HQ289350.1	6		
17	Serrasalminae			<i>Mylossoma duriventre</i>	MG752459.1	HQ289539.1	AY788049.1	HQ288958.1	HQ289155.1	HQ289346.1	6		
18	Serrasalminae			<i>Acnodon normani</i>	MG751916.1		AF285430.1				2		
19	Parodontidae			<i>Parodon nasus</i>	GU701591.1	HQ289714.1	HQ171429.1	HQ289137.1	HQ289328.1	HQ289521.1	6		
20	Parodontidae			<i>Apareiodon affinis</i>	AP011998.1	AP011998.1	AP011998.1	HQ289037.1	HQ289230.1	HQ289424.1	6	Mito genome AP011998.1	x
21	Hemiodontidae			<i>Argonectes robertsi</i>		HQ289540.1	HQ171249.1	HQ288959.1	HQ289156.1	HQ289347.1	5		
22	Hemiodontidae			<i>Anodus elongatus</i>	KX086791.1	KX086806.1	KX087043.1	KX086917.1		KX086983.1	5		
23	Anostomidae			<i>Leporellus vittatus</i>	KF568980.1	KF569023.1		KF569152.1	KF569066.1	KF569109.1	5	isolate L070	
24	Anostomidae			<i>Leporinus brunneus</i>	KY524535.1	KY524549.1	MF285870.1	KY524494.1	KY524508.1	KY524521.1	6		
25	Anostomidae			<i>Abramites hypselonotus</i>	KX086793.1	KX086808.1	KX087045.1	KX086919.1	KX086970.1	KX086981.1	6		
26	Anostomidae			<i>Leporinus striatus</i>	KX086761.1	KX086811.1	KX087048.1	KX086887.1	KX086939.1	KX086982.1	6		

TABLE S1 | (Continued)

ID	Family	Subfamily	Tribe (Mirande/Teran)	Species	COI	Cyt-b	S16	Myh6	RAG1	RAG2	number of genes	Comments	
27	Prochilodontidae			Ichthyoelephas longirostris	KP025763.1	KP025763.1	KP025763.1	KX086870.1	KX086956.1	KX086992.1	6	Mito genome KP025763.1	x
28	Prochilodontidae			Semaprochilodus varii	KX086777.1	KX086858.1	KX087058.1	KX086871.1	KX086930.1	KX087027.1	6		
29	Prochilodontidae			Prochilodus rubrotaeniatus	KX086782.1	KX086825.1	KX087091.1	HQ129037.1	HQ129113.1	KX087008.1	6		
30	Chilodontidae			Chilodus punctatus	AP011984.1	AP011984.1	AP011984.1	KF562483.1	KF562509.1	HQ289405.1	6	Mito genome AP011984.1	x
31	Chilodontidae			Caenotropus labyrinthicus	KF568971.1	EU183007.1	KF562380.1	KF569143.1	KF569057.1	KF569100.1	6	isolate L126	
32	Curimatidae			Curimatopsis crypticus	KU519363.1	MH537446.1	MH537127.1	MH537566.1	MH542759.1	MH542845.1	6		
33	Curimatidae			Potamorhina altamazonica	MN551008.1	HQ289552.1	HQ171261.1	HQ288971.1	HQ289168.1	HQ289359.1	6		
34	Curimatidae			Cyphocharax spilurus	MH537292.1	MH537443.1	MH537170.1	MH537562.1	MH542758.1	MH542843.1	6		
35	Curimatidae			Psectrogaster ciliata	MH537308.1	MH537375.1	MH537186.1	MH537499.1	MH542697.1		5		
36	Curimatidae			Curimata cyprinoides	KX086781.1	KX086803.1	KX087054.1	KX086907.1	KX086961.1	KX086978.1	6		
37	Chalceidae			Chalceus erythrurus		AY791379.1	AY787990.1	JF801078.1	HQ289201.1	AY804053.1	5		
38	Chalceidae			Chalceus epakros		HQ289630.1	HQ171341.1	HQ289050.1	HQ289243.1	HQ289436.1	5		
39	Iguanodectidae			Piabucus melanostoma		HQ289627.1	KT277905.1	HQ289047.1	HQ289240.1	HQ289434.1	5		
40	Iguanodectidae			Iguanodectes geisleri		HQ289605.1	HQ171316.1	HQ289025.1	HQ289218.1	GQ339524.1	5		
41	Iguanodectidae			Bryconops caudomaculatus	KF210145.1		KF209861.1	KF210420.1	KF210892.1	KF211128.1	5		
42	Acestrorhynchidae			Acestrorhynchus falcatus	MH507424.1	HQ289601.1	HQ171312.1	HQ289022.1	HQ289214.1	HQ289408.1	6		
43	Acestrorhynchidae			Gilbertolus maracaiboensis		HQ289649.1	HQ171362.1	HQ289070.1	HQ289263.1	HQ289456.1	5		
44	Acestrorhynchidae			Roestes ogilviei		HQ289697.1	HQ171410.1	HQ289118.1	HQ289311.1	HQ289503.1	5		
45	Acestrorhynchidae			Gnathocharax steindachneri		HQ289614.1	HQ171325.1	HQ289034.1	AY430211.1	HQ289421.1	5		
46	Bryconidae			Chilobrycon deuterodon		KF780042.1	KF780004.1	KF780078.1	KF780111.1	KF780151.1	5		
47	Bryconidae			Salminus franciscanus	HQ600856.1	HQ289688.1	HQ171401.1	HQ289109.1	HQ289302.1	HQ289494.1	6		
48	Bryconidae			Brycon pesu	KX086789.1	KF780037.1	KF779999.1	KF780074.1	KX086967.1	KF780145.1	6		
49	Bryconidae			Henochilus wheatlandii		HQ289624.1	HQ171335.1	HQ289044.1	HQ289237.1	HQ289431.1	5		
50	Gasteropelecidae			Engraulisoma taeniatum		HQ289589.1	HQ171299.1	HQ289009.1		HQ289396.1	4		
51	Gasteropelecidae			Thoracocharax stellatus	KU289060.1	GQ339535.1	HQ171384.1	HQ289092.1	HQ289285.1	FJ749092.1	6		
52	Gasteropelecidae			Gasteropelecus sternicla		GQ339543.1	HQ171304.1	HQ289014.1	HQ289206.1	GQ339520.1	5		
53	Gasteropelecidae			Carnegiella strigata	AP011983.1	AP011983.1	AP011983.1	MT372749.1	KC149896.1	MT372771.1	6	Mito genome AP011983.1	x
54	Triporthidae			Lignobrycon myersi		HQ289689.1	HQ171402.1	HQ289110.1	HQ289303.1	HQ289495.1	5		



