

Evaluation Paraná

A total of 71 Cichlid species from the Rio de la Plata drainage have been evaluated in this paper. Round about 25% of them need a further study to determine their actual situation and conservation status.

Index 0:

Apistogramma pleurotaenia and *Crenicichla niederleini* could be considered as unknown species (possible nomen dubium) and included in the status DD (Data Deficient).

Index 1:

Australoheros charrua, *Crenicichla empheres*, *Crenicichla hu* and *Gymnogeophagus caaguazuensis* are only known from their Type Locality.

Index 2 – 5:

This species deserve a detailed study about their actual conservation status.

Index > 6:

This species could be considered as „Least Concern“ and assumedly don't need a detailed evaluation; except the species with a high standard deviation.value.

Index: Arithmetic mean of D-Index and L-Index

SD: Standard Deviation of Index

Dist: Distribution range in km: Circumference with a maximum of 4.000km

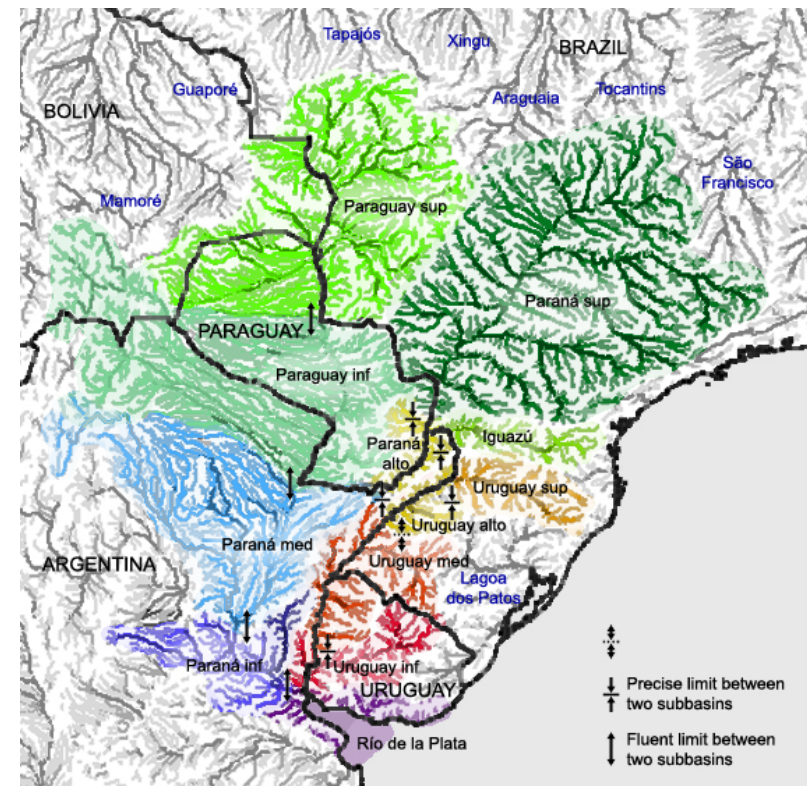
D-Index: ($X^{0,2776}$): with an Index range of 1 to 10: 1 means only one single locality known; 10 means a circumference of the distribution range of at least 4000km.

Loc: Known localities with a maximum of 50

L-Index: ($X^{0,5885}$): with an Index range of 1 to 10: 1 means only one single locality known; 10 means at least 50 localities documented.

Results

Index:	Species	in %	Status:	Index:	Species	in %	Status:
Index 0	2	2,82%	DD	Index 6	7	9,86%	LC
Index 1	4	5,63%	CR	Index 7	13	18,31%	LC
Index 2	1	1,41%	EN	Index 8	8	11,27%	LC
Index 3	2	2,82%	VU	Index 9	6	8,45%	LC
Index 4	10	14,08%	NT	Index 10	7	9,86%	LC
Index 5	11	15,49%	NT-LC				



