

# Mercury content and consumption risk of the invasive *Arapaima gigas* (paiche) in Bolivia

Contenido de mercurio y riesgo de consumo de la especie invasora paiche *Arapaima gigas* en Bolivia

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## SUPPLEMENTARY MATERIAL

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Acceso abierto



**Table S1.** Mercury content in different commercial fish from the Bolivian Amazon. SD: Standard Deviation; C: Carnivore; O: Omnivore; D: Detritivore.

| Species                             | Local name                   | Locality         | n  | Hg ww [mg kg <sup>-1</sup> ] |      | Reference                             |
|-------------------------------------|------------------------------|------------------|----|------------------------------|------|---------------------------------------|
|                                     |                              |                  |    | Mean, or Min-Max             | SD   |                                       |
| <i>Arapaima gigas</i>               | Paiche (O)                   | Bolivian amazon  | 86 | 0.248                        | 0.16 | Present study                         |
| <i>Brachyplatystoma rousseauxii</i> | Dorado de piel, Plateado (C) | Beni River       | 4  | 1.237                        |      | Maurice-Bourgoin <i>et al.</i> (2000) |
| <i>Cichla monoculus</i>             | Tucunará (C)                 | Manuripi River   | 9  | 0.029 – 0.109                |      | Lopez (2005)                          |
|                                     |                              | San Martín River | 22 | 0.030 – 0.088                |      |                                       |
|                                     |                              | Mamoré River     | 9  | 0.036 – 0.255                |      |                                       |
| <i>Hoplias malabaricus</i>          | Bentón (C)                   | Blanco River     | 24 | 0.09                         | 0.04 | Pouilly <i>et al.</i> (2013)          |
|                                     |                              | San Martín River | 26 | 0.09                         | 0.09 |                                       |
|                                     |                              | Iténez River     | 65 | 0.13                         | 0.07 |                                       |
| <i>Plagioscion squamosissimus</i>   | Corvina (C)                  | Upper Beni River | 4  | 0.66                         | 0.31 | Rivera <i>et al.</i> (2016)           |
|                                     |                              | Mamoré River     | 12 | 0.114 – 0.481                |      | Lopez (2005)                          |
| <i>Pseudoplatystoma fasciatum</i>   | Surubí, Pintado (C)          | Beni River       | 3  | 0.436                        |      | Maurice-Bourgoin <i>et al.</i> (2000) |
|                                     |                              | San Martín River | 13 | 0.023 – 0.426                |      | Lopez (2005)                          |
|                                     |                              | Mamoré River     | 23 | 0.100 – 0.446                |      |                                       |
|                                     |                              | Manuripi River   | 19 | 0.188 – 0.583                |      |                                       |
| <i>Pseudoplatystoma tigrinum</i>    | Chuncuina, Pintado (C)       | Beni River       | 10 | 0.986                        |      | Maurice-Bourgoin <i>et al.</i> (2000) |
|                                     |                              | Upper Beni River | 5  | 0.850                        | 0.49 | Rivera <i>et al.</i> (2016)           |
| <i>Pseudoplatystoma</i> sp.         | Pintado (C)                  | Blanco River     | 6  | 0.130                        | 0.10 | Pouilly <i>et al.</i> (2013)          |