TABLE S1 | (Continued)

ID	Family	Subfamily	Tribe (Mirande/Teran)	Species	COI	Cyt-b	S16	Myh6	RAG1	RAG2	number of genes	Comments	
55	Triporthidae			Clupeacharax anchoveoides		HQ289626.1	HQ171337.1	HQ289046.1	HQ289239.1	HQ289433.1	5		
56	Triporthidae			Agoniates anchovia		HQ289665.1	HQ171378.1	HQ289086.1	HQ289279.1	HQ289472.1	5		
57	Triporthidae			Triporthes angulatus	GU060427.1	KT281196.1	AY788082.1	KT281233.1	KT281242.1	AY804125.1	6		
58	Characidae	Stethaprioninae	Stethaprionini/ probolodini	Hemigrammus bleheri	LC074360.1	LC074360.1	LC074360.1			AY804076.1	4	Mito genome LC074360.1	x
59	Characidae	Stethaprioninae	Stethaprionini/ probolodini	Paracheirodon axelrodi	AB898197.1	AB898197.1	AB898197.1				3	Mito genome AB898197.1	x
60	Characidae	Stethaprioninae	Stethaprionini/ probolodini	Hyphessobrycon eques	KU568868.1	HQ289682.1	KF209870.1	HQ289103.1	HQ289296.1	AY804080.1	6		
61	Characidae	Stethaprioninae	Stethaprionini/ probolodini	Hyphessobrycon megalopterus	MT185596.1	MT185596.1	MT185596.1	HQ289105.1	HQ289298.1	HQ289490.1	6	Mito genome MT185596.1	x
62	Characidae	Stethaprioninae	Stethaprionini	Moenkhausia pirauba			KC110714.1	KC189527.1			2		
63	Characidae	Stethaprioninae	Stethaprionini	Moenkhausia lepidura			KF209872.1	KF210429.1			2		
64	Characidae	Stethaprioninae	Stethaprionini	Moenkhausia costae	HM405163.1	KC189491.1	KC110704.1	KC189516.1	KC196437.1	KC196462.1	6		
65	Characidae	Stethaprioninae	Stethaprionini	Moenkhausia lata			KC110712.1	KC189525.1		KC196471.1	3		
66	Characidae	Stethaprioninae	Stethaprionini	Moenkhausia nigromarginata		KC189486.1	KC110699.1	KC189511.1	KC196432.1	KC196457.1	5		
67	Characidae	Stethaprioninae	Stethaprionini	Moenkhausia celibela		KC189497.1	KC110710.1	KC189523.1	KC196444.1	KC196469.1	5		
68	Characidae	Stethaprioninae	Stethaprionini	Nematocharax venustus	HM562866.1	HQ289693.1	HQ171406.1	HQ289114.1	HQ289307.1	HQ289499.1	6		
69	Characidae	Stethaprioninae	Stethaprionini	Nematocharax varii	MG025937.1	MG063080.1		MG063116.1	MG063128.1		4		
70	Characidae	Stethaprioninae	Stethaprionini	Moenkhausia gracilima		KC189495.1	KC110708.1	KC189520.1	KC196441.1	KC196466.1	5		
71	Characidae	Stethaprioninae	Stethaprionini	Gymnocorymbus bondi			KP959290.1	KP959282.1	KP959275.1	KP959268.1	4	Isolate Gbondi15777	
72	Characidae	Stethaprioninae	Stethaprionini	Brachyhalcinus copei		HQ289720.1	HQ171435.1	HQ289143.1	HQ289334.1	HQ289527.1	5		
73	Characidae	Stethaprioninae	Stethaprionini	Pristella maxillaris	KU568982.1	HQ289546.1	HQ171255.1	HQ288965.1	HQ289162.1	FJ749087.1	6		
74	Characidae	Stethaprioninae	Stethaprionini	Moenkhausia comma		KC189487.1	KC110700.1	KC189512.1	KC196433.1	KC196458.1	5		
75	Characidae	Stethaprioninae	Stethaprionini	Aphyodite grammica		HQ289707.1	HQ171421.1	HQ289129.1	HQ289322.1	HQ289514.1	5		
76	Characidae	Stethaprioninae	Stethaprionini	Hemigrammus ulreyi		HQ289681.1	HQ171394.1	HQ289102.1	HQ289295.1	HQ289487.1	5		
77	Characidae	Stethaprioninae	Stethaprionini	Moenkhausia dichroua		KC189485.1	KC110698.1	KC189510.1	KC196431.1	KC196456.1	5		
78	Characidae	Stethaprioninae	Rhoadsiini/ Gymnocharacini	Inpaichthys kerri		HQ289615.1	AY788039.1	HQ289035.1	HQ289228.1	AY804093.1	5		
79	Characidae	Stethaprioninae	Rhoadsiini/ Gymnocharacini	Nematobrycon palmeri	FJ749061.1	HQ289654.1	HQ171367.1	HQ289075.1	KF210902.1	FJ749103.1	6		
80	Characidae	Stethaprioninae	Rhoadsiini/ Gymnocharacini	Pseudochalceus kyburzi	HM562869.1		HM562765.1				2		

