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Range extension of *Piabucus dentatus* (Koelreuter, 1763) for the Pindaré River drainage, Mearim River basin, Brazil (Characiformes: Iguanodectinae)

by

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Résumé. – Extension de la répartition de l'espèce *Piabucus dentatus* (Koelreuter, 1763) dans le fleuve Pindaré, bassin du Mearim, au nord-est du Brésil (Characiformes: Iguanodectinae).

Cette étude présente l'extension de la répartition de *Piabucus dentatus* dans le réseau hydrographique de la rivière Pindaré, bassin du fleuve Mearim, dans l'état de Maranhão, au nord-est du Brésil. La répartition géographique de cette espèce était connue auparavant uniquement dans les réseaux hydrographiques situés le long de la côte du golfe Paría, au Vénézuéla, et jusqu'au sud de l'embouchure du fleuve Amazone. C'est le premier signalement de cette espèce au nord-est du Brésil, et également le premier signalement de ce genre dans cette région. Des données méristiques des spécimens sont présentées et les caractères diagnostiques de *P. dentatus* sont discutés. Certaines données méristiques présentées ici sont les premières à être publiées sur cette espèce.

Key words. – Characidae - *Piabucus dentatus* - Brazil - Maranhão state - Taxonomy - Range extension.

The Iguanodectinae is a subfamily of the Neotropical fish family Characidae, comprising about 30 valid species (Moreira, 2003; Nelson *et al.*, 2016). Species of genus *Piabucus* Oken, 1817 are distributed along the Atlantic river drainages of South America, from the Orinoco River basin in the north through most of the rivers of the Amazon River basin, to the Paraguay River basin in the south (Vari, 1977). Its members are characterized mainly by having an elongated, basally-contracted body, multicuspid teeth, gill-membranes united and free from the isthmus, posterior end of maxilla not extending to the eyes, dorsal-fin origin usually located posteriorly to the middle of body, and a long anal fin (Moreira, 2003).

The genus *Piabucus* is distinguished from *Iguanodectes* Cope, 1872, its most similar genus, by having a longer pectoral fin and a compressed thoracic and preventral region, terminating ventrally in a well-developed keel (Vari, 1977; Moreira, 2003); it currently comprises only three valid species (Nelson *et al.*, 2016): *Piabucus caudomaculatus* Vari, 1977, *P. dentatus* (Koelreuter, 1763), and *P. melanostoma* Holmberg, 1891. *Piabucus dentatus* was originally described as *Trutta dentata* (Moreira, 2003). The geographical distribution of the species is known from the coastal drainages of Paria Gulf in Venezuela to the mouth of the Amazon River, including the lower Amazon River basin, in Brazil, French Guiana, Guyana, Suriname, and Venezuela (Géry, 1977; Planquette *et al.*, 1996;

Moreira, 2003). We have found this species in the Pindaré River drainage of the Mearim River basin, northeastern Brazil, expanding its distribution about 400 km further southeast.

MATERIALS AND METHODS

The specimens of *Piabucus dentatus* were collected at two sites of the Pindaré River drainage, Mearim River basin, northeastern Brazil (Fig. 1). The specimens were fixed in 10% formaldehyde solution, and then transferred to 70% ethanol for preservation. Measurements and counts followed Fink and Weitzman (1974). Data related to fin rays, branchiostegal rays, teeth, supraneurals, vertebrae, and ribs, were conducted in the three cleared and stained specimens (C&S) after Taylor and Van Dyke (1985). The other data were taken from the seven not cleared and stained specimens. The Weberian apparatus were not included in the vertebral count and the fused PU1+U1 was considered a single element. Comparison to congeners was based on Géry (1977), Vari (1977), Moreira (2003), and Lima *et al.* (2013). The collected material was deposited in the Coleção Ictiológica do Centro de Ciências Agrárias Ambientais (CICCA) of the Universidade Federal do Maranhão.

