

## Occurrence of the Burrowing goby *Trypauchen vagina* (Bloch and Schneider, 1801) in Southeastern Mediterranean, Turkey

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### Abstract

A single male specimen of the burrowing goby, *Trypauchen vagina* (Bloch and Schneider, 1801), was caught at a depth of 30 m from the Arsuz coast, Turkey by a trammel net on 17 October 2017. Total length (TL) of the specimen measured as 206 mm. Measurements of the specimen were given and the geographical distribution of the species in the Mediterranean was documented. Although this is the third record of *T. vagina* from the Mediterranean coast of Turkey, the paper is the first report of an adult male specimen of *T. vagina* from southern coast of Turkey and confirms the extension of the species towards southeastern Mediterranean in the region. The finding of *T. vagina* in Arsuz coast suggests the habitat expansion of the species. As a result of this study a gap is filled relating to the geographic distribution of this species in the eastern Mediterranean coast of Turkey.

**Keywords:** Burrowing goby, Record, Arsuz coast, Mediterranean Sea

### INTRODUCTION

The Suez Canal is the most important route of invasion for Erythrean organisms entering the Mediterranean [1]. There is a number of records of non-indigenous species entering the Mediterranean from the Red Sea via the Suez Canal [2], [3].

The burrowing goby *Trypauchen vagina* (Bloch and Schneider, 1801) belonging to the family Gobiidae is a demersal species inhabiting burrows in coastal waters as well as estuaries [4]. It feeds on mainly small crustaceans [5]. The species is originally found in tropical waters of western Pacific to Indian Ocean [5] Nevertheless, *T. vagina* is also reported from New Caledonia [6], South Africa [7] and Iranian coast of the Persian Gulf [8] as well as the Red Sea coasts of Israel [5] and Turkey [9] in eastern Mediterranean.

Northward extension of the distribution range of the species by migrations via Suez Canal was confirmed with the first report of *T. vagina* from Red Sea [5] and then, from eastern Mediterranean, Turkey [9]. Later, Yaglioglu et al. [10] reported this species from northeastern Mediterranean Sea (Mersin Bay, Turkey).

The present study is the first report of a male specimen of *T. vagina* from the southeastern Mediterranean. Although

the species has reported a couple of times along the Mediterranean coast of Turkey, present study resulted in the filling of the gap in geographic distribution of this species in the eastern Mediterranean Sea.

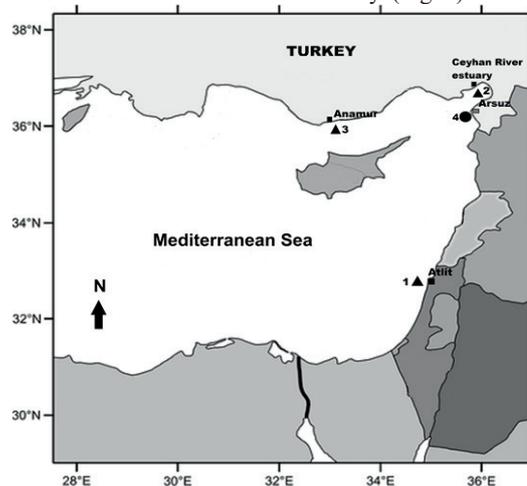
### MATERIALS AND METHODS

On 17 October 2017 a single male specimen, 206 mm TL, of *Trypauchen vagina* was captured with a trammel net on sandy-muddy substrate at a depth of 30 m from Konacik location of Arsuz coast (Fig. 1).

