**Table S2:** **Data verification and description of data inconsistencies.** Discrepancies (72 out of 498 species) between the maximum sizes on FishBase and maximum sizes in the original literature. All body size not reported here were cited from the Checklist of Freshwater Fishes of South and Central America (CLOFFSCA, Reis et al. 2003) and no discrepencies between FishBase and CLOFFSCA were found. Only 6 cases (in bold) were found where a clear error in the maximum body size was recorded on FishBase. Results were unchanged when analyses were rerun with corrected data. Other uncertainties in the data were due to inability to access the original source provided on FishBase (Unavailable source), female lengths without a direct reference and likely from various ecological or life history studies cited for each species on FishBase (Length of female specimen, uncited) or data was collected from angling records. For full citations see FishBase.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Species | Max  Fishbase | CLOFFSCA | Note | Body Size Used  (App S1) |
| Aequidens biseriatus | 120 | 80 | Length of female specimen, uncited | 80 |
| Apistogramma alacrina | 55 | - | Unavailable source1 | 55 |
| Apistogramma angayuara | 25 | - | Unavailable source2 | 25 |
| Apistogramma baenschi | 53 | - | Unavailable source3 | 53 |
| Apistogramma caetei | 40 | 36 | Length of female specimen, uncited | 36 |
| Apistogramma diplotaenia | 45 | 29 | Length of female specimen, uncited | 29 |
| Apistogramma gephyra | 40 | 33 | Length of female specimen, uncited | 33 |
| Apistogramma gibbiceps | 50 | 45 | Length of female specimen, uncited | 45 |
| Apistogramma gossei | 50 | 44 | Length of female specimen, uncited | 44 |
| Apistogramma hippolytae | 50 | 34 | Length of female specimen, uncited | 34 |
| Apistogramma hongsloi | 50 | 34 | Length of female specimen, uncited | 34 |
| Apistogramma iniridae | 50 | 36 | Length of female specimen, uncited | 36 |
| Apistogramma meinkeni | 45 | 35 | Length of female specimen, uncited | 35 |
| Apistogramma ortmanni | 55 | 41 | Length of female specimen, uncited | 41 |
| Apistogramma pertensis | 45 | 39 | Length of female specimen, uncited | 39 |
| Apistogramma pleurotaenia | 50 | 28 | Length of female specimen, uncited | 28 |
| Apistogramma resticulosa | 38 | 27 | Length of female specimen, uncited | 27 |
| Apistogramma rupununi | 50 | 38 | Length of female specimen, uncited | 38 |
| Apistogramma staecki | 40 | 21 | Length of female specimen, uncited | 21 |
| Apistogramma steindachneri | 70 | 65 | Length of female specimen, uncited | 65 |
| Apistogramma trifasciata | 46 | 38 | Length of female specimen, uncited | 38 |
| Apistogramma uaupesi | 60 | 28 | Length of female specimen, uncited | 28 |
| Apistogramma viejita | 46 | 30 | Length of female specimen, uncited | 30 |
| Archocentrus multispinosus | 170 | - | Unavailable source4 | 170 |
| Astronotus ocellatus | 457 | 210 | Angling record5 | 210 |
| **Australoheros capixaba** | **57** | **-** | **Holotype reported, rather than largest specimen at 1206** | **57** |
| **Australoheros forquilha** | **110** | **-** | **Holotype reported, rather than largest specimen at 1307** | **110** |
| Australoheros kaaygua | 94 | - | Length of female specimen, uncited | 94 |
| **Australoheros paraibae** | **61** | **-** | **More recent source, largest specimen 718** | **61** |
| **Australoheros perdi** | **167** | **-** | **Possibly an error in data transfer, source reports largest at 1229** | **167** |
| **Australoheros scitulus** | **89** | **-** | **Holotype reported, rather than largest specimen at 9710** | **89** |
| Australoheros taura | 124 | - | Unavailable source11 | 124 |
| **Australoheros tavaresi** | **79** | **-** | **Possibly an error in data transfer, source reports largest at 6612** | **79** |
| Australoheros tembe | 134 | - | Unavailable source13 | 134 |
| Biotoecus opercularis | 100 | 38 | Unavailable source14 | 100 |
| Bujurquina vittata | 90 | 70 | Unavailable source15 | 90 |
| Chaetobranchus flavescens | 260 | 210 | Length of female specimen, uncited | 210 |
| Cichla intermedia | 550 | 375 | Angling record5 | 375 |
| Cichla jariina | 340 | - | Unavailable source16 | 340 |
| Cichla kelberi | 276 | - | Unavailable source16 | 276 |
| Cichla melaniae | 290 | - | Unavailable source16 | 290 |
| Cichla mirianae | 520 | - | Unavailable source16 | 520 |
| Cichla nigromaculata | 263 | - | Unavailable source16 | 263 |
| Cichla ocellaris | 740 | 419 | Angling record5 | 740 |
| Cichla pinima | 520 | - | Unavailable source16 | 520 |
| Cichla piquiti | 430 | - | Unavailable source16 | 430 |
| Cichla pleiozona | 340 | - | Unavailable source16 | 340 |
| Cichla temensis | 990 | 750 | Angling record5 | 990 |
| Cichla thyrorus | 430 | - | Unavailable source16 | 430 |
| Cichla vazzoleri | 410 | - | Unavailable source16 | 410 |
| Cichlasoma atromaculatum | 250 | 170 | Unavailable source14 | 250 |
| Cichlasoma bimaculatum | 300 | 123 | Length of female specimen, uncited | 123 |
| Cichlasoma urophthalmum | 394 | 300 | Angling record5 | 300 |
| Crenicichla celidochilus | 268 | 181 | Unavailable source17 | 268 |
| Crenicichla igara | 312 | 223 | Unavailable source17 | 312 |
| Crenicichla jurubi | 303 | 178 | Unavailable source17 | 303 |
| Crenicichla minuano | 260 | 172 | Unavailable source17 | 260 |
| Crenicichla missioneira | 283 | 209 | Unavailable source17 | 283 |
| Crenicichla sveni | 250 | 150 | Unavailable source18 | 19323 |
| Crenicichla yaha | 146 | - | Unavailable source19 | 146 |
| Dicrossus maculatus | 60 | 53 | Length of female specimen, uncited | 53 |
| Hoplarchus psittacus | 320 | - | Angling record5 | 23523 |
| Hypsophrys nicaraguensis | 200 | 165 | Length of female specimen, uncited | 165 |
| Laetacara curviceps | 66 | 46 | Length of female specimen, uncited | 46 |
| Laetacara dorsigera | 60 | 45 | Unavailable source15 | 60 |
| Laetacara thayeri | 120 | 65 | Unavailable source20 | 6923 |
| Parachromis dovii | 720 | 500 | Angling record5 | 500 |
| Parachromis managuensis | 550 | 220 | Angling record5 | 220 |
| Pterophyllum altum | 180 | 65 | Unavailable source21 | 180 |
| Satanoperca pappaterra | 192 | 174 | Unavailable source15 | 17423 |
| Taeniacara candidi | 50 | 33 | Length of female specimen, uncited | 33 |
| Tahuantinsuyoa macantzatza | 120 | 74 | Unavailable source22 | 120 |