Examined material

Brazil: Maranhão State: Alto Alegre do Pindaré municipality: CICCA 00095, 3 specimens, C&S, 75.2-91.2 mm SL; Igarapé do Fausto, 3°42'47.45"S-46°3'26.26"W; E. Guimarães and C. Costa, 03 Dec. 2015. CICCA 00096, 6 spms, 100.1-102.1 mm SL; Igarapé do Fausto, 3°42'47.45"S-46°3'26.26"W; E. Guimarães and C. Costa, 03 Dec. 2015. CICCA 00097, 1 spm, 94.8 mm SL; Igarapé Mineirão, 3°42'26.96"S-45°56'15.12"W, E. Guimarães and C. Costa, 03 Dec. 2015.

RESULTS

The specimens (Fig. 2) were identified as *Piabucus dentatus*, as having two rows of teeth on premaxilla (inner row with six teeth, and outer row with one smaller tooth) (Fig. 3), while the other two congeneric species possess only one row of teeth. The meristics of *P. dentatus* are similar to those of *P. melanostoma* (Géry, 1977), differing from *P. caudomaculatus* by the following features: presence of adipose fin (Fig. 2C), 80-84 (vs. 75-76) perforated scales in the lateral line, 11 (vs. 8-9) dorsal-fin rays and 45-46 (vs. 36-38) total anal-fin rays.

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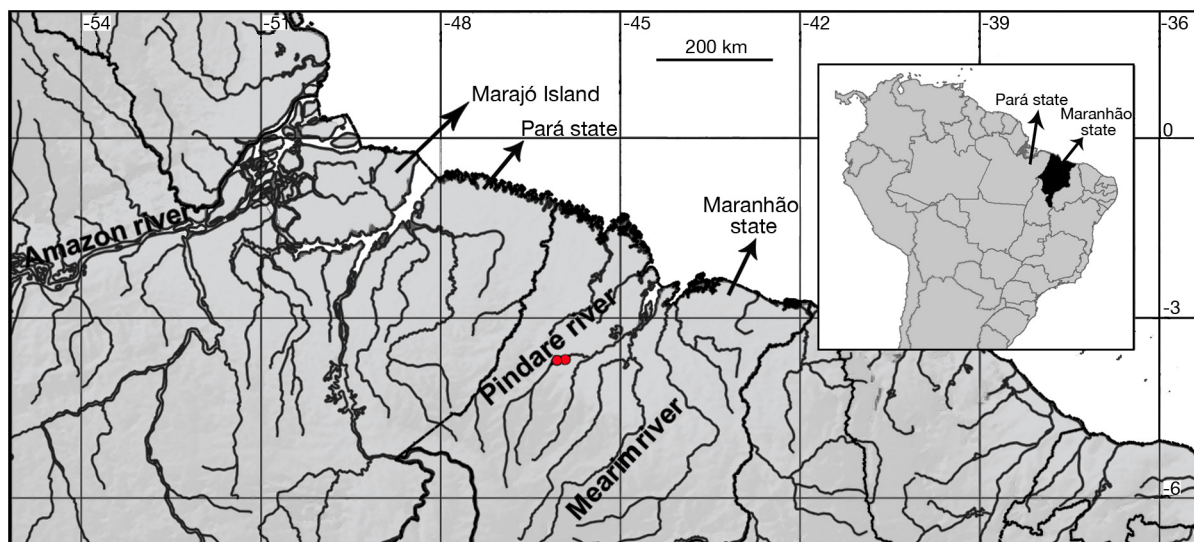


Figure 1. – New records of *Piabucus dentatus* (red circles) in the Pindaré River drainage, Mearim River basin, Maranhão state, northeastern Brazil.

