

RESEARCH ARTICLE

Two marine fish records of Liechtenstein's goby (*Corcyrogobius liechtensteini*) and the Atlantic originated sergeant major (*Abudefduf saxatilis*), new for the Turkish fauna

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Abstract

During scuba divers carried out along the Aegean Sea coasts, two fish species hitherto unrecorded from the Turkish fauna were determined. Liechtenstein's goby (*Corcyrogobius liechtensteini*), which is endemic to the Mediterranean Sea, was collected from coralligenous habitats of Kanyon (Sığacık Bay) and the Atlantic originated sergeant major, *Abudefduf saxatilis*, was recently observed at Küçükada (Çandarlı Bay) in shallow depths ranging from 1 to 3 m.

Keywords: *Corcyrogobius liechtensteini*, *Abudefduf saxatilis*, Gobiidae, Pomacentridae, Aegean Sea, Turkey

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Introduction

The number of marine fish species known from Turkey continuously rises, primarily due to a couple of factors such as the ever increasing influx of alien intruders, more advanced studies on the distribution of cryptobenthic fish and pronounced affinity of researchers to biodiversity studies. A total of 449 species was reported by 2002, which has increased to 512 species by 2014 (Bilecenoglu *et al.* 2002, 2014) and seven more were recently added to the fauna just within the last two years, i.e. *Buenia affinis* Iljin, 1930 (Engin *et al.* 2014), *Equulites elongatus* (Günther, 1874) (Irmak *et al.* 2015), *Lebetus guilleti* (Le Danois, 1913) (Engin *et al.* 2015), *Cheilodipterus novemstriatus* (Rüppell, 1838) (Irmak and Engin 2015; Turan *et al.* 2015), *Epinephelus coioides* (Hamilton, 1822) (Gökoğlu and Özvarol 2015), *Cephalopholis taeniops* (Valenciennes, 1828) (Engin *et al.* 2016) and *Plotosus lineatus* (Thunberg, 1787) (Doğdu *et al.* 2016).

In this study, first records of two marine fish species *Abudefduf saxatilis* (Linnaeus, 1758) (Pomacentridae) and *Corcyrogobius liechtensteini* (Kolombatović 1891) previously unknown from the Turkish coasts are presented.

Species Accounts

Abudefduf saxatilis (Linnaeus, 1758)

The family Pomacentridae is represented by six species through the Mediterranean Sea, including one native, *Chromis chromis* (Linnaeus, 1758), and five alien species, *Abudefduf hoefleri* (Steindachner, 1881), *A. saxatilis* (Linnaeus, 1758), *A. vaigiensis* (Quoy & Gaimard, 1825), *Chrysiptera cyanea* (Quoy and Gaimard, 1825) and *Stegastes variabilis* (Castelnau, 1855) (Lipej *et al.* 2014; Vella *et al.* 2015; Vella *et al.* 2016a, 2016b). Along the Turkish coasts, the Atlanto-Mediterranean originated *C. chromis* is a commonly observed schooling littoral fish typically found in association with seagrass meadows, but there are currently no records of any alien pomacentrids (Bilecenoğlu *et al.* 2014).

On 27 July 2016, a single individual of *Abudefduf saxatilis* with ca. 10 cm total length was observed at depths ranging from 1 to 3 m (Figure 1), during a scuba dive carried out in the vicinity of Küçükada, Çandarlı Bay (38°51'44" N, 26°52'51"E; Figure 2A). The observed individual could not be collected, but the underwater photographs were taken (despite of the swift escape response of the fish) were helpful enough to make a precise species identification.

As previously indicated by several authors (see references cited herein), *A. saxatilis* is morphologically very similar to the Indo-Pacific originated *A. vaigiensis* (currently unrecorded from Turkey), which both can be distinguished by a couple of taxonomical characteristics. The most distinct feature of *A. saxatilis* is its color pattern, where five black bars run vertically on its sides (the first from dorsal fin origin to pectoral fin base, the fifth from the posterior margin of dorsal and anal fin); two black spots are prominent on the caudal peduncle (clearly visible from Figure 1); and pectoral fins bear a black dot at the upper base (Azzurro *et al.* 2013b; Vella *et al.* 2016a). According to De Beaufort (1940), 5th transverse band is below posterior end of dorsal fin and continued on the posterior dorsal rays in *A. saxatilis*, while 5th transverse band is behind dorsal fin on caudal peduncle in *A. vaigiensis*. Based on the above mentioned taxonomical data, Çandarlı Bay specimen perfectly matches to the color description of *A. saxatilis*.

Since only a single observation of *A. saxatilis* is currently available from Turkey, it is not feasible to predict whether an established population occurs in the Aegean Sea or not, but further field studies will doubtless provide valuable information on the matter. The species was first sighted at Tarragona, Spain on August 2009 (Azzurro *et al.* 2013a) and reached to the Aegean Sea shores just within seven years (if not earlier), indicating a very fast spreading pattern from western

Mediterranean basin towards eastern basin. It will be rational to closely monitor the status of this non-native species along Turkey.

