

First Record of *Chromogobius zebratus* (Gobiidae) for the Mediterranean Coast of Turkey

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Abstract: The Kolombatovic's goby *Chromogobius zebratus*, was caught for the first time from the Turkish coast of the Mediterranean Sea. The lateral-line system and morphometric features of this species were examined.

Key Words: Gobiidae, *Chromogobius zebratus*, Mediterranean Sea

Türkiye'nin Akdeniz Kıyıları İçin Yeni Bir Kayıt, *Chromogobius zebratus* (Gobiidae)

Özet: Türkiye'nin Akdeniz kıyıları balık faunası için yeni bir kayabalığı türü olan *Chromogobius zebratus* Doğu Akdeniz kıyılarından ilk defa yakalanmıştır. Ayrıca bu türün lateral-kanal sistemi ve morfometrik özellikleri incelenmiştir.

Anahtar Sözcükler: Gobiidae, *Chromogobius zebratus*, Akdeniz

Introduction

Chromogobius zebratus is a small cryptobenthic fish species belonging to the genus *Chromogobius* along with *C. quadrivittatus* and *C. britoi*. It is distributed in the Atlantic, and from Israel to the Adriatic Sea and Rhodes (Miller, 1971, 1977; Ahnelt, 1990; Alberto and Nieto, 1993) and found in both intertidal and subtidal areas to 12 m depth (Bouchereau and Tomasini, 1989; Patzner, 1999). It has been not observed on open bottom ground, but is sometimes found under solitary stones and boulders on sand or flat bedrock (Kovacic, 1997). *C. quadrivittatus* is the unique fish represented within the genus *Chromogobius* for Turkish fish fauna and is recorded from the Sea of Marmara, Aegean Sea, and Mediterranean Sea of Turkey (Bilecenoğlu et al., 2002). Recently, *C. zebratus* was reported from the southern Aegean Sea coast (Fricke et al., 2007). We here present the first record of *C. zebratus* from the Turkish Mediterranean coast, which extends the known distribution range of this rare species.

Materials and Methods

The specimen, a male, 27.7 + 6.3 mm, was collected from Arsuz (30 km south of İskenderun) (Figure 1) on 21 January 2006 by snorkelling using a hand-net on rocky habitat at 0.5 m. The specimen is deposited at the Zoological collection, Faculty of Fisheries Rize (FFR, 1023) (Figure 2). The specimen was collected by S. Engin



Figure 1. Previous records (●), present record (Arsuz: ▲) of record of *Chromogobius zebratus*.

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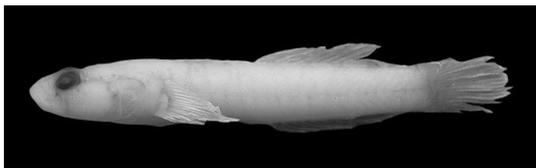


Figure 2. *Chromogobius zebratus*, male, 27.7 + 6.3 mm, FFR 1023, Arsuz, Hatay, south of Turkey, January 2006.

and G. Dalgıç. Meristic characters and morphometric measurements were obtained under a binocular microscope (to the nearest 0.01 mm) following Miller (1988). Meristic abbreviations: A, anal fin; C, caudal fin; D1, D2, first and second dorsal fin; P, pectoral fin; V, pelvic disc; LL, scales in lateral series; TR, scales in transverse series. Morphometric abbreviations: Ab, anal fin base; Ad and Aw, body depth and width at anal fin origin; Cl, caudal fin length; CHd, cheek depth; CP and CPd, caudal peduncle length and depth; D1b and D2b, first and second dorsal fin base; E, eye diameter, H and Hw, head length and width; I, interorbital width; Pl, pectoral fin length; PO, postorbital length; SL, standard length; SN, snout length; SN/A and SN/AN, distance from snout to vertical of anal fin origin and anus; SN/D1 and SN/D2, distance from snout to origin of first and second dorsal fins; SN/V, distance from snout to vertical of pelvic fin origin; V/AN, Distance from pelvic fin origin to anus; Vd, body depth at pelvic fin origin; VI, pelvic fin length. Terminology of the lateral-line system follows Sanzo (1911) and Miller (1986).

