

## Evaluation Orinoco

A total of 67 Cichlid species from Orinoco drainage have been evaluated in this paper. Round about 50% of them need a further study to determine their actual situation and conservation status.

**Index 0:**

none

**Index 1:**

*Aequidens chimantanus*, *Apistogramma helkeri* and *Apistogramma lineata* 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

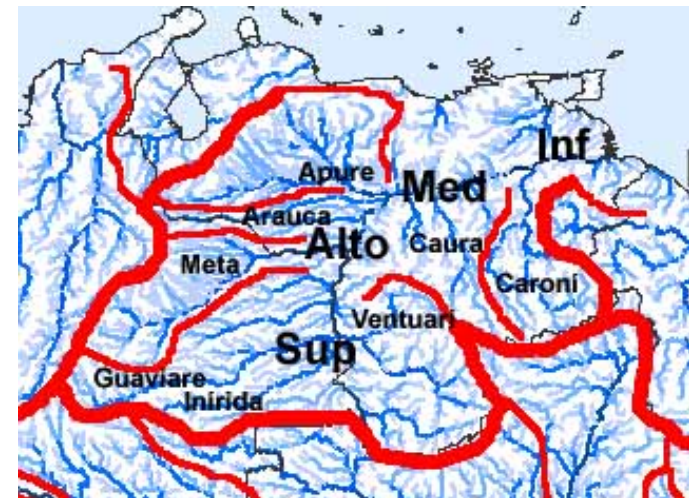
**D-Index:** ( $X^{0,2776}$ ): with an Index range of 1 to 10: 1 means only one single locality known; 10 means a circumference of the distribution range of at least 4000km.

**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:
Criteria 0	0	0,00%	DD	Criteria 6	12	17,91%	LC
Criteria 1	3	4,48%	CR	Criteria 7	8	11,94%	LC
Criteria 2	0	0,00%	EN	Criteria 8	3	4,48%	LC
Criteria 3	2	2,99%	VU	Criteria 9	2	2,99%	LC
Criteria 4	12	17,91%	NT	Criteria 10	8	11,94%	LC
Criteria 5	17	25,37%	LC				



Name	Author	Distribution	Index	SD	Dist.	D-Ind.	Loc.	L-Ind.
<i>Acaronia vultuosa</i>	Kullander, 1989	Amazonas: Negro; Orinoco: sup / alto / med;	<b>6,70</b>	2,2	2600	8,87	13	4,52
<i>Aequidens chimantanus</i>	Inger, 1956	Caroní	<b>1,00</b>	0,0	1	1,00	1	1,00
<i>Aequidens diadema</i>	(Heckel, 1840)	Amazonas: Negro; Orinoco: sup / alto / med;	<b>6,12</b>	2,0	1900	8,13	11	4,10
<i>Aequidens metae</i>	Eigenmann, 1922	Meta	<b>5,17</b>	0,4	500	5,61	14	4,73
<i>Aequidens superomaculatus</i>	Hernández-Acevedo, Machado-Allison & Lasso, 2015	Orinoco; Casiquiare; Negro	<b>4,21</b>	2,0	700	6,16	4	2,26
<i>Aequidens tetramerus</i>	(Heckel, 1840)	Amazonas: whole; Xingu; E: Parnaíba, Mearim; Orinoco: upper; middle; NE: Essequibo, Courantyne, Maroni, Oyapock;	<b>10,00</b>	0,0	10000	10,00	101	10,00
<i>Andinoacara pulcher</i>	(Gill, 1858)	Orinoco and Trinidad and Tobago	<b>9,57</b>	0,4	2900	9,14	100	10,00
<i>Apistogramma alacrina</i>	Kullander, 2004	Orteguaza (Caquetas; Amazon basin) and upper Guaviare and Meta? (Orinoco basin) river drainages in Colombia.	<b>4,46</b>	1,9	780	6,35	5	2,58
<i>Apistogramma caudomaculata</i>	Mesa S. & Lasso, 2011	Ríos Candela, Arature, Upata y Caura	<b>4,49</b>	2,2	960	6,73	4	2,26
<i>Apistogramma flabellicauda</i>	Mesa S. & Lasso, 2011	Bajo y medio río Ventuari (caños Guapuchi, Palometa y Laguna Lorenzo); alto Orinoco antes de confluencia con el río Ventuari (caños El Carmen, Moyo, Guachapana, Perro de Agua y Esteros de Macuruco) y en el río Autana	<b>3,59</b>	1,3	310	4,92	4	2,26
<i>Apistogramma guttata</i>	Antonio C., Kullander & Lasso A., 1989	Morichal Largo (Orinoco); auch Rio San Juan (Cuenca del golfo de Paria; Mesa & Lasso 2011)??	<b>3,48</b>	1,6	340	5,04	3	1,91
<i>Apistogramma helkeri</i>	Schindler & Staeck, 2013	lower río Cuao	<b>1,00</b>	0,0	1	1,00	1	1,00
<i>Apistogramma hoignei</i>	Meinken, 1965	Portuguesa, Aracua, and lower Caura River drainages, and along the mainstream of the lower Orinoco River to Barrancas.	<b>6,65</b>	1,9	2300	8,57	14	4,73
<i>Apistogramma hongloi</i>	Kullander, 1979	Orinoco River basin, in the Vichada River drainage and the middle Meta River drainage in Colombia, and along the middle Orinoco River basin.	<b>4,70</b>	1,8	860	6,53	6	2,87
<i>Apistogramma iniridae</i>	Kullander, 1979	Inírida River basin.	<b>3,44</b>	0,6	150	4,02	6	2,87

