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Populations of *Characidium rachovii* (Crenuchidae: Characidiinae) with reduction of the adipose fin from Argentina and a Southernmost record of *C. occidentale*

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KEYWORDS: *Characidium rachovii*, *Characidium occidentale*, Characiformes, Southern South America, taxonomy, distribution.

PALABRAS CLAVE: *Characidium rachovii*, *Characidium occidentale*, Characiformes, Sud América, taxonomía, distribución.

The genus *Characidium* includes approximately 43 valid species that occur widely in major tropical and subtropical drainages between eastern Panamá and the vicinity of La Plata (Buenos Aires) (Ringuelet *et al.*, 1978; Buckup *et al.*, 2000; Buckup & Hahn, 2000; Souto de Melo & Buckup, 2002). Five species of *Characidium* have been reported for Argentina—*Characidium borellii* (Boulenger, 1895), *C. fasciatum* Reinhardt = *C. cf. zebra*, *C. pterostictum* Gómez, *C. tenue* (Cope), and *C. rachovii* Regan (Pozzi, 1935; Braga, 2000/ 2001; López *et al.*, 2003; López & Miquelarena, 2005).

The objective of this note is to report on populations of *Characidium rachovii* (Fig. 1, Table 1) with reduction and absence of the adipose fin from Salí-Dulce and Paraná River basins, Argentina. In addition, we make considerations about the use of this character as diagnostic at the alpha level and mention the occurrence of *Characidium occidentale* Buckup & Reis in the Lower Uruguay River basin. *C. occidentale* (Table 1), was described by Buckup & Reis in 1997 for a tributary of the Uruguay River, in Brazil and we include the first report from the Chirimay Miní stream, a tributary of the Uruguay River in the Province of Misiones, Argentina.

The material studied is deposited in the ichthyologic collections of the Fun-

dación Miguel Lillo, Tucumán, Argentina (FML); Museo de La Plata, La Plata, Argentina (MLP) and Instituto de Limnología Dr. Raúl A. Ringuelet, Buenos Aires, Argentina (ILPLA).

Material examined: *Characidium rachovii*: ILPLA 1582, 5 specimens (2 cleared and stained), 34.1-36.8 mm SL, Tucumán, Departamento Chicligasta, Gastona River, collectors L. Fernández and G. Scrocchi, Feb. 1999; FML 2554, 25 specimens, 32.9-40.1 mm SL, same data as above; FML 2593, 4 specimens, 28.1-45.9 mm SL, same data as above; MLP 7293, 27 specimens (8 specimens with vestigial adipose fin), 22.7-32.8 mm SL, Santa Fe, Madrejón near Colastiné River, collectors: R. Ringuelet and R. Arámburu, 1 Oct. 1961. *Characidium occidentale*: ILPLA 1581, 2 specimens, 40.3-41.8 mm SL, Misiones, Departamento Apóstoles, Chirimay Miní stream, Uruguay River basin, (27°54'S-55°45'W), collectors: R. Filiberto *et al.*, 8 Jan. 2001. The measurements were taken on the left side of the specimen with a digital calliper with a precision of 0.02 mm under a stereomicroscope according to Buckup (1993).

In northwestern Argentina, *Characidium cf. zebra* is mainly distributed in the western mountain rivers of Tucumán,

whereas *C. rachovii* occurs in the southern and eastern rivers of that province. Specimens of *C. rachovii* presenting reduced to absent adipose fin (Fig. 1) as well as specimens showing a normal adipose fin were collected at the same time in a canal that overflows from the Gastona River (Salí-Dulce basin). A vestigial adipose fin was also the observed condition in eight specimens of the same species from the Lower Paraná River (Santa Fe). All specimens of *C. rachovii* present 33 to 35 lateral line scales (11 perforated scales).

A reduced adipose fin in a *Characidium* species has first been reported by Buckup & Hahn (2000), who diagnosed *C. vestigipinne* by the reduction of the adipose fin, which can be very small (less 4% SL) or absent. This species is endemic from the upper Uruguay basin and has been included in a monophyletic clade together with *C. occidentale*, *C. orientale* and *C. rachovii* based on four external characters. In addition to having a variably reduced adipose fin, *C. vestigipinne* can be further distinguished from other species of the genus *Characidium* by the

presence of a lateral line complete or beyond the 12th scale. The specimens examined for Argentinean localities shared the four synapomorphies for that clade following Buckup & Hahn (2000).