TABLE S1 | (Continued)

ID	Family	Subfamily	Tribe (Mirande/Teran)	Species	COI	Cyt-b	S16	Myh6	RAG1	RAG2	number of genes	Comments
81	Characidae	Stethaprioninae	Rhoadsiini/ Gymnocharacini	<i>Rhoadsia altipinna</i>	MZ820711.1	MZ818371.1	OP647423		OP654740	OP654744	5	
83	Characidae	Stethaprioninae	Rhoadsiini/ Gymnocharacini	<i>Rhoadsia minor</i>	MZ820736.1	MZ818636.1	OP647424		OP654741	OP654745	5	
84	Characidae	Stethaprioninae	Rhoadsiini/ Gymnocharacini	<i>Carlana eigenmanni</i>	MZ820769.1	MZ818697.1	OP647421	HQ288986.1	OP654738	OP654742	6	
85	Characidae	Stethaprioninae	Rhoadsiini/ Gymnocharacini	<i>Parastremma sadina</i>	MZ820762.1	MZ818692.1	OP647422		OP654739	OP654743	5	
86	Characidae	Stethaprioninae	Rhoadsiini/ Gymnocharacini	<i>Hollandichthys multifasciatus</i>	JN988898.1		HQ171434.1	HQ289142.1	HQ289333.1	HQ289526.1	5	
87	Characidae	Stethaprioninae	Rhoadsiini/ Gymnocharacini	<i>Rachoviscus graciliceps</i>	FJ749079.1		FJ748991.1			FJ749106.1	3	
88	Characidae	Stethaprioninae	Rhoadsiini/ Gymnocharacini	<i>Rachoviscus crassiceps</i>	HM562858.1	HQ289658.1	HQ171371.1	HQ289079.1	HQ289272.1	FJ749107.1	6	
89	Characidae	Stethaprioninae	Rhoadsiini/ Gymnocharacini	<i>Moenkhausia pyrophthalma</i>			KC110688.1	KC189500.1	KC196421.1	KC196446.1	4	
90	Characidae	Stethaprioninae	Rhoadsiini/ Gymnocharacini	<i>Thayeria obliqua</i>			HQ171344.1	HQ289053.1	HQ289246.1	HQ289439.1	4	
91	Characidae	Stethaprioninae	Rhoadsiini/ Gymnocharacini	<i>Thayeria boehlkei</i>	FJ749063.1		FJ749023.1			FJ749105.1	3	
92	Characidae	Stethaprioninae	Rhoadsiini/ Gymnocharacini	<i>Moenkhausia cosmops</i>			KC110705.1	KC189517.1	KC196438.1	KC196463.1	4	
93	Characidae	Stethaprioninae	Rhoadsiini/ Gymnocharacini	<i>Bario steindachneri</i>		HQ289608.1	HQ171319.1	HQ289028.1	HQ289221.1	HQ289415.1	5	
94	Characidae	Stethaprioninae	Rhoadsiini/ Gymnocharacini	<i>Moenkhausia oligolepis</i>	EU177042.1		KT277933.1	KC189508.1	KC196429.1	KC196454.1	5	
95	Characidae	Stethaprioninae	Rhoadsiini/ Gymnocharacini	<i>Moenkhausia sanctaefilomenae</i>	FJ749056.1		AY788054.1	KC189509.1	KC196430.1	FJ749099.1	5	
96	Characidae	Stethaprioninae	Rhoadsiini/ Gymnocharacini	<i>Moenkhausia forestii</i>	GU701434.1		KC110695.1	KC189507.1	KC196428.1	KC196453.1	5	
97	Characidae	Stethaprioninae	Rhoadsiini/ Gymnocharacini	<i>Moenkhausia australe</i>	EU177032.1	KC189478.1	KC110690.1	KC189502.1	KC196423.1	KC196448.1	6	
98	Characidae	Stethaprioninae	Grundulini/ Probolodini	<i>Parecbasis cyclolepis</i>		HQ289708.1	HQ171422.1	HQ289130.1	HQ289323.1	HQ289515.1	5	
99	Characidae	Stethaprioninae	Grundulini/ Probolodini	<i>Macropsobrycon xinguensis</i>			KC110754.1	KC189607.1	KC196384.1	KC196420.1	4	
100	Characidae	Stethaprioninae	Grundulini/ Probolodini	<i>Moenkhausia cotinho</i>			KT277935.1	KC189505.1	KC196426.1	KC196451.1	4	
101	Characidae	Stethaprioninae	Grundulini/ Probolodini	<i>Moenkhausia ceros</i>		KC189499.1	KC110713.1	KC189526.1	KF210891.1		4	