<b><i>Apistogramma inornata</i></b>	Staeck, 2003	Ríos Apure, Guárico, Uracoa, Guanipa, Morichal Largo, Upata, Imataca y Caura (Mesa et al 2011)	<b>5,01</b>	2,1	1200	7,16	6	2,87
<b><i>Apistogramma intermedia</i></b>	Mesa S. & Lasso, 2011	Río Caura y delta del Orinoco	<b>4,26</b>	2,3	900	6,61	3	1,91
<b><i>Apistogramma lineata</i></b>	Mesa S. & Lasso, 2011	Colombia, Bajo río Atabapo	<b>1,00</b>	0,0	1	1,00	1	1,00
<b><i>Apistogramma macmasteri</i></b>	Kullander, 1979	in the upper Meta River drainage (Guaytiquía River, Metica River).	<b>5,12</b>	0,0	360	5,12	16	5,11
<b><i>Apistogramma megaptera</i></b>	Mesa S. & Lasso, 2011	Ríos Inírida y Mavaca, y al oriente del río Atabapo en morichales que drenan hacia el norte y desembocan al río Orinoco (Mikolji com pers.).	<b>4,02</b>	2,1	690	6,14	3	1,91
<b><i>Apistogramma minima</i></b>	Mesa S. & Lasso, 2011	Bajo río Capanaparo, inmediaciones de Puerto Ayacucho en el río Puente Paria, medio río Ventuari y alto Orinoco en caños de las inmediaciones del delta interno Orinoco-Ventuari antes de la confluencia de estos dos ríos (caños Perro de Agua y Guachapana); en Colombia en el río Bitá (caño el Mosco) y en el río Guaviare; and Río Apure (GBIF)	<b>4,76</b>	1,4	680	6,11	8	3,40
<b><i>Apistogramma nororientalis</i></b>	Mesa S. & Lasso, 2011	Cuencas del golfo de Paria (río San Juan) y del río Orinoco (río Uracoa)	<b>3,63</b>	1,7	420	5,35	3	1,91
<b><i>Apistogramma pedunculata</i></b>	Mesa S. & Lasso, 2011	Alto y medio río Cataniapo y río Caura	<b>3,92</b>	2,0	610	5,93	3	1,91
<b><i>Apistogramma piaroa</i></b>	Mesa S. & Lasso, 2011	Bajo río Ventuari (caños Tigre y Chipiro); medio Orinoco en caños de las inmediaciones del delta interno Orinoco-Ventuari luego de la confluencia de estos dos ríos (caños El Carmen, Perro de Agua, Winare, Palometa y Manaka); bajo río Guaviare, río Autana y río Cataniapo	<b>4,18</b>	1,3	460	5,49	6	2,87
<b><i>Apistogramma uaupesi</i></b>	Kullander, 1980	Negro; upper Orinoco??	<b>4,42</b>	2,2	890	6,59	4	2,26
<b><i>Apistogramma velifera</i></b>	Staeck, 2003	Medio río Ventuari (caño Guapuchi); medio Orinoco en caños posteriores a la confluencia Orinoco-Ventuari (caños El Carmen, Perro de Agua y Winare) y río Guaviare	<b>2,93</b>	0,7	100	3,59	4	2,26
<b><i>Apistogramma viejita</i></b>	Kullander, 1979	Ríos Meta y Cataniapo	<b>4,77</b>	1,6	800	6,40	7	3,14
<b><i>Astronotus ocellatus</i></b>	(Agassiz, 1831)	gesamter Hauptstrom des Amazonas; Xingu; Orinoco; Oyapock;	<b>10,00</b>	0,0	8700	10,00	51	10,00

