

**WESTERNMOST MEDITERRANEAN RECORDS OF THREE GOBIID SPECIES  
(ACTINOPTERYGII: PERCIFORMES: GOBIIDAE)**

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**Abstract.** Information on the distribution of small benthic fish such as gobies is sometimes scattered or incomplete. This is probably due to the sampling difficulties involved in the study of these small fishes at depths below those accessible for SCUBA diving techniques. These are the cases of *Buenia massutii* Kovačić, Ordines et Schlieven, 2017 (recently described and currently only known from the Balearic Islands (western Mediterranean), the locality where it was described); *Vanneaugobius dollfusi* Brownell, 1978 (only known from the Adriatic and Aegean seas in the Mediterranean, and from Agadir, the locality of the species' description in the Atlantic coast of Morocco); and *Odondebuena balearica* (Pellegrin et Fage, 1907) (which in the western Mediterranean is only known from scattered localities). The aim of the presently reported study was to improve and significantly extend the information on the distribution of these three species. New records of these gobiids are herewith reported from the western Mediterranean. The new material has been deposited in the Natural History Museum of Rijeka. *Buenia massutii* is reported from various locations in the Alboran Sea, *O. balearica* is reported from the Gulf of Valencia, and *V. dollfusi* from the Balearic Islands. The three reported records are the westernmost Mediterranean records of these species. Moreover, *V. dollfusi* is reported for the first time from the western Mediterranean basin, whereas *B. massutii* is reported for the first time elsewhere from its description locality. The number of individuals of *V. dollfusi* collected from the Balearic Islands points out this is a common and abundant species in the circalittoral bottoms of this area. On the other hand, the different localities from where *B. massutii* is reported, two localities in the Iberian Peninsula coast and also the Alboran Island, point out this species may be widely distributed, at least in the western Mediterranean.

**Keywords:** small benthic fishes, circalittoral zone, extended distribution, MEDITS surveys.

## INTRODUCTION

The Gobiidae, with currently 1907 valid species (Fricke et al. 2019), and with still increasing known diversity is one of the largest fish families (Nelson et al. 2016). This also applies to the Mediterranean, where the current, known number of gobies approximates 70 species, the majority of them living in shallow inshore waters down to 100 m depth (Miller 1986, Kovačić and Patzner 2011, Engin et al. 2018). Nowadays, most of the sampling effort conducted to collect data on gobies is done using SCUBA diving techniques because gobiids are small benthic species, often showing a cryptobenthic behaviour. Moreover, gobiids cannot be easily collected using standard fisheries methods (Kovačić et al. 2012).

However, the SCUBA diving techniques, usually involving the use of an anaesthetic, are not commonly applied below the depth of 50 m (Glavičić and Kovačić 2016, Glavičić et al. 2016). In a well-studied sea such as the northern Mediterranean, the description of new gobiid species collected by the SCUBA diving techniques had slowed down during the 1990s and stopped in 2000 on the finding of *Gobius kolombatovici* Kovačić et Miller, 2000. This kind of discoveries recently continued in the eastern Mediterranean with the description of three new gobiid species (Engin and İnnal 2017, Engin and Seyhan 2017, Engin et al. 2018). Contrary to this, the other three new gobiid species recently found in the North Mediterranean, *Speleogobius llorisi* Kovačić, Ordines et Schlieven, 2016,

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*Buenia massutii* Kovačić, Ordines et Schliewen, 2017, and *Buenia lombartei* Kovačić, Ordines et Schliewen, 2018, showed some common characteristics: all were caught during bottom trawl surveys and all are deep-water species either from open bottoms in the circalittoral, such as *S. llorisi* and *B. massutii*, mainly appearing in depths between 50 to 70 m, or the upper slope, such as *B. lombartei*, collected at 343 and 375 m (Kovačić et al. 2016, 2017, 2018).