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ID	Family	Subfamily	Tribe (Mirande/Teran)	Species	COI	Cyt-b	S16	Myh6	RAG1	RAG2	number of genes	Comments	
102	Characidae	Stethaprioninae	Grundulini/Probolodini	Hyphessobrycon herbertaxelrodi	KU568877.1		FJ749013.1			FJ749097.1	3		
103	Characidae	Stethaprioninae	Grundulini/Probolodini	Erythrocharax altipinnis		JX570762.1	JX570761.1	JX570763.1		JX570764.1	4		
104	Characidae	Stethaprioninae	Grundulini/Gymnocharacini	Grundulus bogotensis	KM677190.1	KM677190.1	KM677190.1				3	Mito genome KM677190.1	x
105	Characidae	Stethaprioninae	Grundulini/Probolodini	Coptobrycon bilineatus			HQ171370.1	HQ289078.1	HQ289271.1	HQ289464.1	4		
106	Characidae	Stethaprioninae	Grundulini/Probolodini	Myxiops aphos	KY327453.1	HQ289661.1	HQ171374.1	HQ289082.1	HQ289275.1	HQ289468.1	6		
107	Characidae	Stethaprioninae	Grundulini/Probolodini	Probolodus heterostomus	HM065016.1	HQ289645.1	HQ171356.1	HQ289065.1	HQ289258.1	HQ289451.1	6		
108	Characidae	Stethaprioninae	Stethaprioninii/Probolodini	Paracheiroidon innesi	KP013092.1	KP013092.1	KP013092.1			FJ749096.1	4	Mito genome KP013092.1	x
109	Characidae	Stethaprioninae	Stethaprioninii/Probolodini	Hyphessobrycon erythrostigma	FJ749055.1		FJ749015.1			FJ749098.1	3		
110	Characidae	Stethaprioninae	Grundulini/Probolodini	Stygichthys typhlops	HM405019.1	HQ289694.1	HQ171407.1	HQ289115.1	HQ289308.1	HQ289500.1	6		
111	Characidae	Stethaprioninae	Grundulini/Probolodini	Deuterodon giton	NC_044970.1	NC_044970.1	NC_044970.1				3	Basionym: Astyanax giton; Mito genome NC_044970.1	x
112	Characidae	Stethaprioninae	Grundulini/Probolodini	Deuterodon iguape	KT580789.1	HQ289653.1		HQ289074.1	HQ289267.1	HQ289460.1	5		
113	Characidae	Stethaprioninae	Gymnocharacini/Gymnocharacini	Jupiaba anteroides		HQ289668.1	HQ171381.1	HQ289089.1	HQ289282.1	HQ289475.1	5		
114	Characidae	Stethaprioninae	Gymnocharacini/Gymnocharacini	Jupiaba polylepis	FJ749068.1		FJ749027.1			FJ749124.1	3		
115	Characidae	Stethaprioninae	Gymnocharacini/Gymnocharacini	Psellogrammus kennedyi	JN989170.1	HQ289652.1	HQ171365.1	HQ289073.1	HQ289266.1	HQ289459.1	6		
116	Characidae	Stethaprioninae	Gymnocharacini/Gymnocharacini	Ctenobrycon hauxwellianus		HQ289599.1	KT277930.1	HQ289020.1	HQ289212.1	FJ749116.1	5		
117	Characidae	Stethaprioninae	Gymnocharacini/Gymnocharacini	Psalidodon xiru	MK928381.1			MK991895.1		MN011706.1	3		
118	Characidae	Stethaprioninae	Gymnocharacini/Gymnocharacini	Astyanax microlepis	MF415746.1		FJ944717				2		
119	Characidae	Stethaprioninae	Gymnocharacini/Gymnocharacini	Astyanax nasutus	FJ439390.1	FJ439300.1	FJ439438.1		FJ439486.1		4		
120	Characidae	Stethaprioninae	Gymnocharacini/Gymnocharacini	Astyanax nicaraguensis	FJ439406.1	FJ439217.1	FJ439429.1		FJ439477.1		4		