<b><i>Biotodoma wavrini</i></b>	(Gosse, 1963)	in the middle and upper Negro River drainage in Brazil and Venezuela; Orinoco River basin in Colombia and Venezuela.	<b>8,34</b>	0,8	2900	9,14	31	7,55
<b><i>Biotocus dicentrarchus</i></b>	Kullander, 1989	Orinoco River basin, from the Inírida River (Colombia) to Maripa (Venezuela).	<b>4,53</b>	2,3	1000	6,80	4	2,26
<b><i>Bujurquina mariae</i></b>	(Eigenmann, 1922)	Meta	<b>3,71</b>	0,1	120	3,78	9	3,64
<b><i>Chaetobranchus flavescens</i></b>	Heckel, 1840	Amazon River basin, in Peru and Brazil; Orinoco River basin in Venezuela (Rio Apure); rivers of Guyana, Suriname, French Guiana, and Amapá State. Widespread.	<b>10,00</b>	0,0	9000	10,00	51	10,00
<b><i>Cichla intermedia</i></b>	Machado-Allison, 1971	Specimens at hand are from the Rio Cinaruco in Apure state, and from the Rio Casiquiare (Rio Cunucuna, Rio Cataniapo), reflecting the fragmented range given by Machado-Allison (1971: fig. 13, also including the Rio Siapa drainage) (Fig. 9). Winemiller (2001: fig. 2) also included the lower Rio Caura in the distribution. There are no records from Colombia, although the species is probably present also in that country.	<b>5,56</b>	1,2	1000	6,80	12	4,32
<b><i>Cichla nigromaculata</i></b>	Jardine & Schomburgk, 1843	upper Orinoco; Casiquiare; Negro	<b>5,08</b>	3,2	2000	8,25	3	1,91
<b><i>Cichla orinocensis</i></b>	Humboldt, 1821	Orinoco; Negro	<b>9,38</b>	0,6	4200	10,00	40	8,77
<b><i>Cichla temensis</i></b>	Humboldt, 1821	Restricted to blackwater rivers and their tributaries (Fig. 75), recorded from many localities along the Rio Negro in Brazil and Venezuela, many localities in the Rio Orinoco drainage, a few localities only in the Rio Branco drainage. Along the Rio Solimões-Amazonas recorded from Tefé, Rio Puraquequara, lower Rio Uatumã, Rio Preto da Eva, and Lago Saracá, all black-water habitats. Reported by Lowe-McConnell (1969) from the Rio Branco drainage in Guyana.	<b>9,38</b>	0,6	4200	10,00	40	8,77