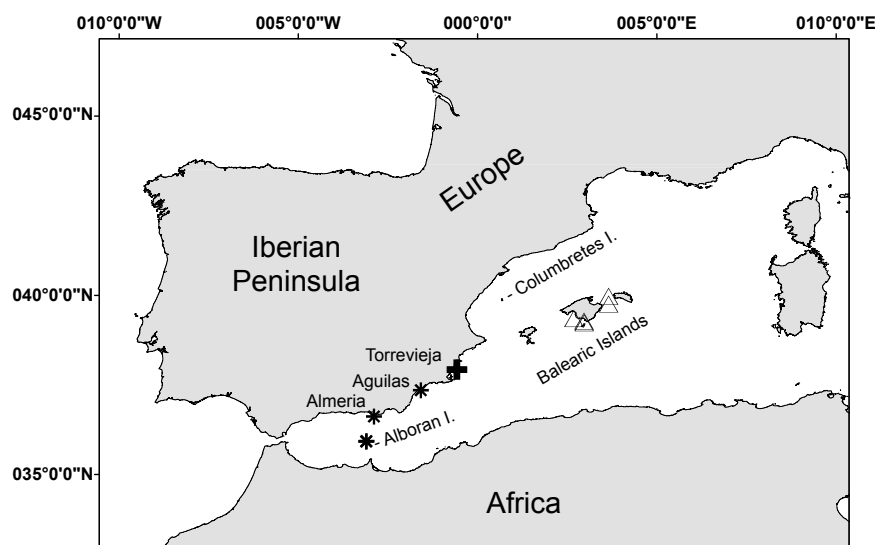
The presently reported study was intended to improve the knowledge of Mediterranean small benthic fish biodiversity by reporting the Mediterranean westernmost records of three goby species collected at depths ranging between 57 and 113 m depth.

## MATERIALS AND METHODS

All the specimens described in the presently reported study were collected during the MEDITS surveys (for more specifications on sampling and design of these surveys see Bertrand et al. 2002) carried out on board the R/V *Miguel Oliver* from 2015 to 2018. In these surveys, a bottom trawl was used to sample the continental shelf and the slope bottoms within the depths of 50–800 m. The bottom trawl is a GOC73, which has an horizontal and vertical openings ranging from 16 to 21 m and 2.4 to 3.1 m, respectively, and is equipped with 10 mm diamond-mesh codend. Hauls had a duration of 20 to 60 min of effective sampling (bottom time) depending on depth stratum (shorter on the shelf), at a speed of 3 knots. Since 2014, additional samplings using beam trawl have been carried out in some MEDITS stations in order to characterize the epibenthic communities. These additional samplings started within the framework of the IRIS-SES project developed in 2014. In that year, up to 44 beam trawl samples were collected, covering MEDITS sampling stations of all depth strata in the Alboran Sea and the Balearic Islands. In the following years, after the end of the project, beam trawl sampling continued but at a lower intensity (10–12 stations each year). In these surveys a ‘Jennings’ beam trawl, and a beam

trawl designed in the Instituto Español de Oceanografía-Centre Oceanogràfic de Balears (BT\_COB) were used. These beam trawls are specifically made to collect samples of epibenthic organisms. The ‘Jennings’ beam trawl has a 2 m horizontal opening and a 5 mm diamond-mesh codend, whereas the BT\_COB is 1.3 m wide and has a 10 mm diamond-mesh codend. Trawls had a duration of 1 to 3 min of effective sampling (bottom time) at a speed of 2 knots. A SCANMAR® depth sensor and a Sea Bird 37 CTD were attached to both the beam trawl and the bottoms trawl gears in order to monitor in real time the arrival and departure of the net to the bottom and to record precise measures of depth, temperature and salinity at the bottom at each station, respectively. Locations and depths of each sampling station at which the individuals were collected are represented in Fig. 1 and specified for each individual reported in the results section.

