TABLE S1 | Data set for phylogenetic analysis. Next, the raw data used in the phylogenetic analysis were separated into three groups (continuous characters, discrete characters, and landmarks) to make it easier to find.

Continuous characters (Chars. 1–4):

Ictalurus punctatus	0.440-0.640	0.491-0.687	0.940-1.000	0.141
Steindachneridion scriptum	0.520-0.600	0.196	0.585	0.357-0.468
Rhamdia quelen	0.360-0.520	0.172-0.405	0.818	0.833-1.000
Pseudopimelodus bufonius	0.080-0.200	0.399-0.724	0.445-0.637	0.211-0.317
Pseudopimelodus mangurus	0.000-0.160	0.227-0.650	0.556-0.695	0.158-0.375
Batrochoglanis raninus	0.360-0.360	0.387-0.816	0.350-0.384	0.280-0.489
Microglanis parahybae	0.160-0.360	0.840-1	0.524-0.716	0.193-0.368
Lophiosilurus fowleri	0.280-0.560	0.117-0.448	0.357	0.188-0.275
Lophiosilurus alexandri	0.440-0.480	0.000-0.053	0.000-0.175	0.000-0.073
Cruciglanis pacifici	0.120-0.200	0.350	0.706	0.198-0.247
Rhyacoglanis pulcher	0.120-0.160	0.485-0.748	0.333-0.420	0.134-0.188
Rhyacoglanis paranensis	0.120-0.320	0.387-0.933	0.520-0.641	0.257-0.409
Rhyacoglanis seminiger	0.120-0.240	0.534-0.724	0.540-0.709	0.105-0.183
Rhyacoglanis annulatus	0.160-0.200	0.712-0.718	0.345-0.453	0.455-0.602
Rhyacoglanis epiblepsis	0.080-0.200	0.294-0.632	0.453-0.549	0.324-0.470
Lophiosilurus albomarginatus	0.320-0.360	0.221-0.534	0.305-0.381	0.180-0.314
Lophiosilurus apurensis	1.000	0.515	0.390-0.414	0.229
Lophiosilurus nigricaudus	0.360-0.560	0.491-0.497	0.186	0.195-0.288

TABLE S1 | (Continued)

Discrete characters (Chars. 5–74):

Ictalurus punctatus 0 ? 0 1 ? 0 0 0 0 ? 0
0 ? 0 0 1 0 0 0 0 0 0 0 0 ?
0 0 0 0 0 ? ? ? 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 1 0 0 0 0 0 0 0 0 0 0 0
0 0 0

Steindachneridion scriptum 0 ? 0 0 ? 0 0 0 0 ? 0
0 ? 0 1 1 0 0 0 1 0 0 0 1 1
1 0 1 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 1 0 0 0 0 0 0
0 1 1 0 0 1 0 1 1 1 0 0 0 0
0 0 0

Rhamdia quelen 0 ? 0 0 ? 0 0 0 0 ? 0 0
? 0 0 1 1 0 0 0 0 0 0 ? 1
0 0 0 1 ? 0 0 0 0 0 1 0 0 0
0 0 0 0 0 0 0 1 0 1 1 1 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0

Pseudopimelodus bufonius 1 0 1 0 0 0 1 0 1 0 0
1 0 0 0 1 ? 0 0 0 1 ? ? ? ?
? 1 ? ? 0 1 1 0 1 0 1 1 1 ?
1 1 1 0 0 1 1 0 1 1 0 0 ? 1
1 0 0 1 0 0 1 1 1 1 1 0 2 0
0 0 0

Pseudopimelodus mangurus 1 0 1 0 0 0 1 0 1 0 0
1 0 0 0 1 0 0 0 0 1 0 0 1 1
2 1 0 1 0 1 1 0 1 0 1 1 1 0
1 1 1 0 0 1 1 0 1 1 0 0 1 1
1 0 0 0 0 0 1 1 1 1 1 0 2 0
0 0 0

Batrochoglanis raninus 1 0 0 1 0 1 1 2 1 1 0
1 0 0 0 1 0 1 1 0 1 0 1 1 0
1 1 1 1 0 1 1 0 1 0 1 1 1 0
0 0 2 1 0 0 2 0 2 0 2 0 1 1
0 0 0 0 1 0 1 1 1 1 1 1 1 0
1 1 0

