

First record of *Aphyocharax anisitsi* Eigenmann & Kennedy, 1903 in the upper Bermejo River basin, northwestern Argentina.

Guillermo E. Terán¹, Felipe Alonso², Gastón Aguilera^{1,*} & J. Marcos Mirande¹

¹ Unidad Ejecutora Lillo (CONICET)-Fundación Miguel Lillo. Miguel Lillo 251, San Miguel de Tucumán (CP 4000), Tucumán, Argentina

² División Ictiología, Museo Argentino de Ciencias Naturales "Bernardino Rivadavia" (MACN)-CONICET, Av. Ángel Gallardo 470, Buenos Aires (CP 1405), Argentina

* gaguilera@lillo.org.ar

Abstract

Aphyocharax anisitsi is recorded for the first time from the upper Bermejo River, Argentina, in the provinces of Salta and Jujuy. This represents a range extension of the known distribution of approximately 600 km. Also, collection specimens of *A. dentatus* from this area are cited for first time.

Resumen

Aphyocharax anisitsi es registrado por primera vez en la Cuenca alta del Río Bermejo, Argentina, en las provincias de Salta y Jujuy. Esto representa una extensión de la distribución conocida de aproximadamente 600 km. Además, se cita material de colección de *A. dentatus* para el área por primera vez.

Introduction

The monophyletic characid subfamily Aphyocharacinae (Mirande, 2010; Tagliacollo et al., 2012), includes a total of 25 valid species (Eschmeyer & Fong, 2016). The so called bloodfin tetras, *Aphyocharax*, is the most diverse genus of this subfamily, with 11 valid species (Eschmeyer et al., 2016). This genus is diagnosable by a combination of characters including: incomplete lateral line, a short anal fin (17-27 rays) and the dorsal fin near the middle of the body. Its teeth are uniserial on the premaxilla and most of them tricuspid (Gery, 1977). *Aphyocharax* is distributed in the main Neotropical basins: Orinoco, Amazon, and La Plata. (e.g.: Steindachner, 1882; Taphorn & Thomerson, 1991; Eigenmann & Kennedy, 1903).

Mirande & Koerber (2015) listed 5 species of Aphyocharacinae as present in Argentina: *Aphyocharax anisitsi*, *A. dentatus*, *A. nattereri*, *A. rathbuni*, and *Prionobrama paraguayensis*. *Aphyocharax anisitsi* and *A. dentatus* have been recorded from the Paraguay, Uruguay, and Paraná River basins (Gonçalves et al., 2005; Gómez & Chebez, 1996; Almirón et al., 2015).

Gonzo (2003) cited *Aphyocharax alburnus* for the Bermejo River basin in Salta. Nevertheless, the description of the coloration pattern and the drawings presented by Gonzo (2003), and the fact that *A. alburnus* was described from the Amazon River in Peru, lead us to conclude that the cited specimens correspond to *Aphyocharax dentatus*, as was previously noted by Mirande & Aguilera (2009) and Mirande & Koerber (2015).

In recent ichthyological collecting expeditions to Northwestern Argentina in the Bermejo River basin, in Salta and Jujuy provinces (fig. 1), several specimens were collected and identified as *Aphyocharax dentatus* and *A. anisitsi*. This findings confirms the presence *A. dentatus* based on collected material, and allow us to record for the first time *A. anisitsi* from the upper Bermejo basin.

Material and methods

The specimens collected were identified following the artificial keys provided by Géry (1977). Also, the specimens show the features described for these species according to Almirón et al. (2015).

Institutional abbreviations: CI-FML: Colección ictiológica, Fundación Miguel Lillo, Tucumán, Argentina. IBIGEO-I, Instituto De Bio y Geociencias del NOA- Ictiología, Salta, Argentina.

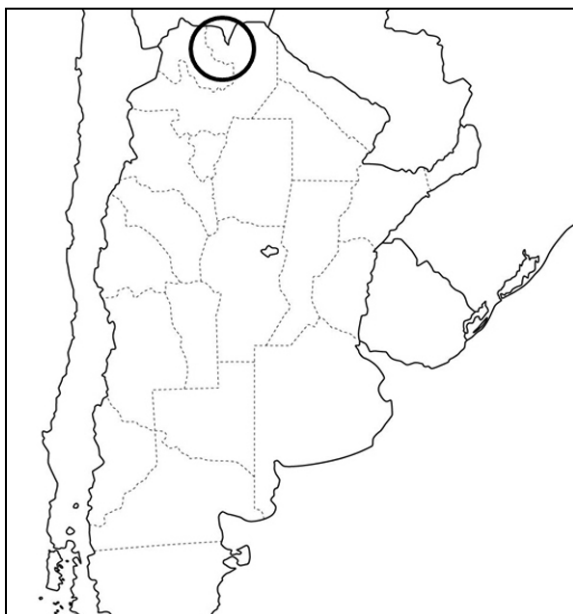
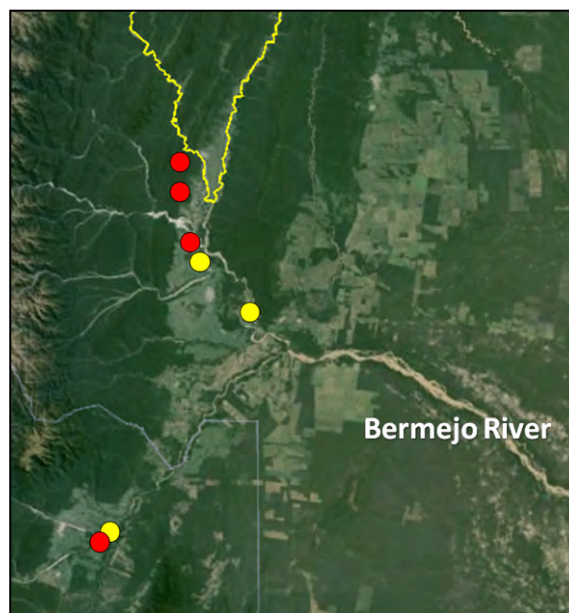