<b><i>Cichlasoma bimaculatum</i></b>	(Linnaeus, 1758)	Orinoco River basin, in the Caroni River in Venezuela; Guianas, from the Essequibo? River to the Sinnamary River; Amazon River basin, in the upper Branco River basin.	<b>6,32</b>	2,9	3000	9,23	8	3,40
<b><i>Cichlasoma orinocense</i></b>	Kullander, 1983	Orinoco River basin, in left bank tributaries of the Orinoco River from the Meta River in Colombia to about Ciudad Bolívar in Venezuela.	<b>5,20</b>	2,9	1900	8,13	4	2,26
<b><i>Cichlasoma taenia</i></b>	(Bennett, 1831)	Trinidad Island, and adjacent northeastern Venezuela.	<b>4,52</b>	0,0	230	4,52	13	4,52
<b><i>Cleithracara maronii</i></b>	(Steindachner, 1881)	Trinidad Island (impersistent); Orinoco River basin (delta), Guianan rivers from Barima River (Guyana) to Ouanary River (French Guyana).	<b>8,72</b>	0,0	2400	8,68	40	8,77
<b><i>Crenicichla frenata</i></b>	Gill, 1858	Trinidad Islands and northeastern Venezuela.	<b>3,54</b>	0,1	110	3,69	8	3,40
<b><i>Crenicichla geayi</i></b>	Pellegrin, 1903	Portuguesa River basin (Apure tributary);	<b>6,23</b>	2,3	2300	8,57	10	3,88
<b><i>Crenicichla johanna</i></b>	Heckel, 1840	Amazonas (whole); Xingu	<b>10,00</b>	0,0	8400	10,00	51	10,00
<b><i>Crenicichla sveni</i></b>	Ploeg, 1991	in the Llanos of Venezuela and Colombia.	<b>4,56</b>	2,0	870	6,55	5	2,58
<b><i>Crenicichla zebrina</i></b>	Montaña, López-Fernández & Taphorn, 2008	Known only from the lower Ventuari River, the largest Venezuelan tributary of the upper Orinoco River basin	<b>2,44</b>	0,9	80	3,38	2	1,50
<b><i>Dicrossus filamentosus</i></b>	(Ladiges, 1958)	Amazon River basin, in the Negro River drainage; Orinoco River basin from the Inírida River in Colombia to Maripa in Venezuela.	<b>7,04</b>	1,2	2000	8,25	20	5,83
<b><i>Dicrossus gladicauda</i></b>	Schindler & Staeck, 2008	lower río Atabapo drainage in Colombia.	<b>3,84</b>	1,9	550	5,76	3	1,91
<b><i>Geophagus abalios</i></b>	López-Fernández & Taphorn, 2004	llanos of the Orinoco drainage, reaching the Andean piedmont, the Río Caura in the Guyana Shield, and the higher Orinoco and Casiquiare	<b>6,92</b>	1,1	1800	8,01	20	5,83
<b><i>Geophagus dicrozoster</i></b>	López-Fernández & Taphorn, 2004	in black water tributaries of the Orinoco in the Guyana Shield, and its middle and upper course, as well as in the Casiquiare and the headwaters of the Río Negro	<b>6,53</b>	1,2	1600	7,75	17	5,30