For descriptive and classification purposes of the new records, the following meristic characters and abbreviations were used: A, anal fin; C, caudal fin; D1, first dorsal fin; D2, second dorsal fin; P, pectoral fin; V, pelvic disc; LL, scales in lateral series; TR, scales in transverse series; Meristic methods: TR is made from the anterior origin of the anal fin obliquely upwards and rearwards to the base of D2; LL is counted from pectoral-fin axil along lateral midline, including the scales on the C itself; in D2 and A the last bifid ray is counted as a single ray. Morphometric methods, when implied follow Schliewen and Kovačić (2008). Terminology of lateral line system follows Miller (1986) based on Sanzo (1911). The specimens were reversibly stained in 2% solution of Cyanine Blue in distilled water (Saruwatari et al. 1997) for studying scales and head lateral line system. The diagnoses presented are the minimum combination of characters that would identify the recorded species among gobiid species known in the CLOFNAM area (Miller 1986, Ahnelt and Dorda 2004, Kovačić 2005, Kovačić et al. 2018 and references therein). The additional material was just identified by diagnosis characters, but not used



**Fig. 1.** Map showing the location of the new records of three gobiid fishes; star—*Buenia massutii*, cross—*Odondebuena balearica*, triangle—*Vanneaugobius dollfusi*

in the descriptions due to the poor state of the material prevented the study of the most delicate morphological details. All examined material has been deposited in the Natural History Museum Rijeka (PMR), Croatia.

## RESULTS

The new westernmost Mediterranean records reported in the present work include *Buenia massutii* from various locations in the Alboran Sea, *Odondebuena balearica* from the Gulf of Valencia, and *Vanneaugobius dollfusi* from the Balearic Islands (Fig. 1).

Family Gobiidae Cuvier, 1816

Genus *Buenia* Iljin, 1930

*Buenia massutii* Kovačić, Ordines et Schlieuwen, 2017

**Material studied.** PMR VP4125, 2 females, 22.9 and 19.0 mm, both with caudal fin damaged, near Almeria, Spain, Western Mediterranean, 36°37'26" N, 002°53'24" W, deep sea oyster shell remains, 81 m depth, coll. F. Ordines, MEDITS survey, beam trawl, 3 May 2015; PMR VP4124, 2 females, 25. + 5.8 (standard length + caudal = total length) (Fig. 2) and 25.3 + 5.7 mm, Alboran Island, Spain, Western Mediterranean, 35°56'19"N, 003°05'48"W, deep sea oyster shell remains, 113 m depth, coll. F. Ordines, MEDITS survey, beam trawl, 30 April 2015.

**Additional material identified.** PMR VP4144, 4 females, 25.3 + 5.8, 25.5 + 5.9, 25.7 + 5.8, 26.3 mm with caudal fin damaged, Alboran Island, Spain, Western Mediterranean, 35°55'33"N, 003°06'12"W, deep sea oyster shell remains, 125 m depth, coll. F. Ordines, MEDITS survey, beam trawl, 29 April 2016; PMR VP4358, female, 20.1 mm with caudal fin damaged, near Águilas, Spain, Western Mediterranean, 37°21'22"N, 001°34'59"W, deep sea oyster shell remains, 98 m depth, coll. F. Ordines, MEDITS survey, bottom trawl, 13 May 2018.

**Diagnosis.** (1) anterior oculoscapular and preopercular head canals present, posterior oculoscapular canal absent; (2) suborbital row of sensory papillae *a* present; (3) suborbital transverse rows of sensory papillae absent; (4) suborbital sensory papillae row *c* with 5 papillae; (5) anal fin I/6–7 (only I/6 in present material); (6) pectoral fin 16–

17 (pectoral fin with 17 rays was present in PMR VP4124 and PMR VP4358, which is different from original description); (7) pelvic fins united in pelvic disc; (8) pelvic disc with anterior transverse membrane in midline reduced to less than 1/6 of spinous ray; (9) scales in transverse series 5–6; (10) eye equal or more than 32.8% of head length (33.3%–35.0% in presently reported material); (11) body with four vertical midline stripes visible at lateral midline and fifth longer vertical mark as margin between caudal peduncle and fin.