fig. 1a. Collection area.

fig. 1b. Localities where *Aphyocharax anisitsi* (red) and *Aphyocharax dentatus* (yellow) were found.

Material examined

Aphyocharax anisitsi: CI-FML 7115. 3 ex. Arroyo Quebrada Colorada (22°48.201' S - 64°21.176' W), Bermejo River basin, Salta, Argentina. Col: Mirande, Alonso & Terán. May 2015. IBIGEO-I 350 to 352 (3 ex), same data as above. CI-FML 7116. 3ex. Pool at RN 50 (22°59.056' S - 64°22.355' W) Bermejo River basin, Salta, Argentina. Col: Mirande, Alonso & Terán. May 2015. CI-FML 7117. 1 ex. Unnamed stream between Blanco and Pescado River (22°59.171' S - 64°22.299' W), Salta, Argentina. Coll.: Mirande, Alonso & Terán. CI-FML 7119. 1 ex. Arroyo Solazuty (22°53.896' S; 64°22.074' W), Bermejo River basin, Salta, Argentina. Col: Mirande, Alonso & Terán. May 2015. CI-FML 7123. 2 ex. San Francisco River (23°50'27.08" S - 64°37'24.70" W) Bermejo River basin, Jujuy, Argentina. Col.: Aguilera, Terán & Bugeau. 04/2016.

Aphyocharax dentatus: CI-FML 7118. 2 ex. Bermejo River (23° 10' 55.55" S - 64°12'18.36" W), Salta, Argentina. Col: Mirande, Aguilera, Terán & Alonso. Sept 2015. IBIGEO-I 353 (1 ex). Same data as above. CI-FML 7120. 1 ex. Unnamed stream between Blanco and Pescado Rivers (23°01.553' S - 64°21.619' W), Salta, Argentina. CI-FML 7122. 61 ex. San Lorenzo River (23°50'27.08" S - 64°37'24.70" W) Bermejo River basin, Jujuy, Argentina. Coll.: Aguilera, Terán & Bugeau. 04/2016.

fig. 2. *Aphyocharax anisitsi* CI-FML 7116. 21.2 mm SL. Live specimen, from a pool at RN 50. (22°59.056' S - 64°22.355' W), Salta province, Bermejo River basin.



fig. 3. *Aphyocharax dentatus*. A. CI-FML 7122. Upon capture. San Lorenzo River, Jujuy province (23°50'27.08" S - 64°37'24.70" W). Scale bar 30 mm. B. CI-FML 7118. Bermejo River, Salta province. (23° 10' 55.55" S - 64° 12'18.36" W) Scale bar 20 mm.

Aphyocharax anisitsi, Bermejo river basin (fig. 2): mouth small, 2-4 teeth in the maxilla, 33 to 34 scales of which 8 or 9 are perforated (plus one isolate pored scale in the peduncle), and between 18-21 anal fin rays, the first rays form a lobule. Each premaxilla has 8 teeth in one series. Teeth are conical or tricuspids. Coloration pattern: background silver, base of pelvic and anal fin red (Géry, 1977; Almirón et al., 2015).

Aphyocharax dentatus, Bermejo river basin (fig. 3): tip of the maxilla reaching the third infraorbital, between 9-20 maxillary teeth that occupy more than half of its length. 18-21 anal fin rays, the first rays form a lobule. 36-42 scales in the longitudinal series. Lateral line incomplete (plus one isolate pored scale in the peduncle). The distal portion of the maxilla reaches the anterior margin of the eye. Each premaxilla has 7-10 teeth in one series. Coloration pattern: Background silver with blue with bluish reflections. One diffuse gray humeral spot. Caudal fin red. Presence of a yellow spot in the opercular region (Géry, 1977; Almirón et al., 2015).