1 Kullander 2004 Ichthyological Exploration of Freshwaters 15: 41-48

2 Kullander and Ferreira 2005 Neotropical Ichthyology 3(3): 361-371

3 Romer et al. 2004 Das Aquarium 422: 15-30

4 Riehl and Baensch 1991 Aquarien Atlas 1: 992

5 Database of IGFA angling records until 2001

6 Ottoni 2010 Vertebrate Zoology 60:19-25

7 Rícan and Kullander 2008 Zootaxa 1724:1-51

8 Ottoni et al. 2008 Vertebrate Zoology 58:207-232

9 Ottoni et al. 2011 Vertebrate Zoology 61: 137-145

10 Rícan and Kullander 2003 Copeia 2003: 794-802

11 Ottoni and Cheffe 2009 Spixiana 32:153-159

12 Ottoni 2012 Vertebrate Zoology 62: 83-96

13 Casciotta et al. 1995 Ichthyological Exploration of Freshwaters

14 Axelrod 1993 The most complete colored lexicon of cichlids

15 Britski et al. 2007 Peixes do Pantanal

16 Kullander and Ferreira 2006 Ichthyological Exploration of Freshwaters 17(4): 289-398

17 Filho et al. 2004 Catálogo ilustrado de peixes do alto Rio Uruguai

18 Baensch and Riehl 1995 Aquarien Atlas

19 Casciotta et al. 2006 Zoologische Abhabdlungen 56:107-112

20 Stawikowski and Werner 1998 Die Buntbarsche Amerikas

21 Riehl and Baensch 1996 Aquarien Atlas

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23 López-Fernández et al. 2013 Evolution 67: 1321-1337