**Description.** Body moderately elongate, laterally compressed towards caudal fin. Head fairly long, depressed, with a nearly horizontal predorsal profile. Snout moderately short and pointed, shorter than eye, dorsal profile of snout gently sloping. Eyes dorsolateral, extending above dorsal profile, large, about 1/3 of head length (33.3%–35.0%). Interorbital space narrow, 1/8 or less of eye diameter. Anterior nostril short, tubular, erect, without process from rim; posterior nostril pore-like, near orbit, with erected rim. Mouth oblique, posterior angle of jaws below mid-eye. Branchiostegal membrane attached to entire side of isthmus. Fins: D1 VI, D2 I/7, A I/6, C damaged for ray counts, except in VP4124 specimen 25.4 + 5.8 mm with 11 branched and 14 segmented rays, P 16–17 (both sides, 16 : 6, 17 : 2), V I/5 + I/5. D1 II spine longest, when folded reaching back barely to D2 spine in females. C rounded. P uppermost rays not free from membrane. V united in pelvic disc. V disc with anterior transverse membrane in midline reduced to 1/10 of spinous ray. Body with scales lost, but scale pouches well visible after staining, used for description of scale distribution and for scale counts. LL 26 (26: 7, left side of PMR VP4125 22.9 mm too damaged for count), TR 5–6 (both sides, 5 : 1, 6 : 7). Head with opercle and cheek naked. Predorsal area, including nape, naked. Breast scaled. Head with anterior oculoscapular canal semiclosed with pores  $\sigma$ ,  $\lambda$ ,  $\kappa$ ,  $\omega$ ,  $\alpha$ ,  $\rho$  and with additional pores or open furrows from interorbital part to pore  $\rho$ . Posterior oculoscapular canal absent. Preopercular canals with pores  $\gamma$ ,  $\delta$ ,  $\epsilon$ , and with additional pores. Suborbital row of sensory papillae *a* present. Suborbital sensory rows *a*



**Fig. 2.** *Buenia massutii*, PMR VP4124, female, 25.4 + 5.8 mm (standard length + caudal = total length), Alboran Island, Spain, Western Mediterranean, photo M. Kovačić



and *c*, including *cp*, without transverse proliferation. Row *a* as two larger papillae below rear part of eye. Row *c* as five papillae below frontal and middle part of eye, starting anteriorly with two papillae superimposed each other at or slightly behind vertical of front border of eye, posteriorly ending before vertical of *a* row. Two *cp* as larger papillae below *a* row, *cp'* approximately below *cp*. Longitudinal suborbital row *b* short of three to four papillae. Preserved specimens pale yellow, with four dark brown vertical slightly oblique midline stripes visible at lateral midline and fifth longer vertical mark as margin between caudal peduncle and fin (Fig. 2).

**Remarks.** The present specimens of *B. massutii* clearly differs from other *Buenia* species and all other gobiid species known in the CLOFNAM area by the characters listed in diagnosis and also by additional characters in the short description. It matches well the earlier published morphology of *B. massutii* (see Kovačić et al. 2017), except for the count of 17 pectoral fin ray in one specimen. Therefore, the known pectoral fin ray count for this species should be extended to 16–17 where the new range of the count is still useful for species diagnosis and as the character in the identification key for this species.

*Odondebuena* de Buen, 1930

*Odondebuena balearica* (Pellegrin et Fage, 1907)

**Material studied.** PMR VP4140, 1 male, 19.2 + 4.3 mm, Torrevieja, Spain, Western Mediterranean, 37°55'52"N, 000°34'34"W, sand with very low biomass of red algae, 75 m depth, coll. M. Vivas, MEDITS survey, beam trawl, 14 May 2017 (Fig. 3).

**Diagnosis.** (1) suborbital papillae without longitudinal row *a*; (2) transverse suborbital rows six (last one with 1 papilla); (3) anterior oculoscapular and preopercular head canals present, posterior oculoscapular canal absent; (4) pelvic fins separate; (5) scales on base of caudal fin with lateral ctenii greatly enlarged.