TABLE S1 | (Continued)

ID	Family	Subfamily	Tribe (Mirande/Teran)	Species	COI	Cyt-b	S16	Myh6	RAG1	RAG2	number of genes	Comments	
121	Characidae	Stethaprioninae	Gymnocharacini/ Gymnocharacini	<i>Astyanax magdaleneae</i>	KY268178.1		FJ944716.1				2		
122	Characidae	Stethaprioninae	Gymnocharacini/ Gymnocharacini	<i>Astyanax cremnobates</i>	KY267444.1		FJ749006.1			FJ749090.1	3		
123	Characidae	Stethaprioninae	Gymnocharacini/ Gymnocharacini	<i>Astyanax mexicanus</i>	AP011982.1	AP011982.1	AP011982.1	MK991899.1	FJ439501.1	HQ289510.1	6	Mito genome AP011982.1	x
124	Characidae	Stethaprioninae	Gymnocharacini/ Gymnocharacini	<i>Astyanax petenensis</i>	FJ439398.1	FJ439333.1	FJ439449.1		FJ439504.1		4		
125	Characidae	Stethaprioninae	Gymnocharacini/ Gymnocharacini	<i>Oligosarcus pintoii</i>	MN119440.1			MK991877.1		MN011686.1	3		
126	Characidae	Stethaprioninae	Gymnocharacini/ Gymnocharacini	<i>Astyanacinus moorii</i>		HQ289641.1	HQ171352.1	HQ289061.1	HQ289254.1	HQ289447.1	5	Tetragonopterus moorii; <i>Astyanacinus</i> moorii	
127	Characidae	Stethaprioninae	Gymnocharacini/ Gymnocharacini	<i>Hasemania crenuchooides</i>	JN988883.1	HQ289663.1	HQ171376.1	HQ289084.1	HQ289277.1	HQ289470.1	6		
128	Characidae	Stethaprioninae	Gymnocharacini/ Gymnocharacini	<i>Psalidodon fasciatus</i>	MT428071.1	MT428071.1	MT428071.1	MK991885.1		MN011702.1	5	mitogenome: MT428071.1	x
130	Characidae	Spintherobolinae		<i>Spintherobolus ankoseion</i>		HQ289620.1	HQ171331.1	HQ289040.1	HQ289233.1	HQ289427.1	5		
131	Characidae	Exodontinae		<i>Roeboexodon guyanensis</i>		HQ289634.1	HQ171345.1	HQ289054.1	HQ289247.1	HQ289440.1	5		
132	Characidae	Exodontinae		<i>Exodon paradoxus</i>		AY791397.1	AY788013.1	HQ289016.1	HQ289208.1	AY804072.1	5		
133	Characidae	Tetragonopterinae		<i>Tetragonopterus anostomus</i>	KX058296.1	KT895104.1	KT880470.1	KT895124.1	KT895144.1	KT895164.1	6		
134	Characidae	Tetragonopterinae		<i>Tetragonopterus rarus</i>	KT895193.1		KT880490.1			KT895183.1	3		
135	Characidae	Tetragonopterinae		<i>Tetragonopterus argenteus</i>	HM070398.1	GQ339548.1	KT880474.1	HQ288999.1	HQ289193.1	GQ339515.1	6		
136	Characidae	Characinae		<i>Microschemobrycon casiquiare</i>		HQ289696.1	HQ171409.1	HQ289117.1	HQ289310.1	HQ289502.1	5		
137	Characidae	Characinae		<i>Phenacogaster calverti</i>	FJ749077.1	HQ289636.1	HQ171347.1	HQ289056.1	HQ289249.1	FJ749120.1	6		
138	Characidae	Characinae		<i>Roebooides descalsvadensis</i>	JN989199.1		KF209895.1	KF210444.1			3		
139	Characidae	Characinae		<i>Charax stenopterus</i>	KU289041.1		KF209863.1	KF210422.1	KF210894.1	KF211129.1	5		
140	Characidae	Characinae		<i>Acestrocephalus sardina</i>		HQ289660.1	HQ171373.1	HQ289081.1	HQ289274.1	HQ289467.1	5		
141	Characidae	Characinae		<i>Cynopotamus argenteus</i>	FJ749050.1		FJ749011.1				2		
142	Characidae	Aphyocharacinae		<i>Aphyocharacidium bolivianum</i>		HQ289710.1	HQ171424.1	HQ289132.1	HQ289325.1	HQ289517.1	5		
143	Characidae	Aphyocharacinae		<i>Paragoniates alburnus</i>		HQ289712.1	HQ171426.1	HQ289134.1	HQ289326.1	HQ289519.1	5		
144	Characidae	Aphyocharacinae		<i>Phenagoniates macrolepis</i>			HQ171391.1	HQ289099.1	HQ289292.1	HQ289484.1	4		
145	Characidae	Aphyocharacinae		<i>Leptagoniates steindachneri</i>		HQ289600.1	HQ171311.1	HQ289021.1	HQ289213.1	HQ289407.1	5		
146	Characidae	Aphyocharacinae		<i>Prionobrama paraguayensis</i>		JQ820072.1	HQ171272.1	HQ288982.1	HQ289179.1	HQ289369.1	5		



