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Aphanius marassantensis, a new toothcarp from the Kızılırmak drainage in northern Anatolia (Cyprinodontiformes: Cyprinodontidae)

S. JOHANNES PFLEIDERER, MATTHIAS F. GEIGER & FABIAN HERDER
Zoologisches Forschungsmuseum Alexander Koenig, Leibniz Institute for Animal Biodiversity, Adenauerallee 160, 53113 Bonn, Germany. E-mail: johannes.pfleiderer@uni-bonn.de, m.geiger@zfmk.de, f.herder@zfmk.de

Abstract

Aphanius marassantensis, new species, is described from the Kızılırmak River drainage in northern Anatolia based on colouration, meristic and morphometric characters, and the mtDNA COI barcode region. It is distinguished from other Anatolian *Aphanius* by one or several of the following characters: a stout body shape (BD/SL 28.2–39.6%), complete scale cover, and 25–28 scales along the lateral line. Males have 8–13 dark-brown lateral bars, of which the antepenultimate bar anterior to the caudal-fin base is 0.9–1.8 times wider than the anterior white interspace, 2–3 vertical rows of spots on the caudal fin, a black dorsal fin, sometimes with a narrow whitish-grey base, a white anal fin with 1–3 rows of black spots, in some individuals with a black margin, and hyaline pelvic fins. Females do not have vertical rows of dark-brown spots on caudal or anal fins, but numerous dark-brown spots on the flanks, arranged in 1–3 lateral rows behind a vertical from the dorsal-fin base. Their dorsal fin is hyaline with tiny dark-brown spots on rays and membranes; pectoral fins, caudal and anal fins are hyaline, and one prominent large dark-brown blotch is situated in mid-lateral position on the hypural plate. The new species is also distinguished by 11 fixed, diagnostic nucleotide substitutions in the mtDNA COI barcode region. The description of this new species, which brings the number of Anatolian *Aphanius* species to 12, underlines the character of Anatolia as a region of extraordinarily high biodiversity.

Key words: Turkey, mtDNA, COI barcode region, taxonomy, zoogeography

Introduction

Central Anatolia and the Iranian plateau are the areas with the highest species richness of cyprinodontid killifishes in the Western Palaearctic (Esmaeili *et al.* 2014, Hrbek & Meyer 2003, Teimori *et al.* 2014). In Anatolia, these fishes have been intensively studied for their biogeography (Kosswig 1967, Hrbek & Meyer 2003) and evolutionary history (Villwock 1966), but the number of species in the area is still under debate. Akşiray (1948a, 1948b) recognized 11 species and 14 subspecies in Anatolia, while Wildekamp *et al.* (1999) accepted only five species and three subspecies, while treating all other taxa described by Akşiray (1948a, 1948b) and earlier authors as synonyms. Hrbek & Wildekamp (2003) described one additional species (*A. villwocki*), and Geiger *et al*. (2014) proposed the revalidation of *A. fontinalis* Akşiray, 1948*; A. iconii* Akşiray, 1948*; A. maeandricus* Akşiray, 1948*; A. meridionalis* Akşiray, 1948 and *A. saldae* (Akşiray, 1955) from Central Anatolia, based on genetic distances derived from the mitochondrial COI marker.

In Anatolia, *Aphanius* are not restricted to the Mediterranean basin and Central Anatolia: they also occur in the Black Sea basin, where *A. villwocki* is known from the Sakarya drainage (Hrbek & Wildekamp 2003). Two additional species (*A. fasciatus* and *A. mento*) occur in southern Turkey along the coast of the Mediterranean Sea. Both of these, however, are clearly separated spatially from the Anatolian inland species, and are also clearly distinct at the molecular level (Hrbek & Wildekamp 2003). Here, we focus on the inland *Aphanius* of Anatolia.

Aphanius from the Kızılırmak, the largest river in the Anatolian Black Sea basin, were identified as *A. danfordii* (Boulenger, 1890) by Wildekamp *et al.* (1999), but this species was originally described from the Elbistan district in central Turkey by Boulenger (1890), apparently from the Sultan Sazlığı Marshes at Soysallı (Wildekamp *et al.* 1999). Fishes from the Kızılırmak had earlier been identified as *A. chantrei* by Sözer (1942),

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