Name:	Author	Distribution	Index	SD	Dist.	D-Ind.	Loc.	L-Ind.
<i>Aequidens plagiozonatus</i>	Kullander, 1984	Paraguay sup.; Guaporé (Amazonas)	6,94	1,6	2300	8,57	17	5,30
<i>Apistogramma borellii</i>	(Regan, 1906)	Paraguay sup / inf; Paraná med / inf; Uruguay med;	10,00	0,0	4000	10,00	50	10,00
<i>Apistogramma commbrae</i>	(Regan, 1906)	Paraguay sup / inf; Paraná med / inf; Uruguay med;	9,38	0,7	4000	10,00	40	8,77
<i>Apistogramma inconspicua</i>	Kullander, 1983	Paraguay sup; Guaporé (Amazonas)	6,23	2,1	2100	8,36	11	4,1
<i>Apistogramma pleurotaenia</i>	(Regan, 1909)	Rio de la Plata	0,00	0,0		0,00		0,00
<i>Apistogramma trifasciata</i>	(Eigenmann & Kennedy, 1903)	Paraguay sup / inf; Paraná med; Guaporé (Amazonas)	8,91	1,3	4000	10,00	33	7,83
<i>Astronotus crassipinnis</i>	(Heckel, 1840)	Paraguay sup; Paraná sup (alloc.); Guaporé (Amazonas)	7,05	2,7	3700	9,78	12	4,32
<i>Australoheros angiru</i>	Řičan, Piálek, Almirón & Casciotta, 2011	Iguazú; Uruguay sup;	6,73	0,1	1000	6,80	25	6,65
<i>Australoheros charrua</i>	Řičan & Kullander, 2008	Uruguay med;	1,00	0,0	1	1,00	1	1,00
<i>Australoheros facetus</i>	(Jenyns, 1842)	Paraná med / inf; Rio de la Plata; Uruguay med / inf;	8,96	0,2	2900	9,14	40	8,77
<i>Australoheros forquilha</i>	Řičan & Kullander, 2008	Uruguay sup;	5,45	0,5	630	5,99	15	4,92
<i>Australoheros guarani</i>	Řičan & Kullander, 2008	Paraná alto;	3,57	1,7	390	5,24	3	1,91
<i>Australoheros kaaygua</i>	Casciotta, Almirón & Gómez, 2006	Paraná alto;	3,03	0,5	90	3,49	5	2,58
<i>Australoheros minuano</i>	Řičan & Kullander, 2008	Uruguay med;	4,32	2,1	790	6,37	4	2,26
<i>Australoheros scitulus</i>	(Řičan & Kullander, 2003)	Rio de la Plata; Uruguay med / inf;	7,17	0,8	1800	8,01	23	6,33
<i>Australoheros tavaresi</i>	Otoni, 2012	Paraná sup;	6,17	1,4	1500	7,62	14	4,73
<i>Australoheros tembe</i>	(Casciotta, Gómez & Toresanni, 1995)	Urugua-Í;	3,65	0,5	170	4,16	7	3,14
<i>Australoheros ykeregua</i>	Řičan, Piálek, Almirón & Casciotta, 2011	Uruguay alto;	4,33	1,2	470	5,52	7	3,14
<i>Bujurquina oenolaemus</i>	Kullander, 1987	Paraguay sup;	2,60	1,1	110	3,69	2	1,50
<i>Bujurquina vittata</i>	(Heckel, 1840)	Paraguay sup / inf; Paraná med / inf;	9,05	1,1	4000	10,00	35	8,10
<i>Chaetobranchopsis australis</i>	Eigenmann & Ward, 1907	Paraguay sup / inf; Paraná med; Guaporé (Amazonas)	7,05	2,9	4000	10,00	11	4,10
<i>Cichlasoma dimerus</i>	(Heckel, 1840)	Paraguay sup / inf; Paraná med / inf; Uruguay alto / med / inf;	10,00	0,3	4000	10,00	50	10,00