Discussion

Aphyocharax anisitsi is known to be present in Paraná and Uruguay River basins in Argentina. *Aphyocharax dentatus* is found in Paraná River basin (Liotta, 2005). The finding of *A. anisitsi* in the upper Bermejo River basin represents a range extension of the known distribution of approximately 600 km. Interestingly, even though there are many endemisms known from the upper Bermejo Basin, there are also several elements shared by this biogeographic area and the Paraguay-Paraná River systems (Aguilera et al., 2016).

In this contribution we record *Aphyocharax anisitsi* for the upper Bermejo basin, in Salta and Jujuy provinces.

Acknowledgements

CONICET, Fundación Miguel Lillo, and FONCyT (PICT-2011-0992 to JMM and PICT-2012-2683 to GA) for financial support. Secretaria de Ambiente de Salta, and especially to Yanina Bonduri and Sebastián Musalem, for help with the collecting permissions. Baltazar Bugeau (FML) for technical support. We thank Google Earth for making available the satellite image used in fig. 1b.

References

- Aguilera, G., G.E. Terán, F. Alonso & J.M. Mirande (2016): First record of the banjo catfish *Bunocephalus doriae* Boulenger 1902 (Siluriformes: Aspredinidae) in the Bermejo River basin, Salta, Argentina. Check List 12 (3/1888): 1-4
- Almirón, A., J. Casciotta, L. Ciotek & P. Giorgis (2015): Guía de los peces del Parque Nacional Pre-Delta. 2nd ed. Administración de Parques Nacionales, Ciudad Autónoma de Buenos Aires. 300 p.
- Eigenmann, C.H. & C.H. Kennedy (1903): On a collection of fishes from Paraguay, with a synopsis of the American genera of cichlids. Proceedings of the Academy of Natural Sciences of Philadelphia 55: 497-537
- Eschmeyer, W.N., R. Fricke & J. Fong (eds.) (2016): Catalog of Fishes. Electronic Version. www.calacademy.org/scientists/projects/catalog-of-fishes.
- Eschmeyer, W.N. & J.D. Fong (2016): Species by family (<http://researcharchive.calacademy.org/research/ichthyology/catalog/SpeciesByFamily.asp>). Electronic version.
- Géry, J. (1977): Characoids of the World. Neptune City, TFH Publications. 672 p.
- Gómez, S.E. & J.C. Chebez (1996): Peces de la provincia de Misiones. Chapter 4. In: Chebez, J.C. (ed.): Fauna Misionera. Catálogo sistemático y zoogeográfico de los vertebrados de la Provincia de Misiones (Argentina). L.O.L.A., Buenos Aires. 38-70 + Addenda 315-316
- Gonzo, G.M. (2003): Peces de los Ríos Bermejo, Juramento y Cuencas Endorreicas de la Provincia de Salta. Museo de Ciencias Naturales y Consejo de Investigación, Universidad Nacional de Salta. 243 p.
- Gonçalves, T.K, M.A. Azevedo, L.R. Malabarba & C.B. Fialho (2005): Reproductive biology and development of sexually dimorphic structures in *Aphyocharax anisitsi* (Ostariophysi: Characidae). Neotropical Ichthyology 3 (3): 433-438
- Mirande, J.M. (2010): Phylogeny of the family Characidae (Teleostei: Characiformes): from characters to taxonomy. Neotropical Ichthyology 8 (3): 385-568
- Mirande, J.M. & G. Aguilera (2009): Los peces de la selva pedemontana del noroeste argentino. 169-211. In: Brown, A., P. G. Blendinger, T. Lomáscolo & P. Garcia Bes (eds.), Selva Pedemontana de las Yungas. Historia Natural, Ecología y Manejo de un Ecosistema en Peligro.
- Mirande J.M. & S. Koerber (2015): Checklist of the freshwater fishes of Argentina (CLOFFAR). Ichthyological Contributions of PecesCriollos 36: 1-68
- Liotta, J. (2005): Distribución geográfica de los peces de aguas continentales de la República Argentina. ProBiota - Serie Documentos 3: 1-701
- Steindachner, F. (1882): Beiträge zur Kenntniss der Flussfische Südamerikas (IV). Anzeiger der Akademie der Wissenschaften in Wien, Mathematisch-Naturwissenschaftliche Classe 19 (19): 175-180
- Tagliacollo, V.A., R. Souza-Lima, R.C. Benine & C. Oliveira (2012): Molecular phylogeny of Aphyocharacinae (Characiformes, Characidae) with morphological diagnoses for the subfamily and recognized genera. Molecular Phylogenetics and Evolution 64 (2): 297-307
- Taphorn, D.C. & J.E. Thomerson (1991): Un characido nuevo, *Aphyocharax colifax*, de las cuencas de los ríos Caroni y Caura en Venezuela. Revista Unellez de Ciencia y Tecnología 4 (1-2): 113-115

recommended form for reference:

Terán, G.E., F. Alonso, G. Aguilera & J.M. Mirande (2016): First record of *Aphyocharax anisitsi* Eigenmann & Kennedy, 1903 in the upper Bermejo River basin, northwestern Argentina. Ichthyological Contributions of PecesCriollos 44: 1-4 available as pdf-file at www.pecescrilloos.de since 06.Jun.2016