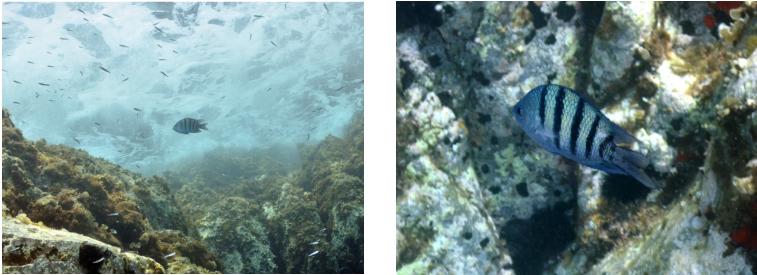


Figure 1. Habitat (left) and close-up view (right) of the *Abudefduf saxatilis* individual observed at Çandarlı Bay (Photographs courtesy of M.E. Çınar).

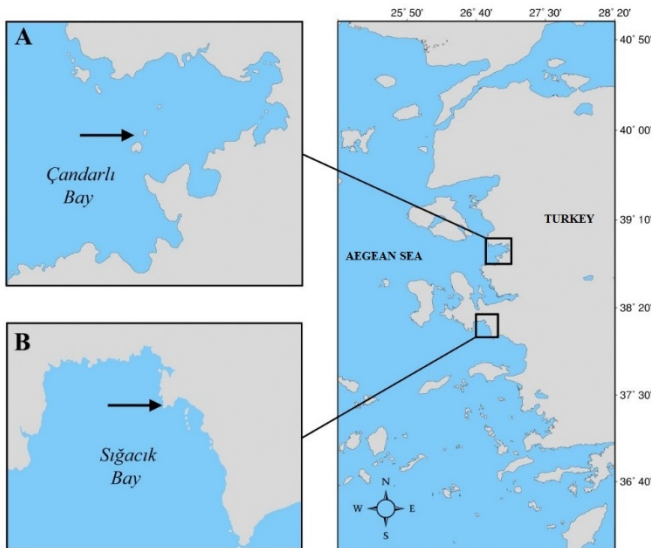


Figure 2. Observation and sampling localities of the newly recorded species (shown by arrows). A: *Abudefduf saxatilis*, B: *Corcyrogobius liechtensteini*.

Corcyrogobius liechtensteini (Kolombatović, 1891)

On 23 June 2016, a single individual of *Corcyrogobius liechtensteini* (2.3 cm total length, Figure 3) was collected from Kanyon, Sığacık Bay (38°09'48"N, 26°46'24"E, Figure 2B), where the sampling depths (20 to 30 m) were typically characterized by coralligenous habitats. Collected fish was fixed in 70% alcohol and kept in the museum of Faculty of Fisheries, Ege University (uncatalogued yet). Identification of the species was made following Miller (1972) and Ahnelt *et al.* (1994).

Diagnostic characters of the Sığacık Bay specimen are as follows: first dorsal finrays VI, second dorsal finrays I+9, anal finrays I+8, pectoral finrays 16, lateral line scales 28. Anterior oculoscapular canal present, posterior oculoscapular and preopercular canals absent. Sub-orbital papillae with no row *a*, transverse suborbital rows 6 (last row with one papillae). Predorsal area and head naked. Body orange/reddish with anterior part much darker than the posterior part. More than 10 bluish vertical stripes present, the conspicuous first five stripes (just below the first dorsal fin) followed by less visible ones. Typical intense dark spot on branchiostegal membrane. Dorsal and caudal finrays with reddish irregular stripes; pelvic fins whitish and pectoral fins hyaline.



Figure 3. *Corcyrogobius liechtensteini* individual collected from Sığacık Bay, Aegean Sea (Photograph by M. Bilecenoğlu).

The species was for long known only from its type locality (Adriatic Sea), whose distribution range has expanded westwards to Spain (Ahnelt *et al.* 1994) and eastwards to Crete (Kovačić *et al.* 2011) within the last few decades. Thus, the existence of *C. liechtensteini* at Sığacık Bay not only constitutes a first record from Turkey, but also the second observation from the eastern Mediterranean basin. A recent spread of the species towards Aegean Sea is not anticipated, but it is more likely that researchers have simply overlooked this small sized cryptobenthic goby.

Occurrence of the species is not restricted to coralligenous habitats, which may also be found in shallow waters with hard bottoms comprising crevices, boulders and cobbles (Kovačić *et al.* 2011), thus an exploration of suitable habitats may reveal a wider occurrence range for *C. liechtensteini* along the Turkish coasts.

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Türkiye faunası için iki yeni deniz balığı kaydı: *Corcyrogobius liechtensteini* ve *Abudefduf saxatilis*

Öz

Ege Denizi kıyılarında gerçekleştirilen Scuba dalışları esnasında, Türkiye deniz balıkları faunasına henüz ilave edilmemiş iki yeni balık türü saptanmıştır. Akdeniz'e endemik bir tür olan Liechtenstein kayabalığı (*Corcyrogobius liechtensteini*) Sığacık Körfezi'nin Kanyon mevkiindeki korallijenli habitatlardan elde edilmiş, Atlantik Okyanusu kökenli *Abudefduf saxatilis* türü ise, Çandarlı Körfezi'nde yer alan Küçükada'nın sığ sularında (1-3 m) gözlenmiştir.

Anahtar Kelimeler: *Corcyrogobius liechtensteini*, *Abudefduf saxatilis*, Gobiidae, Pomacentridae, Ege Denizi, Türkiye

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