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<i>Cichlasoma paranaense</i>	Kullander, 1983	Paraná sup;	7,25	1,4	2400	8,68	20	5,83
<i>Cichlasoma pusillum</i>	Kullander, 1983	Paraná alto;	3,98	0,8	290	4,83	7	3,14
<i>Crenicichla britskii</i>	Kullander, 1982	Paraná sup;	6,71	1,4	1900	8,13	17	5,30
<i>Crenicichla celidochilus</i>	Casciotta, 1987	Uruguay sup / alto / med / inf;	6,00	2,1	1900	8,13	10	3,88
<i>Crenicichla empheres</i>	Lucena, 2007	Uruguay sup;	1,00	0,0	1	1,00	1	1,00
<i>Crenicichla gaucho</i>	Lucena & Kullander, 1992	Uruguay alto;	5,03	0,7	540	5,73	12	4,32
<i>Crenicichla gillmorlisi</i>	Kullander & Lucena, 2013	Paraná alto;	3,85	1,0	290	4,83	6	2,87
<i>Crenicichla hadrostigma</i>	Lucena, 2007	Uruguay sup / alto;	4,92	1,0	620	5,96	10	3,88
<i>Crenicichla haroldoi</i>	Luengo & Britski, 1974	Paraná sup;	6,60	1,9	2200	8,47	14	4,73
<i>Crenicichla hu</i>	Piálek, Říčan, Casciotta & Almirón, 2010	Paraná alto;	1,00	0,0	1	1,00	1	1,00
<i>Crenicichla igara</i>	Lucena & Kullander, 1992	Uruguay sup;	4,14	0,7	300	4,87	8	3,40
<i>Crenicichla iguassuensis</i>	Haseman, 1911	Paraná alto;	5,65	0,5	710	6,19	16	5,11
<i>Crenicichla jaguarensis</i>	Haseman, 1911	Paraná sup;	7,58	0,8	2100	8,36	26	6,80
<i>Crenicichla jupiaensis</i>	Britski & Luengo, 1968	Paraná sup / med	6,10	3,0	2800	9,06	7	3,14
<i>Crenicichla jurubi</i>	Lucena & Kullander, 1992	Uruguay sup;	5,14	0,2	420	5,35	15	4,92
<i>Crenicichla lepidota</i>	Heckel, 1840	Paraguay sup / inf; Paraná alto / med / inf; Uruguay sup / alto / med / inf; Guaporé (Amazonas); Lagoa dos Patos (East);	10,00	0,5	4000	10,00	50	10,00
<i>Crenicichla mandelburgeri</i>	Kullander, 2009	Paraná alto;	4,46	1,1	470	5,52	8	3,40
<i>Crenicichla minuano</i>	Lucena & Kullander, 1992	Uruguay sup / alto / med / inf;	6,86	1,4	2000	8,25	18	5,48
<i>Crenicichla missioneira</i>	Lucena & Kullander, 1992	Uruguay sup / alto / med / inf;	6,86	1,4	2000	8,25	18	5,48
<i>Crenicichla niederleinii</i>	(Holmberg, 1891)	Uruguay sup???	0,00	0,0		0,00		0,00
<i>Crenicichla prenda</i>	Lucena & Kullander, 1992	Uruguay sup;	3,16	1,3	210	4,41	3	1,91
<i>Crenicichla scottii</i>	(Eigenmann, 1907)	Paraná inf; Rio de la Plata; Uruguay med / inf;	7,88	0,5	2100	8,36	30	7,40
<i>Crenicichla semifasciata</i>	(Heckel, 1840)	Paraguay sup / inf; Paraná sup** / med / inf;	8,70	1,4	4000	10,00	30	7,40
<i>Crenicichla taikyra</i>	Casciotta, Almirón, Aichino, Gómez, Piálek & Říčan, 2013	Paraná med;	3,46	1,5	330	5,00	3	1,91
<i>Crenicichla tapii</i>	Piálek, Dragová, Casciotta, Almirón & O. Říčan, 2015	Iguazú	3,10	1,2	190	4,29	3	1,91