**Description.** Body moderately elongate, laterally compressed towards caudal fin. Head moderately large, slightly depressed, with almost horizontal predorsal profile. Snout moderately short, shorter than eye, dorsal profile of snout moderately convex, gently sloping. Eyes

dorsolateral, large, interorbital space narrow. Anterior nostril moderately long, tubular, erect, without process from rim; posterior nostril pore like, with erected rim. Mouth oblique, posterior angle of jaws below pupil. Branchiostegal membrane attached to entire side of isthmus. Fins: D1 VI, D2 I/10, A I/9, C 14 branched rays, 16 segmented rays, P left and right side 15, V I/5 + I/5. D1 I the longest, elongated, reaching backwards to D2 3rd ray. C rounded, shorter than head. P uppermost rays not free from membrane. V fins separate, except for the low membrane between bases of the innermost rays, fourth V ray longest, no V anterior transverse membrane. Body with ctenoid scales, most of them lost, scale counts made on scale pouches well visible after staining. LL left side too damaged for count, 26 right side, TR both sides 7. Head with opercle and cheek naked. Predorsal area, including nape, naked. Pectoral base naked. Breast also with no visible scales. Uppermost and lowermost scales on base of caudal fin with elongate ctenii, all four of them with 12 elongate ctenii. Head lateral-line system with anterior oculoscapular canal carrying pores  $\sigma$ ,  $\lambda$ ,  $\kappa$ ,  $\omega$ ,  $\alpha$ ,  $\beta$ ,  $\rho$ . Preopercular canal and posterior oculoscapular canal absent. Suborbital row of sensory papillae *a* absent. Transverse suborbital rows six (last one with 1 papilla); four transverse rows before longitudinal row *b*, none below it. Longitudinal row *b* extending forwards to fourth row. Oculoscapular row *x'* ending anteriorly posterior to pore  $\beta$ . Anterior dorsal row *g* ending close behind lateral part of row *o*. Colour of preserved specimen were fawn, with brown dotted dense pigmentation dorsally dots on head and body, and coarse reticulation of brown dots laterally on body (Fig. 3). D1, D2, and A pigmented, C and V poorly pigmented, P more or less transparent.

**Remarks.** The presently reported specimen of *O. balearica* clearly differs from all other gobiid species known in the CLOFNAM area by the characters listed in diagnosis and also by additional characters in the short description. It matches well the earlier published morphologies of *O. balearica* (see Miller and Tortonese 1968, Kovačić and Golani 2007), except for the missing preopercular canal.



**Fig. 3.** *Odondebuena balearica*, PMR VP4140, male, 19.2 + 4.3 mm (SL + caudal = TL), Torrevieja, Spain, Western Mediterranean, photo M. Kovačić

*Vanneaugobius* Brownell, 1978

*Vanneaugobius dollfusi* Brownell, 1978

**Material studied.** PMR VP3857, female, 22.2 + 5.9 mm, southern Mallorca (Cabrera), Balearic Islands, 39°16'60"N, 002°58'13"E, maërl beds, 57 m depth, coll. F. Ordines, MEDITS survey, beam trawl, 8 June 2016; PMR VP3865, male, 32.0 + 8.1 mm, eastern Menorca (Maó), Balearic Islands, 39°45'51"N, 003°39'23"E, coarse biogenic sand, 99 m depth, coll. F. Ordines, MEDITS survey, beam trawl, 11 June 2016 (Fig. 4).

**Additional material identified.** PMR VP3857, 1 juvenile of unidentified sex, 15.0 + 4.1 mm, 2 juvenile females of unidentified sex, 17.6 + 6.2 mm and 17.9 mm with caudal fin damaged, southern Mallorca (Cabrera), Balearic Islands, 39°16'60"N, 002°58'13"E, maërl beds, 57 m depth, coll. F. Ordines, MEDITS survey, beam trawl, 8 June 2016; PMR VP3860, 1 juvenile of unidentified sex, 15.3 + 4.3 mm, southern Mallorca (Cabrera), Balearic Islands, 39.3565°N, 2.6902°E, *Peyssonnelia* beds, 54 m depth, coll. F. Ordines, MEDITS survey, beam trawl, 9 June 2016; PMR VP3865, 5 juveniles of unidentified sex, 14.9 + 4.0 mm to 16.1 + 4.4 mm, eastern Menorca (Maó), Balearic Islands, 39°45'51"N, 003°39'23"E, coarse biogenic sand, 99 m depth, coll. F. Ordines, MEDITS survey, beam trawl, 11 June 2016; PMR VP3869, 5 juveniles of unidentified sex, 14.4 + 4.2 to 17.7 + 5.0 mm, southern Menorca (Ciutadella), Balearic Islands, 39°58'54"N, 003°39'23"E, maërl beds, 64 m depth, coll. F. Ordines, MEDITS survey, beam trawl, 15 June 2016; PMR VP4137, 1 juvenile of unidentified sex, 14.8 + 4.1 mm, Mallorca, Balearic Islands, 39°14'14"N, 002°58'41"E, *Peyssonnelia* beds, 67 m depth, coll. F. Ordines, beam trawl manoeuvres tests, beam trawl, 13 April 2015.