Microglanis parahybae 1 0 0 1 0 1 1 2 1 0 0
1 0 0 0 0 0 1 1 0 1 0 1 1 2
1 1 1 1 0 1 1 0 1 0 1 1 1 0
0 0 3 1 0 0 2 0 2 0 2 2 1 1
0 0 0 0 2 0 1 1 1 1 1 1 1 0
1 1 0

TABLE S1 | (Continued)

Lophiosilurus fowleri			1	1	0	0	0	0	0	0	1	0	0
0	0	0	0	1	2	1	1	0	1	1	0	1	0
2	1	0	1	0	1	1	2	1	0	1	1	1	1
0	1	2	1	0	0	3	0	1	0	3	0	1	1
0	1	1	0	0	0	1	2	1	1	1	1	1	1
0	0	0											
Lophiosilurus alexandri			1	1	0	0	0	0	0	0	1	0	0
0	0	0	0	1	2	1	1	0	1	1	0	1	0
2	1	0	0	0	1	1	2	1	0	1	1	1	1
0	1	1	1	0	0	3	0	1	0	3	0	2	1
0	1	1	0	0	0	1	2	1	1	1	1	1	1
0	0	0											
Cruciglanis pacifici			1	0	1	0	0	0	1	1	1	0	0
1	2	1	0	1	0	0	0	0	1	0	0	?	?
1	0	1	1	0	2	1	1	1	1	1	1	1	0
0	0	1	0	0	1	1	0	1	0	2	1	1	1
1	0	0	1	1	0	1	1	1	1	1	0	2	0
0	0	0											
Rhyacoglanis pulcher			1	0	1	0	1	0	0	0	1	0	0
1	1	0	0	1	?	0	0	0	1	?	?	?	?
?	1	?	?	0	?	?	?	1	0	1	1	1	?
0	0	2	0	1	1	?	0	2	1	0	1	?	1
1	0	0	1	0	0	1	1	1	1	1	0	2	0
0	0	1											
Rhyacoglanis paranensis			1	0	1	0	1	0	0	0	1	0	0
1	1	0	0	1	0	0	0	0	1	0	0	1	2
1	1	1	1	0	1	1	0	1	0	1	1	1	0
0	0	2	0	0	1	1	0	2	1	0	1	1	1
1	0	0	1	0	0	1	1	1	1	1	0	2	0
0	0	1											
Rhyacoglanis seminiger			1	1	1	0	1	0	0	0	1	1	0
1	1	0	0	1	?	0	0	0	1	?	?	?	?
?	?	?	?	0	?	?	?	1	0	1	1	1	?
0	0	2	0	1	1	?	0	2	1	0	1	?	1
1	0	0	1	0	0	1	1	1	1	1	0	2	0
0	0	1											
Rhyacoglanis annulatus			1	1	1	0	1	0	0	0	1	0	0
1	1	0	0	1	?	0	0	0	1	?	?	?	?
?	?	?	?	0	?	?	?	1	0	1	1	1	?
0	0	2	1	0	1	?	0	2	1	0	1	?	1
1	0	0	1	0	0	1	1	1	1	1	0	2	0
0	0	1											

TABLE S1 | (Continued)

Rhyacoglanis epiblepsis			1	0	1	0	1	0	0	0	1	0	1
1	1	0	0	1	0	0	0	0	1	0	0	1	2
1	1	1	1	0	1	1	0	1	0	1	1	1	0
0	0	2	1	0	1	1	0	2	1	1	1	1	1
1	0	0	1	1	0	1	1	1	1	1	0	2	0
0	0	1											
Lophiosilurus albomarginatus			1	1	1	0	0	0	0	0	1	1	
1	1	0	1	0	1	2	1	1	0	1	0	1	1
0	1	1	0	1	0	?	1	1	1	0	1	1	0
1	0	0	2	2	0	1	3	0	2	1	2	2	1
1	0	0	1	0	2	0	1	2	1	1	1	1	1
1	0	0	0										
Lophiosilurus apurensis			1	1	1	0	0	0	0	0	1	0	1
0	0	0	0	1	2	1	1	0	1	1	0	1	0
2	1	0	1	0	?	1	1	1	0	1	1	0	1
0	1	2	0	0	1	3	0	1	0	3	2	1	1
0	1	1	0	0	0	1	2	1	1	1	1	1	1
0	0	0											
Lophiosilurus nigricaudus			1	0	0	0	0	0	1	0	1	0	0
1	0	1	?	1	?	1	?	?	?	?	?	?	?
?	1	?	?	0	?	?	?	?	?	?	?	0	?
?	1	2	1	0	1	?	?	?	0	3	2	?	1
?	?	?	0	0	0	1	2	1	1	1	1	1	1
0	0	0											