TABLE S1 | (Continued)

ID	Family	Subfamily	Tribe (Mirande/Teran)	Species	COI	Cyt-b	S16	Myh6	RAG1	RAG2	number of genes	Comments
147	Characidae	Aphyocharacinae		Aphyocharax nattereri		JQ820070.1	JQ820088.1	JQ820057.1	JQ820042.1	JQ820029.1	5	
148	Characidae	Aphyocharacinae		Aphyocharax alburnus		HQ289533.1	HQ171242.1	HQ288952.1	HQ289149.1	JQ820034.1	5	
149	Characidae	Aphyocharacinae		Prionobrama filigera		JQ820074.1	KT277921.1	JQ820059.1	JQ820044.1	JQ820027.1	5	
150	Characidae	Aphyocharacinae		Aphyocharax dentatus	JN988681.1	JQ820082.1	KF209858.1	JQ820068.1	JQ820047.1	JQ820036.1	6	
151	Characidae	Aphyocharacinae		Xenagoniates bondi		HQ289563.1	HQ171274.1	HQ288984.1		HQ289371.1	4	
152	Characidae	Cheirodontinae		Heterocheirodon yatai		HQ289619.1	HQ171330.1	HQ289039.1	HQ289232.1	HQ289426.1	5	
153	Characidae	Cheirodontinae		Nanocheirodon insignis			HQ171349.1	HQ289058.1		HQ289444.1	3	
154	Characidae	Cheirodontinae		Saccoderma melanostigma		HQ289637.1	HQ171348.1	HQ289057.1	HQ289250.1	HQ289443.1	5	
155	Characidae	Cheirodontinae		Kolpotocheirodon theloura	HM376391.1	HQ289625.1	HQ171336.1	HQ289045.1	HQ289238.1	HQ289432.1	6	
156	Characidae	Cheirodontinae		Odontostilbe pequirá	MT823248.1	KC189546.1	KC110733.1	KC189586.1	KC196363.1	KC196403.1	6	Holoshestes pequirá
157	Characidae	Cheirodontinae		Aphyocheirodon hemigrammus	JN988685.1	HQ289700.1	HQ171413.1	HQ289121.1	HQ289314.1	HQ289506.1	6	
158	Characidae	Cheirodontinae		Serrapinnus calliurus	HM371155.1	HQ289580.1	KC110745.1	KC189598.1	HQ289195.1	HQ289388.1	6	
159	Characidae	Cheirodontinae		Pseudocheirodon arnoldi	MG937160.1	HQ289715.1		HQ289138.1	HQ289329.1	HQ289522.1	5	
160	Characidae	Cheirodontinae		Cheirodon ibicuihensis	KF210150.1	HQ289623.1	KF209865.1	KF210424.1	KF210896.1	HQ289430.1	6	
161	Characidae	Cheirodontinae		Cheirodon interruptus	FJ749045.1	KC189538.1	KC110725.1	KC189579.1	KC196355.1	KC196395.1	6	
162	Characidae	Cheirodontinae		Cheirodon australe		HQ289564.1	KC110723.1	KC189577.1	HQ289180.1	HQ289372.1	5	
163	Characidae	Cheirodontinae		Prodontocharax melanotus		HQ289530.1	HQ171239.1	HQ288949.1	HQ289146.1	HQ289337.1	5	
164	Characidae	Cheirodontinae		Compsura gorgonae		KC189531.1	KC110718.1	KC189571.1	KC196348.1	KC196388.1	5	
165	Characidae	Cheirodontinae		Acinocheirodon melanogramma	HM404965.1	KC189547.1	KC110734.1	KC189587.1	KC196364.1		5	
166	Characidae	Cheirodontinae		Odontostilbe stenodon	JN988792.1	KC189541.1	KC110728.1	KC189581.1	KC196358.1	KC196398.1	6	Cheirodon deuterodon
167	Characidae	Cheirodontinae		Macropsobrycon uruguayanae	FJ749038.1	HQ289644.1	HQ171355.1	HQ289064.1	HQ289257.1	FJ749112.1	6	
168	Characidae	Cheirodontinae		Odontostilbe splendida		KC189560.1	KC110747.1	KC189600.1	KC196377.1	KC196413.1	5	
169	Characidae	Cheirodontinae		Odontostilbe pulchra		KC189561.1	KC110748.1	KC189601.1	KC196378.1	KC196414.1	5	
170	Characidae	Cheirodontinae		Odontostilbe ecuadorensis		KC189562.1	KC110749.1	KC189602.1	KC196379.1	KC196415.1	5	
171	Characidae	Cheirodontinae		Compsura heterura	HM404971.1	KC189564.1	KC110751.1	KC189604.1	KC196381.1	KC196417.1	6	
172	Characidae	Stevardiinae	Eretmobryconini	Markiana nigripinnis			HQ171432.1	HQ289140.1	HQ289331.1	HQ289524.1	4	
173	Characidae	Stevardiinae	Eretmobryconini	Eretmobrycon gonzalezi	MG936915.1	MT372740.1	KF209738.1	MT372752.1	KF210809.1	KF211035.1	6	
174	Characidae	Stevardiinae	Xenobryconini	Tytocharax tambopatensis	KF210270.1			KF210022.1	KF210562.1	KF210990.1	5	