<b><i>Geophagus gottwaldi</i></b>	Schindler & Staeck, 2006	As currently known, <i>Geophagus gottwaldi</i> seems to have a restricted distribution in the upper río Orinoco and its tributaries in southwestern Venezuela (Estado Amazonas) for so far it has been collected only in the lower río Sipapo and the lower río Atabapo.	<b>3,39</b>	1,1	230	4,52	4	2,26
<b><i>Geophagus grammepareius</i></b>	Kullander & Taphorn, 1992	Orinoco River basin, in the upper Caura and lower Caroní River basins.	<b>4,27</b>	1,4	520	5,67	6	2,87
<b><i>Geophagus taeniopareius</i></b>	Kullander & Royero, 1992	Orinoco River basin, in the lower Caura River and along the middle and upper Orinoco River basin.	<b>5,63</b>	1,5	1200	7,16	11	4,10
<b><i>Geophagus winemilleri</i></b>	López-Fernández & Taphorn, 2004	lower Casiquiare drainage and the headwaters of the Río Negro in southern Venezuela, but may be distributed along the length of the Río Negro.	<b>5,94</b>	2,1	1800	8,01	10	3,88
<b><i>Guianacara stergiosi</i></b>	López-Fernández, Taphorn Baechle & Kullander, 2006	Caroní River drainage, with most samples coming from the Claro and the Paragua rivers.	<b>5,36</b>	1,3	910	6,63	11	4,10
<b><i>Heros liberifer</i></b>	Staeck & Schindler, 2015	mittlerer und oberer Orinoco	<b>5,17</b>	2,3	1400	7,47	6	2,87
<b><i>Heros severus</i></b>	Heckel, 1840	Orinoco River basin, in the upper Orinoco River drainage in Colombia and Venezuela; Amazon River basin, in the upper Negro River basin.	<b>4,69</b>	2,1	1000	6,80	5	2,58
<b><i>Hoplarchus psittacus</i></b>	(Heckel, 1840)	Amazon River basin, in the Negro, Preto da Eva, Urubu, and Jamari Rivers in Brazil; Orinoco River basin, in tributaries of the upper Orinoco River basin.	<b>7,31</b>	1,8	2900	9,14	18	5,48
<b><i>Hypselecara coryphaenoides</i></b>	(Heckel, 1840)	Amazon River basin, in the Negro, Trombetas, Tapajós, Maués, and Uatumã Rivers; Orinoco River basin in tributaries of the upper Orinoco River, and in the Aguaro River basin.	<b>7,91</b>	2,1	5300	10,00	20	5,83
<b><i>Laetacara fulvipinnis</i></b>	Staeck & Schindler, 2007	upper and middle río Orinoco, the río Casiquiare and the upper and middle río Negro	<b>6,23</b>	2,8	2800	9,06	8	3,40
<b><i>Mesonauta egregius</i></b>	Kullander & Silfvergrip, 1991	Meta, Vichada (Orinoco)	<b>3,46</b>	1,5	330	5,00	3	1,91
<b><i>Mesonauta insignis</i></b>	(Heckel, 1840)	upper Negro River drainage in Brazil; Orinoco River basin	<b>4,63</b>	3,1	1600	7,75	2	1,50

<b><i>Mikrogeophagus ramirezi</i></b>	(Myers & Harry, 1948)	Orinoco River basin, in the llanos of Venezuela and Colombia.	<b>5,31</b>	3,0	2100	8,36	4	2,26
<b><i>Nannacara quadrispinae</i></b>	Staeck & Schindler, 2004	Delta: northern tributaries to the Orinoco Delta;	<b>3,79</b>	1,5	410	5,31	4	2,26
<b><i>Pterophyllum altum</i></b>	Pellegrin, 1903	upper Negro (Amazonas); upper Orinoco River (Inírida and Atabapo Rivers) to Puerto Ayacucho.	<b>5,44</b>	2,0	1400	7,47	8	3,40
<b><i>Satanoperca daemon</i></b>	(Heckel, 1840)	Amazon River basin, in the upper Negro River in Brazil and Venezuela; Orinoco River basin, in Colombia and Venezuela.	<b>10,00</b>	0,0	4600	10,00	50	10,00
<b><i>Satanoperca mapiritensis</i></b>	(Fernández-Yépez, 1950)	lower Orinoco; Orinoco delta and in rivers north of the lower Orinoco River.	<b>3,76</b>	1,9	500	5,61	3	1,91
<b><i>Uaru fernandezyepezi</i></b>	Stawikowski, 1989	Orinoco River basin, in the Atabapo River basin.	<b>4,69</b>	2,1	1000	6,80	5	2,58

**References (i.a.):**

**FishBase:** Froese, R.; Pauly, D. (eds) (2017): "FishBase" - [www.fishbase.org](http://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/>