TABLE S1 | (Continued)

Landmarks (Char. 75):

Ictalurus punctatus	0.018295,0.249732 -0.052597,0.214277 0.068567,0.211857 -0.101257,0.190112 0.116578,0.192918 -0.078006,0.157169 0.085940,0.151976 -0.136580,0.045713 0.140016,0.039322 -0.220927,-0.191011 0.204648,-0.194087 -0.195304,-0.261962 0.168246,-0.279893 -0.017620,-0.526123
Steindachneridion scriptum	0.006959,0.259715 -0.070850,0.228043 0.087093,0.218722 -0.124955,0.199289 0.127580,0.179878 -0.051696,0.168953 0.065511,0.163795 -0.084513,0.015404 0.093448,0.005316 -0.247951,-0.153321 0.227466,-0.167733 -0.132055,-0.279429 0.122592,-0.296994 -0.018630,-0.541638
Rhamdia quelen	0.007026,0.240201 -0.053814,0.230851 0.068779,0.224079 -0.106288,0.180267 0.121687,0.171019 -0.052973,0.158432 0.065073,0.152681 -0.099142,0.044729 0.107189,0.037140 -0.261126,-0.195710 0.247182,-0.211876 -0.186643,-0.257236 0.163844,-0.255870 -0.020795,-0.518707
Pseudopimelodus bufonius	0.013214,0.241473 -0.085985,0.191995 0.095932,0.180272 -0.159644,0.168650 0.156924,0.152158 -0.080554,0.135602 0.090578,0.126178 -0.129972,0.095697 0.137812,0.078614 -0.291815,-0.143172 0.251468,-0.197763 -0.188257,-0.259493 0.181829,-0.285400 0.008468,-0.484811
Pseudopimelodus mangurus	0.013254,0.242559 -0.081291,0.188621 0.093554,0.181268 -0.151737,0.158848 0.156180,0.157010 -0.073671,0.136281 0.088178,0.133600 -0.131695,0.086279 0.142121,0.079757 -0.298803,-0.144602 0.270043,-0.181066 -0.187469,-0.274104 0.165646,-0.286563 -0.004309,-0.477886
Batrochoglanis raninus	0.006092,0.241109 -0.092995,0.218019 0.102857,0.206285 -0.150498,0.152911 0.152514,0.142928 -0.073360,0.137026 0.090946,0.124911 -0.127590,0.068927 0.136854,0.055012 -0.292594,-0.141850 0.267067,-0.181799 -0.204922,-0.274248 0.189723,-0.292051 -0.004094,-0.457180
Microglanis parahybae	0.012207,0.240518 -0.071568,0.225447 0.082918,0.213454 -0.126925,0.162837 0.146931,0.147173 -0.090775,0.118221 0.099221,0.115057 -0.127304,0.049020 0.127077,0.038011 -0.285612,-0.108855 0.254338,-0.145335 -0.198723,-0.255668 0.175839,-0.258380 0.002376,-0.541502
Lophiosilurus fowleri	0.012346,0.230496 -0.087822,0.217691 0.111916,0.211474 -0.135527,0.161885 0.149271,0.153550 -0.088410,0.141478 0.096209,0.136439 -0.129993,0.078588 0.126884,0.072782 -0.260308,-0.161153 0.252827,-0.165924 -0.165123,-0.289768 0.142841,-0.291740 -0.025110,-0.495796
Lophiosilurus alexandri	0.008797,0.213222 -0.088992,0.195322 0.101688,0.182665 -0.147403,0.178550 0.154211,0.164075 -0.080728,0.165101 0.094402,0.152400 -0.090927,0.077971 0.096350,0.068286 -0.303191,-0.145162 0.282415,-0.168462 -0.146023,-0.291623 0.132400,-0.305062 -0.012999,-0.487283
Cruciglanis pacifici	0.010541,0.243373 -0.070237,0.200011 0.085167,0.191304 -0.151081,0.166093 0.155637,0.158882 -0.064050,0.132266 0.077137,0.126569 -0.109258,0.080554 0.120274,0.068640 -0.279727,-0.139506 0.258074,-0.153105 -0.189302,-0.274203 0.172732,-0.292685 -0.015907,-0.508195
Rhyacoglanis pulcher	0.028573,0.267644 -0.068387,0.209249 0.090278,0.198836 -0.118047,0.173480 0.146422,0.168880 -0.063507,0.112029 0.058234,0.114385 -0.089402,0.069560 0.084642,0.071254 -0.287906,-0.165815 0.268817,-0.159709 -0.194637,-0.277373 0.165702,-0.272700 -0.020782,-0.509721