TABLE S1 | (Continued)

ID	Family	Subfamily	Tribe (Mirande/Teran)	Species	COI	Cyt-b	S16	Myh6	RAG1	RAG2	number of genes	Comments
175	Characidae	Stevardiinae	Xenobryconini	Xenobrycon heterodon	KF210274.1		KF210025.1	KF210564.1	KF210992.1	KF211254.1	5	
176	Characidae	Stevardiinae	Xenobryconini	Tytocharax madeirae	MH003295.1	HQ289655.1	HQ171368.1	HQ289076.1	HQ289269.1	HQ289462.1	6	
177	Characidae	Stevardiinae	Xenobryconini	Xenobrycon pteropus		HQ289709.1	HQ171423.1	HQ289131.1		HQ289516.1	4	
178	Characidae	Stevardiinae	Glandulocaudini	Lophobrycon weitzmani	GU701436.1	HQ289698.1	HQ171411.1	HQ289119.1	KF210967.1	HQ289504.1	6	
179	Characidae	Stevardiinae	Glandulocaudini	Glandulocauda melanopleura	KF210159.1		KF209898.1	KF210447.1	KF210920.1	KF211149.1	5	
180	Characidae	Stevardiinae	Glandulocaudini	Mimagoniates microlepis	FJ749073.1	KR423944.1	FJ749001.1	HQ288950.1	KF210971.1	FJ749081.1	6	
181	Characidae	Stevardiinae	Glandulocaudini	Mimagoniates rheocharis	FJ749074.1		FJ748993.1	KF210535.1			3	
182	Characidae	Stevardiinae	Stevardiini	Argopleura choceensis	KF210032.1		KF209700.1	KF210279.1	KF210782.1	KF210999.1	5	
183	Characidae	Stevardiinae	Stevardiini	Chrysobrycon myersi	KF210096.1		KF209790.1	KF210353.1		KF211080.1	4	
184	Characidae	Stevardiinae	Stevardiini	Pseudocorynopoma heterandria	GU701921.1	GQ339547.1	HQ171268.1	HQ288978.1	HQ289175.1	GQ339511.1	6	
185	Characidae	Stevardiinae	Stevardiini	Corynopoma riisei	FJ749046.1		FJ749009.1	KF210354.1	KF210851.1	FJ749095.1	5	
186	Characidae	Stevardiinae	Stevardiini	Gephyrocharax valencia			KF209889.1	KF210439.1	KF210917.1	KF211145.1	4	
187	Characidae	Stevardiinae	Stevardiini	Pseudocorynopoma doriae	KF210262.1		FJ748984.1	KF210552.1	KF210984.1	KF211244.1	5	
188	Characidae	Stevardiinae	Hemibryconini	Acrobrycon ipanquianus	KF210031.1		KF209698.1	KF210277.1	KF210780.1	KF210996.1	5	
189	Characidae	Stevardiinae	Hemibryconini	Hemibrycon dariensis	KF210172.1		KF209909.1	KF210454.1	KF210927.1	KF211160.1	5	
190	Characidae	Stevardiinae	Hemibryconini	Hemibrycon jabonero	KF210180.1		KF209918.1	KF210467.1	KF210931.1	KF211172.1	5	
191	Characidae	Stevardiinae	Hemibryconini	Hemibrycon huambonicus	KF210176.1		KF209913.1	KF210462.1		KF211165.1	4	
192	Characidae	Stevardiinae	Hemibryconini	Hemibrycon inambari	KF210177.1		KF209916.1	KF210465.1	KF210930.1	KF211171.1	5	
193	Characidae	Stevardiinae	Creagrutini	Planaltina britskii	JN989130.1	HQ289553.1	HQ171262.1	HQ288972.1	HQ289169.1		5	