Results

Body proportions of *Chromogobius zebratus* (Kolombatovic, 1891) are SL(mm) (27.7); %SL, H (29.8); Hw (19.9); SN/D1 (37.0); SN/D2 (57.0); SN/AN (64.1); SN/A (60.5); SN/V (30.2); CP (17.6) D1b (12.6); D2b (29.6); Ab (21.3); Cl (22.5); Pl (23.6); VI (19.4); Vd (15.5); Ad (14.2); Aw (12.3); CPd (11.3); V/AN (29.2); %CP, CPd (64.5); %H, SN (20.9); E (19.6); PO (55.5); CHd (17.1); Hw (66.9); %E, I (39.5); %V/AN, VI (66.6). Anterior nostril medially not very short, tubular, with short process from posterior part of rim. Fins: D1 VI, D2 I/11, A I/10, C 20, P, 16 articulated rays. C rounded. Body with cycloid scales, only caudal peduncle scales ctenoid, LL 42. Predorsal area naked and cheek naked. Preserved specimen was pale brown, with 5 pale saddles. Vertical light brown bands across the body. Dark bar on

petoral fin. Seven transverse rows in sub-orbital area, 4 before and 1 lower part below row *b*. Anterior oculoscapular and preopercular canals present, with pores σ , λ , κ , ω , α , β , ρ and γ , δ , ϵ . However, there was no posterior oculoscapular canal. Rows and, in parentheses, number of sensory papillae as follows: 1. - *Preorbital*: snout with 3 median preorbital series, row *r* (4), row *s1* (8) and *s2* (5). Lateral series *c* in 2 parts: superior *c²* (4); middle *c¹* (4). 2. - *Suborbital*: 7 transverse suborbital rows (1 - 7) of sensory papillae and rows begin near orbit, inferior segment of row 5 greatly extended below level of row *d* (1: 8, 2: 8, 3: 7, 4: 8, 5s: 4, 5i: 14, 6: 5, 7: 2) and row *y* (4). Longitudinal row *b* (12) extending forwards to row 5. Longitudinal row *d* continuous (21). 3. - *Preoperculo-mandibular*: external row *e* and internal row *i* divided into anterior (*e*: 19, *i*: 9), and posterior sections (*e*: 18, *i*: 7); row *f* (3). 4. - *Opercular*: transverse row *ot* (17); superior longitudinal row *os* (7); and inferior longitudinal row *oi* (6). 5. - *Oculoscapular*: 1 longitudinal row *x* (8) and row *y* (6). 6. - *Anterior dorsal*: transversal row *n* behind pore ω (7); transversal rows *o* (3); longitudinal row *g* (6); below posterior part of row *g*; transversal row *h* divided into anterior (*h*: 5) and posterior sections (*h*: 4) (Figure 3).

Discussion

The present record of *C. zebratus* from Arsuz extended the geographical distribution of this species from the Atlantic to the far east of the Mediterranean including the Adriatic Sea (Miller, 1971; Ahnelt, 1990; Kovacic, 1997). This confirms the statement by Patzner (2007) that the distribution of this species in the Mediterranean is rather unclear; and its distribution is probably much greater than that determined to date. During the field work the specimen was caught at 0.5 m depth and many others were observed between 0.5 and

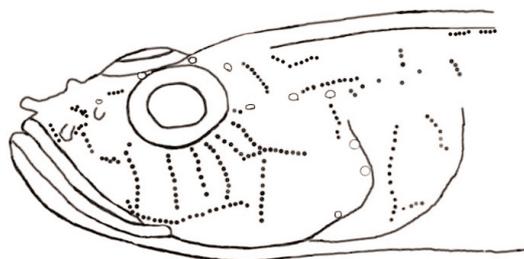


Figure 3. *Chromogobius zebratus*, male, 27.7 + 6.3 mm, FFR 1023, Arsuz, Hatay, south of Turkey, January 2006.

2 m depth, usually on the sheltered sides of breakwaters. General habitat characteristics were similar to Patzner's (1999) findings.

The recently described species *C. britoi* possesses a lower number of scales in the lateral series (30-36) as compared with *C. zebratus* (41-52) and *C. quadrivittatus* (56-72). Scale types differ between the 3 species: *C. britoi* possesses only ctenoid scales, *C. quadrivittatus* only cycloid scales, and *C. zebratus* cycloid scales on the trunk and ctenoid scale on the caudal peduncle (Van Tassel, 2001). Our specimen has a scale number and scale types similar to Van Tassel's (2001) findings.