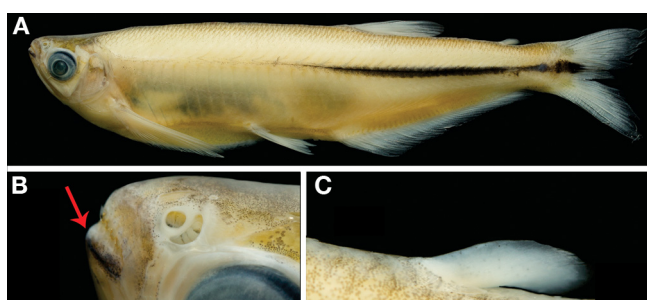


Figure 2. - *Piabucus dentatus*: CICCA 00096, 100.9 mm SL: Pindaré River drainage, Mearim River basin, Maranhão state, northeastern Brazil. **A**: Lateral view; **B**: Lateral view of head (red arrow showing dark pigmentation of lower jaw); **C**: Adipose fin.

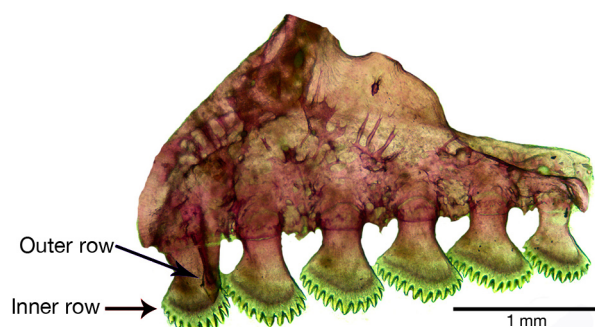


Figure 3. – Premaxilla of *Piabucus dentatus*, CICCA 00095, 91.2 mm SL, C&S, Pindaré River drainage, Mearim River basin, Maranhão state, northeastern Brazil.

Table I. – Meristic data of the examined specimens from the Pindaré River drainage.

	N	Range
Number of dorsal-fin rays	3	iii+8
Number of anal-fin rays	3	45-46
Number of pectoral-fin rays	3	13
Number of pelvic-fin rays	3	8
Number of perforated scales of lateral line	7	80-84
Number of maxillary teeth	3	2 (10-13 cuspids)
Number of teeth in the inner row of premaxilla	3	6 (10-13 cuspids)
Number of teeth in the outer row of premaxilla	3	1 (3-5 cuspids)
Number of teeth in the dentary	3	10 (10-13 cuspids)
Number of branchiostegal rays	3	4
Number of supraneurals	3	11
Number of principal caudal-fin rays	3	22
Number of dorsal procurrent rays	3	9
Number of ventral procurrent rays	3	8
Number of vertebrae (precaudal + caudal)	3	41-43 (21-23 +20-22)
Number of rib pairs	3	21
Number of pterigiophores on dorsal/anal-fin bases	3	10/40

DISCUSSION

The present study extends the distribution of *P. dentatus* for the Pindaré River drainage of the Mearim River basin, northeastern Brazil (Fig. 1), which had never been recorded for this River basin (see Moreira, 2003; Soares, 2013). It represents a distribution expansion of about 400 km further southeast. Moreover, this is the first record of the genus for the northeast of Brazil. Specimens of the genus *Piabucus* are rarely collected on fish expeditions, with few collecting sites records (Géry, 1977; Borba *et al.*, 2013; Lima *et al.*, 2013). This justifies why this is the first record of the genus for northeastern Brazil, and more precisely, for the Maranhão state. In addition, we present some additional meristic data of the specimens herein examined in table I. Some of these meristic data are the first recorded for the species.

According to Vari (1977), *P. dentatus* does not possess dark pigmentation in the lower jaw, what distinguishes it from both *P. melastoma* and *P. caudomaculatus*, which display that dark pigmentation. However, this information was not confirmed by the present study, which revealed the presence of this dark pigmentation in the specimens of *P. dentatus* herein examined (Fig. 2B). Probably, Vari (1977) could not record

this dark pigmentation due to the state of preservation of the specimens he examined. Some specimens of our examined material do not possess this dark pigmentation of the lower jaw so conspicuous. Thus, this colour pattern is not a useful and reliable taxonomic character.

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