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<i>Crenicichla tendybaguassu</i>	Lucena & Kullander, 1992	Uruguay sup / alto / med;	6,53	1,2	1600	7,75	17	5,30
<i>Crenicichla tesay</i>	Casciotta & Almirón, 2009	Paraná alto;	4,60	1,0	480	5,55	9	3,64
<i>Crenicichla tuca</i>	Piálek, Dragová, Casciotta, Almirón & O. Řičan, 2015	Iguazú	4,21	1,3	480	5,55	6	2,87
<i>Crenicichla vittata</i>	Heckel, 1840	Paraguay sup / inf; Paraná alto / med / inf; Rio de la Plata; Uruguay sup / alto / med / inf;	9,38	1,1	4000	10,00	40	8,77
<i>Crenicichla yaha</i>	Casciotta, Almirón & Gómez, 2006	Urugua-Í (Paraná)	1,92	0,4	21	2,33	2	1,50
<i>Crenicichla ypo</i>	Casciotta, Almirón, Piálek, Gómez & Řičan, 2010	Urugua-Í (Paraná)	2,85	0,3	60	3,12	5	2,58
<i>Geophagus brasiliensis</i>	(Quoy & Gaimard, 1824)	Paraná sup; Iguazú; Uruguay sup / alto / med; Lagoa dos Patos;	10,00	1,6	4000	10,00	50	10,00
<i>Gymnogeophagus australis</i>	(Eigenmann, 1907)	Parana inf; Uruguay inf;	4,63	1,8	800	6,40	6	2,87
<i>Gymnogeophagus balzanii</i>	(Perugia, 1891)	Parana med; Parana inf; Uruguay med; Uruguay inf; Paraguay;	8,77	1,3	4000	10,00	31	7,55
<i>Gymnogeophagus caaguazuensis</i>	Staeck, 2006	Paraguay inf	1,00	0,0	1	1,00	1	1,00
<i>Gymnogeophagus che</i>	Casciotta, Gómez & Toresanni, 2000	Urugua-I	3,23	0,4	100	3,59	6	2,87
<i>Gymnogeophagus constellatus</i>	Malabarba, Malabarba & Reis, 2015	Uruguay alto;	4,75	0,0	280	4,78	14	4,73
<i>Gymnogeophagus lipokarenos</i>	Malabarba, Malabarba & Reis, 2015	Uruguay sup; alto	6,43	0,2	720	6,21	25	6,65
<i>Gymnogeophagus mekinos</i>	Malabarba, Malabarba & Reis, 2015	Uruguay inf;	5,70	0,8	840	6,48	15	4,92
<i>Gymnogeophagus meridionalis</i>	Reis & Malabarba, 1988	Paraná inf; Rio de la Plata; Uruguay med / inf;	7,26	1,1	2100	8,36	22	6,17
<i>Gymnogeophagus missioneiro</i>	Malabarba, Malabarba & Reis, 2015	Uruguay alto;	3,34	1,1	210	4,41	4	2,26
<i>Gymnogeophagus pseudolabiatius</i>	Malabarba, Malabarba & Reis, 2015	Uruguay med;	4,72	0,2	310	4,92	13	4,52
<i>Gymnogeophagus rhabdotus</i>	(Hensel, 1870)	Uruguay med / inf; Lagoa dos Patos (East);	8,12	0,0	1900	8,13	35	8,10
<i>Gymnogeophagus setequedas</i>	Reis, Malabarba & Pavanelli, 1992	Paraná alto / sup	5,99	0,2	570	5,82	22	6,17

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<i>Gymnogeophagus terrapurpura</i>	Loureiro, Zarucki, Malabarba & I. González-Bergonzoni, 2016	Uruguay inf; Rio de la Plata;	6,74	0,4	1200	7,16	23	6,33
<i>Gymnogeophagus tiraparae</i>	González-Bergonzoni, Loureiro & Oviedo, 2009	Uruguay inf; Lagoa dos Patos (East)	4,81	1,4	720	6,21	8	3,40
<i>Laetacara dorsigera</i>	(Heckel, 1840)	Paraguay sup / inf; Paraná med; Uruguay med; Guaporé (Amazonas)	8,32	1,8	4000	10,00	25	6,65
<i>Mesonauta festivus</i>	(Heckel, 1840)	Paraguay sup / inf; Guaporé (Amazonas); Mamoré(Amazonas); Madeira(Amazonas); lower Tapajos(Amazonas); Xingu?	7,88	2,0	3900	9,93	20	5,83
<i>Satanoperca pappaterra</i>	(Heckel, 1840)	Paraguay sup / inf; Paraná sup (alloc); Guaporé (Amazonas);	6,68	2,8	3300	9,48	10	3,88

References (i.a.):

FishBase: Froese, R.; Pauly, D. (eds) (2017): "FishBase" - www.fishbase.org,

FishNet 2 (2017): "FishNet 2" - <http://www.fishnet2.net>

GBIF (2017): "Global Biodiversity Information Facility" - <https://www.gbif.org/>

SpeciesLink (2017): "SpeciesLink" - <http://splink.cria.org.br/>