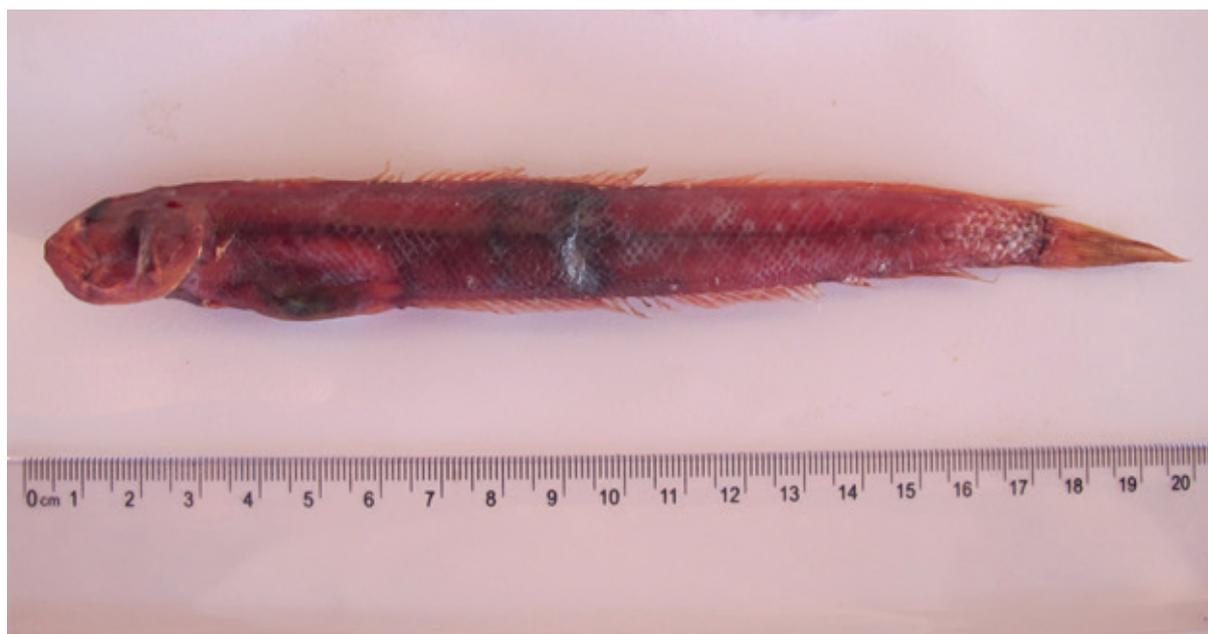
The specimen was taken to the Laboratory of Basic Sciences, Faculty of Marine Sciences and Technology, Iskenderun Technical University (Turkey) for further examination, where the main morphometric measurements were collected by means of a digital calliper (to the nearest 0.01 mm). Sex was determined by macroscopic examination of the gonads.

All counts and measurements agree with the identification of *Trypauchen vagina* given by Randall [11], Murdy [12] and Salameh et al. [5].

Captured specimen was deposited with museum number of MSM-PIS/2017-7 in the Museum of the Faculty of Marine Sciences and Technology, Iskenderun Technical University. (Fig. 2)



**Figure 1.** Distribution of *Trypauchen vagina* in the Mediterranean: 1 Salamah et al. [5]; 2 Akamca et al. [9]; 3 Yaglioglu et al. [10]; 4 This study



**Figure 2.** The male specimen of *Trypauchen vagina* (206 mm TL) captured from Arsuz coast in the Southeastern Mediterranean of Turkey

## RESULTS AND DISCUSSION

Description of the specimen. Body is slender and compressed, head is small and slightly convex in its upper profile with median crest originating at vertical of anterior of orbit and terminating less than half predorsal distance. Mouth is slightly oblique, reaching back to vertical of anterior of orbit. Lower jaw is slightly protruding. Both upper and lower jaws are compiled with ten recurved canine teeth in outer row and much smaller sharp teeth in inner row. A small pouch with a horizontal slit-like opening is located at dorsal margin of operculum. Pelvic fin is located under pectoral fin base, shaped like small funnel with interradiation membrane, median rays being clearly longest [5]. Body is covered with cycloid scales, approximately 69 in longitudinal row [12].

Color of description. The entire body and head were uniformly red. All fins except the pectoral fin are translucent to off-white.