Our findings show that the reduction or absence of the adipose fin might be a frequent condition among *Characidium* species. This has led us to question its use as an alpha-level diagnostic character. Though not yet quantified, we have observed that several species of small Characiformes can present variation in the degree of development of the adipose fin, such variation occurring only in some populations of the species (also Vari, pers. comm.). This appears to be the case we observed in the Characidiinae *C. rachovii*. Hence, we consider that the use of the character reduction or absence of the adipose fin in that group as diagnostic at the alpha level should be avoided or clearly justified.

We follow Buckup & Reis (1997) for the identifications of the *C. occidentale* specimens: Dark spots on dorsal fin forming a continuous band across rays; anteri-

| | A | B | C | D | E | F |
|--------------------------------|------|------|------|------|------|------|
| Standard length (mm) | 33.3 | 21.7 | 36.5 | 35.0 | 40.3 | 41.8 |
| Total length (mm) | 41.2 | 28.1 | 45.9 | 43.7 | 51.6 | 53.0 |
| Percentages of standard length | | | | | | |
| Head length | 27.5 | 31.9 | 26.5 | 26.9 | 25.8 | 28.2 |
| Prepectoral distance | 26.8 | 28.5 | 27.2 | 25.9 | 27.3 | 28.2 |
| Predorsal distance | 48.9 | 51.9 | 50.1 | 48.3 | 47.9 | 48.1 |
| Prepelvic distance | 52.8 | 53.4 | 52.1 | 52.1 | 51.6 | 51.4 |
| Preanal distance | 70.8 | 75.2 | 72.1 | 72.3 | 72.7 | 76.2 |
| Anal-apex distance | 87.9 | 95.2 | 88.3 | 89.2 | 91.6 | 95.2 |
| Body width | 8.9 | 9.8 | 9.7 | 8.6 | 12.1 | 12.4 |
| Body depth at dorsal origin | 28.4 | 27.4 | 29.7 | 28.4 | 27.0 | 26.3 |
| Body depth at anal origin | 17.9 | 19.3 | 19.7 | 19.0 | 18.4 | 18.8 |
| Body depth at caudal peduncle | 12.2 | 10.8 | 12.7 | 12.0 | 12.6 | 11.9 |
| Percentages of head length | | | | | | |
| Snout length | 20.8 | 21.2 | 23.6 | 20.2 | 27.3 | 24.6 |
| Snout-maxilla tip | 21.5 | 23.3 | 26.8 | 23.9 | 25.0 | 23.6 |
| Anterior nares-orbit | 8.0 | 5.8 | 10.8 | 9.1 | 9.7 | 12.1 |
| Posterior nares-orbit | 4.8 | 6.5 | 3.9 | 2.7 | 4.7 | 3.7 |
| Cheek depth | 10.9 | 7.9 | 8.2 | 6.9 | 10.4 | 10.5 |
| Orbital diameter | 32.3 | 32.9 | 29.1 | 30.3 | 32.8 | 32.0 |
| Interorbital distance | 25.1 | 21.0 | 22.9 | 23.6 | 25.0 | 23.5 |

Table 1. Morphometric data of *Characidium rachovii* (with adipose fin reduced and fin absent) FML 2593 (A-D) and *Characidium occidentale* ILPLA 1581 (E-F).



Figure 1. *Characidium rachovii* FML 2554, with adipose fin developed (above), FML 2593, with adipose fin reduced (center), and FML 2593, adipose fin absent (bottom).

or portion of anal fin of males with two conspicuous dark blotches, followed by smaller spots on the posterior portion; 12 series of scales around caudal peduncle; lateral line complete; 33-34 lateral-line scales; scales above lateral line 5; scales below lateral line 5; scales in predorsal

series 12. Dorsal-fin rays iii, 10. Anal-fin rays ii, 7. Pectoral-fin rays iii, 6-7. Pelvic-fin rays i, 6, i. Branched caudal-fin rays 9 on dorsal lobe, 8 on ventral lobe.

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