194	Characidae	Stevardiinae	Creagrutini	Lepidocharax burnsi	KF210231.1		KF209974.1	KF210518.1	KF210961.1	KF211218.1	5	
195	Characidae	Stevardiinae	Creagrutini	Carlastyanax aurocaudatus	KF210089.1		KF209784.1	KF210347.1	KF210849.1	KF211075.1	5	Astyanax aurocaudatus
196	Characidae	Stevardiinae	Diapomini	Ceratobranchia obtusirostris	KF210091.1		KF209786.1	KF210349.1		KF211077.1	4	
197	Characidae	Stevardiinae	Diapomini	Bryconamericus pachacuti	KF210068.1		KF209750.1	KF210319.1	KF210821.1	KF211047.1	5	
198	Characidae	Stevardiinae	Diapomini	Attonitus irisae	KF210036.1		KF209706.1	KF210283.1		KF211005.1	4	
199	Characidae	Stevardiinae	Diapomini	Rhinobrycon negrensis	KF210265.1		KF210014.1	KF210554.1	KF210987.1	KF211246.1	5	
200	Characidae	Stevardiinae	Diapomini	Knodus heteresthes	KF210199.1		KF209938.1	KF210486.1	KF210943.1	KF211188.1	5	
201	Characidae	Stevardiinae	Diapomini	Knodus smithi	KF210212.1		KF209953.1	KF210500.1	KF210954.1	KF211201.1	5	
202	Characidae	Stevardiinae	Diapomini	Knodus meridae	KT248120.1	HQ289548.1	KF209748.1	HQ288967.1	HQ289164.1	HQ289355.1	6	



TABLE S1 | (Continued)

ID	Family	Subfamily	Tribe (Mirande/Teran)	Species	COI	Cyt-b	S16	Myh6	RAG1	RAG2	number of genes	Comments
203	Characidae	Stevardiinae	Diapomini	Piabina argentea	HM144053.1	GU908175.1	HQ171283.1	HQ288993.1	KF210978.1	HQ289380.1	6	
204	Characidae	Stevardiinae	Diapomini	Piabarchus analis		HQ289699.1	HQ171412.1	HQ289120.1	HQ289313.1	HQ289505.1	5	
205	Characidae	Stevardiinae	Diapomini	Bryconamericus stramineus	JN988762.1		FJ748986.1	KF210338.1	KF210840.1	FJ749109.1	5	
206	Characidae	Stevardiinae	Diapomini	Diapoma speculiferum	KF210142.1		KF209853.1	KF210414.1	KF210886.1	FJ749113.1	5	
207	Characidae	Stevardiinae	Diapomini	Bryconamericus microcephalus	KF210067.1		KF209749.1	KF210318.1	KF210819.1		4	
208	Characidae	Stevardiinae	Diapomini	Bryconamericus patriciae	FJ749042.1		KF209751.1	KF210320.1	KF210822.1	FJ749111.1	5	
209	Characidae	Stevardiinae	Diapomini	Hypobrycon maromba		HQ289662.1	HQ171375.1	HQ289083.1	HQ289276.1	HQ289469.1	5	
210	Characidae	Stevardiinae	Diapomini	Odontostoechus lethostigmus	FJ749076.1	HQ289659.1	FJ749033.1	HQ289080.1	HQ289273.1	FJ749083.1	6	
211	Characidae	Stevardiinae	Diapomini	Bryconamericus uporas	KF210086.1		KF209781.1	KF210344.1	KF210847.1		4	
212	Characidae	Stevardiinae	Diapomini	Nantis indefessus	KF210245.1		KF209995.1			KF211229.1	3	
				TOTAL	140	148	204	185	167	181	1025	

Neotropical Ichthyology



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