The morphometric characters used for identification are as follows; Total length (TL): 206 mm, standard length (SL): 185.4 mm, SL of TL: 90.00%, head length (HL) of SL: 14.52%, pelvic fin length (PEL) of SL: 4.52%, PEL of HL: 31.12%, pectoral fin length (PEC) of SL: 4.27%, PEC of HL: 29.38%, head width of SL: 7.61%, jaw length of SL: 4.45%, body depth of SL: 10.42%, pre-dorsal length of SL: 19.16%, pre-pelvic length of SL: 16.00%, pre-anal length of SL: 33.50%.

Morphometric measurements were taken according to Murdy [12] and presented in Table 1.

The geographical distribution of the species in the Levantine Sea and Persian Gulf was documented in Table 2.

*Trypauchen vagina* is an Indo-Pacific species widely distributed from the Arabian Gulf to the Philippines and China [13]. The species mostly inhabits silty and muddy bottoms at depths of 20-90 m [12].

The habitat of male specimen, collected from Konacik, west of Arsuz coast in Iskenderun Bay, agrees with the literature and is a shallow silty and muddy coastline showing characteristics of an eustarine region due to the discharges of the River Asi (Orontes). Ecological conditions are similar for the other two records from the Mediterranean coast of Turkey. First one was from Yumurtalık Bight in Iskenderun

Bay close to Ceyhan River's estuary [9] and the second was from Anamur in Mersin Bay close to Dragon Stream estuary [10]. Hence, it can be claimed that *T. vagina* inhabits shallow estuaries and silty and muddy coastal waters of Turkey.

**Table 1.** Morphometric measurements of the specimen of *Trypauchen vagina* from from Arsuz coast (Iskenderun Bay), Turkey

| Measurements   | Values (mm) |
|--|-------------|
| Total length   | 206.0       |
| Standart length  | 185.4       |
| Head length  | 26.92       |
| Head width:  | 14.10       |
| Jaw length   | 8.25        |
| Body depth   | 19.31       |
| Pre-dorsal length  | 35.52       |
| Pre-pelvic length  | 29.66       |
| Pre-anal length  | 62.10       |
| Pelvic fin length  | 8.38        |
| Pectoral fin length  | 7.91        |
| Meristic   |             |
| Dorsal fin   | 58          |
| Anal fin (Anal-fin pterygiophores preceding the first hemal spine 3-4) | 45          |
| Pectoral-fin rays  | 18          |
| Caudal fin rays  | 16          |
| Caudal vertebral count   | 24          |
| Longitudinal scale rows  | 69          |

**Table 2.** Records of *Trypauchen vagina* from differ locations in 2009-2017

| References                      | Number of Samples | Date                  | Location  | Country | Depth | Length, TL (mm) |
|---------------------------------|-------------------|-----------------------|---|---------|-------|-----------------|
| Salamah et al. (2010) [5]       | 1                 | 01.12.2009            | Atlit and Hadera                                  | Israel  | 90    | 164             |
| Akamca et al. (2011) [7]        | 2                 | 24.08.2010-03.10.2010 | Ceyhan River Estuary, North Eastern Mediterranean | Turkey  | 20-27 | 210-217         |
| Yaglioglu et al. (2013) [8]     | 1                 | 28.10.2012            | Anamur coast, Mersin Bay                          | Turkey  | 25-30 | 230             |
| Alavi-Yeganeh et al. (2015) [6] | 4                 | 2015                  | North of Qeshm Island Persian Gulf                | Iran    | 5-10  | 165-185         |
| Present study                   | 1                 | 17.10.2017            | Arsuz, Iskenderun Bay                             | Turkey  | 30    | 206             |

## CONCLUSION

The present paper confirms the presence of the species in southern coast, Turkey and is the third record of specimen of *T. vagina* from the Mediterranean coast of Turkey. This paper is also the first report of an adult male specimen of *T. vagina* in the region. The importance of this study is that it confirms the presence of additional populations of the species in the Mediterranean Sea and the species has expanded to the coast of Arsuz in the south coast of Turkey (Southeastern Mediterranean Sea).

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