|                              |                            |                  |    |               |      |                                       |
|------------------------------|----------------------------|------------------|----|---------------|------|---------------------------------------|
|                              |                            | Iténez River     | 58 | 0.15          | 0.08 |                                       |
|                              |                            | San Martín River | 13 | 0.17          | 0.10 |                                       |
| <i>Pygocentrus nattereri</i> | Piraña, Palometa, Ñata (C) | San Martín River | 29 | 0.012 – 0.159 |      | Lopez (2005)                          |
|                              |                            | Mamoré River     | 35 | 0.019 – 0.346 |      |                                       |
|                              |                            | Manuripi River   | 15 | 0.105 – 0.398 |      |                                       |
|                              |                            | San Martín River | 28 | 0.100         | 0.05 | Pouilly <i>et al.</i> (2013)          |
|                              |                            | Blanco River     | 20 | 0.140         | 0.09 |                                       |
|                              |                            | Iténez River     | 76 | 0.190         | 0.10 |                                       |
|                              |                            | Beni River       | 2  | 1.219         |      | Maurice-Bourgoin <i>et al.</i> (2000) |
|                              |                            | Upper Beni River | 4  | 1.270         | 1.16 | Rivera <i>et al.</i> (2016)           |
| <i>Prochilodus nigricans</i> | Sábalo (D)                 | Quiquibey River  | 1  | 0.039         |      | Maurice-Bourgoin <i>et al.</i> (2000) |
|                              |                            | Tuichi River     | 1  | 0.055         |      |                                       |
|                              |                            | Beni River       | 5  | 0.078         |      |                                       |
|                              |                            | Upper Beni River | 4  | 0.100         | 0.03 | Rivera <i>et al.</i> (2016)           |
| <i>Colossoma macropomum</i>  | Pacú, Pacú negro (O)       | Tuichi River     | 1  | 0.009         |      | Maurice-Bourgoin <i>et al.</i> (2000) |
|                              |                            | Quiquibey River  | 1  | 0.021         |      |                                       |
|                              |                            | Beni River       | 6  | 0.094         |      |                                       |
|                              |                            | Manuripi River   | 17 | 0.019 – 0.077 |      | López (2005)                          |
|                              |                            | San Martín River | 23 | 0.050 – 0.124 |      |                                       |
|                              |                            | Mamoré River     | 23 | 0.096 – 0.150 |      |                                       |
| <i>Piaractus brachipomus</i> | Tambaquí, Pacú blanco (O)  | Beni River       | 3  | 0.094         |      | Maurice-Bourgoin <i>et al.</i> (2000) |
|                              |                            | Upper Beni River | 5  | 0.040         | 0.20 | Rivera <i>et al.</i> (2016)           |
|                              |                            | Mamoré River     | 9  | 0.007 – 0.030 |      | Lopez (2005)                          |

**Table S2.** Comparison of mercury content reported for the paiche *Arapaima gigas* in different studies and areas from the Amazon basin.

| Drainage                     | n  | Hg ww [mg kg <sup>-1</sup> ] |       |          |       | Reference                     |
|------------------------------|----|------------------------------|-------|----------|-------|-------------------------------|
|                              |    | min                          | max   | mean     | SD    |                               |
| Bolivian amazon              | 86 | 0.047                        | 0.745 | 0.248    | 0.158 | Present study                 |
| Upper Madeira                | 21 |                              | nd    | 3.83     | 0.640 | Boischio & Henshel (2000)     |
| Madeira                      | 4  |                              |       | 0.260    |       | Gali <i>et al.</i> (2005)     |
| Madeira (years 2009 to 2012) | 6  |                              |       | 0.270    | 0.100 | Machado (2012)                |
|                              | 3  |                              |       | 0.310    | 0.100 |                               |
|                              | 6  |                              |       | 0.320    | 0.080 |                               |
| Madeira                      | 6  | 0.231                        | 0.730 | 0.343    |       | Bastos <i>et al.</i> (2008)   |
| Madeira                      | 12 |                              | nd    | 0.670    | 0.290 | Porvari (1995)                |
| Madeira                      | 1  |                              |       | 0.180    | 0.018 | Machado (2012)                |
| Itaituba-Tapajos             | 2  |                              |       | 0.6 -1.0 |       | Yallouz <i>et al.</i> (2004)  |
| Itaituba-Tapajos             | 1  |                              |       | 0.90     |       | Uryu <i>et al.</i> (2001)     |
| Ituqui                       | 11 | 0.087                        | 0.776 | 0.221    | 0.215 | Crossa & McGrath (1999)       |
| San Martín                   | 33 | 0.250                        | 0.320 | 0.127    | 0.072 |                               |
| Jamarí                       |    |                              |       | 0.170    |       | Pfeiffer <i>et al.</i> (1989) |
| Tapajós                      |    |                              |       | 0.001    |       | Akagi <i>et al.</i> (1995)    |
| Tapajós                      | 1  |                              |       | 0.170    |       | Lebel <i>et al.</i> (1997)    |
| Santarém-Tapajos             | 4  |                              |       | 0.113    |       | Uryu <i>et al.</i> (2001)     |
| Tartarugalzinho              | 1  |                              |       | 0.880    |       | Bidone <i>et al.</i> (1997)   |