The meristic counts, drawing of the lateral-line system, and numbers of sensory papillae presented here are similar to those described by Miller (1986) and Van Tassel (2001). In addition, body coloration of the

specimen did not differ from the initial description by Miller (1986) and Van Tassel (2001). During the last few years, the use of diving techniques has improved our knowledge of the geographical range and diversity of gobies in some sectors of the Mediterranean Sea, including new records from the Black Sea (Engin et al., 2007), and the Aegean and Mediterranean Seas (Francour et al., 2007). Knowledge of Turkish ichthyofauna is improved with this goby record.

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References

- Alberto, L.J. and Nieto, P. 1993. Presence of *Chromogobius zebratus* (Kolombatovic, 1891) (Gobiidae) in the Atlantic. Comments on the subspecific characteristics and distribution. *Cybiurn* 17: 215-221.
- Ahnelt, H. 1990. *Chromogobius quadrivittatus*, *Chromogobius zebratus* and *Zebrus zebrus* (Pisces, Gobiidae): Erstnachweise für Korsika (Frankreich) und Sardinien (Italien). *Annalen des Naturhistorischen Museums in Wien* 91 B: 27-41.
- Bilecenoğlu, M., Taşkavak, E., Mater, S. and Kaya, M. 2002. Checklist of the marine fishes of Turkey. *Zootaxa* 113: 1-194.
- Bouchereau, J.L. and Tomasini, J.A. 1989. Note sur la presence de *Chromogobius zebratus* (Kolombatovic, 1891) (Teleostei; Percomorphi, Gobioidae; Gobiidae) sur les côtes de Corse, France. *Bulletin de la Société Zoologique de France* 114: 105-110.
- Engin, S., Turan, D. and Kovacic, M. 2007. First record of the red-mouthed goby, *Gobius cruentatus* (Pisces: Gobiidae), in the Black Sea. *Cybiurn* 31: 87-88
- Francour, P., Bilecenoğlu, M. and Kaya, M. 2007. In situ observations on new and rare gobies from the eastern Mediterranean Sea. *Rapp. Comm. Int. Mer Médit.* 38: 478.
- Fricke, R., Bilecenoğlu, M. and Sari, H.M. 2007. Annotated checklist of fish and lamprey species of Turkey, including a Red List of threatened and declining species. *Stuttgarter Beiträge zur Naturkunde, Serie A (Biologie)*, 706: 1-169.
- Kovacic, M. 1997. Cryptobenthic gobies (Pisces, Perciformes, Gobiidae) and clingfishes (Pisces, Gobiociformes, Gobiocidae) in the Kvarner area, Adriatic Sea. *Natura Croatica* 6: 423-435.
- Miller, P.J. 1971. A revision of Mediterranean gobiid genus *Chromogobius* (Teleostei-Perciformes). *Journal of Zoology* 164: 305-334.
- Miller, P.J. 1977. Gobies from Rhodes and the systematic features of *Zebrus zebrus* (Teleostei: Gobiidae). *Zool. J. Linn. Soc.* 60: 339-362.
- Miller, P.J. 1986. Gobiidae. In: *Fishes of the north-eastern Atlantic and the Mediterranean*, Vol. III (eds. Whitehead P.J.P., Bauchot M.L., Hureau J.C., Nielsen J. and E. Tortonese), Paris, UNESCO, pp. 1019-1085.
- Miller P.J. 1988. New species of *Corcyrogobius*, *Thorogobius* and *Wheelerigobius* from West Africa (Teleostei: Gobiidae). *J. Nat. Hist.* 22: 1245-1262.
- Patzner, R.A. 1999. Habitat utilization and depth distribution of small cryptobenthic fishes (Blenniidae, Gobiocidae, Gobiidae, Tripterygiidae) in Ibiza (western Mediterranean Sea). *Environmental Biology of Fishes* 55: 207-214.
- Patzner, R.A. 2007. Mediterranean gobies - Gobiidae, order Perciformes. Electronic publication. www.users.sbg.ac.at/~patzner/Gobiidae.htm.
- Sanzo L. 1911. Distribuzione delle papille cutanee (organi ciatiforme) e suo valore sistematico nei Gobi. *Mitt. Zool. Stat. Neapel.* 20: 249-328.
- Van Tassel, J.L. 2001. *Chromogobius* (Teleostei: Gobiidae): A new species from the Eastern Atlantic. *Copeia*, 4: 1073-1080.