TABLE S1 | (Continued)

Rhyacoglanis paranensis	0.007988,0.251187 -0.057573,0.208241 0.068759,0.205087 -0.119135,0.182486 0.126992,0.174875 -0.054309,0.110875 0.065503,0.105871 -0.100220,0.048727 0.105846,0.039443 -0.289038,-0.092225 0.274249,-0.123550 -0.200628,-0.285920 0.185377,-0.300963 -0.013813,-0.524135
Rhyacoglanis seminiger	0.005772,0.253332 -0.062683,0.210571 0.076384,0.202686 -0.135135,0.176283 0.139209,0.169934 -0.053082,0.122231 0.064902,0.117639 -0.095665,0.058033 0.102930,0.044877 -0.316793,-0.126981 0.291166,-0.171260 -0.194553,-0.288735 0.179647,-0.312119 -0.002098,-0.456492
Rhyacoglanis annulatus	0.013574,0.267411 -0.050125,0.208414 0.068900,0.209586 -0.110192,0.198577 0.134858,0.197150 -0.083182,0.106232 0.081436,0.100917 -0.094776,0.051947 0.087634,0.049642 -0.269176,-0.137441 0.263422,-0.145526 -0.190917,-0.296148 0.168804,-0.320889 -0.020260,-0.489873
Rhyacoglanis epiblepsis	0.007992,0.242178 -0.051503,0.207622 0.066123,0.206099 -0.119437,0.167647 0.130214,0.152470 -0.048000,0.138725 0.057182,0.130398 -0.088410,0.067835 0.093247,0.055484 -0.292008,-0.143019 0.264584,-0.166512 -0.206776,-0.254881 0.200692,-0.274192 -0.013899,-0.529854
Lophiosilurus albomarginatus	0.013132,0.234898 -0.094535,0.221920 0.110648,0.209784 -0.138619,0.167217 0.149799,0.151191 -0.073621,0.138969 0.089117,0.130888 -0.121204,0.070378 0.130113,0.057361 -0.274210,-0.157693 0.238130,-0.168690 -0.203604,-0.290295 0.181199,-0.297018 -0.006346,-0.468910
Lophiosilurus apurensis	0.008603,0.219518 -0.110307,0.207943 0.121054,0.198064 -0.157269,0.156065 0.164243,0.138715 -0.099151,0.140449 0.111612,0.130872 -0.141545,0.093722 0.149571,0.077658 -0.287641,-0.151065 0.264725,-0.173929 -0.177899,-0.277822 0.162137,-0.301281 -0.008133,-0.458908
Lophiosilurus nigricaudus	0.015715,0.247165 -0.101241,0.220230 0.114257,0.219359 -0.145645,0.162668 0.154319,0.159461 -0.079592,0.142972 0.094479,0.136795 -0.112112,0.052906 0.110740,0.045412 -0.266285,-0.155592 0.257686,-0.171455 -0.168641,-0.279903 0.144086,-0.293835 -0.017766,-0.486184

Neotropical Ichthyology

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