**Diagnosis.** (1) suborbital papillae without longitudinal row *a*; (2) transverse suborbital rows seven (last one with 1 papilla); (3) suborbital row *d* continuous; (4) anterior oculoscapular and preopercular head canals present, posterior oculoscapular canal absent; (4) second dorsal fin I/9–10; anal fin I/8–9 (present material: PMRVP 3865 I/9 and I/8 and PMRVP 3857 I/10 and I/9 respectively); (5) first dorsal fin spine I longest; (6) pelvic fins separate; (7) pelvic fins rays unbranched; (8) scales on base of caudal

fin with lateral ctenii greatly enlarged; (9) first dorsal fin with dark blotch at the base between spines I and V or VI in preserved fish (V in present material).

**Description.** Body moderately elongate, laterally compressed towards caudal fin. Head moderately large, slightly depressed, with horizontal or nearly horizontal predorsal profile. Snout moderately short, dorsal profile of snout convex to slightly convex, moderately sloping. Eyes dorsolateral, large, interorbital space narrow. Anterior nostril moderately long, tubular, erect, reaching upper lip, without process from rim; posterior nostril pore-like with erected rim. Mouth oblique, posterior angle of jaws below pupil. Branchiostegal membrane attached to entire side of isthmus. Fins: D1 VI, D2 I/9 (PMRVP 3865) and 10 (PMRVP3857), A1/8 (PMRVP3865) and 9 (PMRVP3857), C with 14 branched and 16 segmented rays, P 17–18 (both sides: 17 : 3, 18 : 1), V I/5 + I/5. D1 I longest, in male elongated, backwards reaching D2 4th ray, in female not elongated and not reaching D2 spine. P uppermost rays not free from membrane. V fins separate, with short membrane connection at base, fifth V rays unbranched, fourth V ray longest, V anterior transverse membrane absent. C rounded. Scale on body ctenoid, mostly lost, but scale pouches well visible after staining, used for description of scale distribution and for scale counts. LL 28–29 (both sides 28 : 3, 29 : 1), TR 7. Head with opercle and cheek naked. Predorsal area, including nape, naked, D1 base naked to D1 spine III. Pectoral fin base naked. Breast and belly scaled. Dorsal and ventral scales with elongate ctenii lost on base of caudal fin, except lower left scale in PMR VP3865 with total number of ctenii on remaining scale 16 and upper right scale in PMR VP3857 with 14 ctenii. Head with anterior oculoscapular canal with pores  $\sigma$ ,  $\lambda$ ,  $\kappa$ ,  $\omega$ ,  $\alpha$ ,  $\beta$ ,  $\rho$  and preopercular canals with pores  $\gamma$ ,  $\delta$ ,  $\epsilon$ , posterior oculoscapular canal absent. Suborbital row of sensory papillae *a* absent. Transverse suborbital rows seven (last one with 1 papilla); five transverse rows before longitudinal row *b*, none below it. Suborbital longitudinal row *b* reaching anteriorly to near row fifth transversal row. Suborbital row *d* continuous, without broad gap below third and fourth suborbital rows. Oculoscapular row *x'* ending forward behind pore  $\beta$ . Colour in preserved



**Fig. 4.** *Vanneaugobius dollfusi*, PMR VP3865, male, 32.0 + 8.1 mm (SL + caudal = TL), Llevant Menorca (Maó), Balearic Islands, photo M. Kovačić



specimens yellowish white, with overall pattern of grey brown pigmentation marbled on head and reticulate on body, mostly following scale edges or scale pouch edges (Fig. 4). First dorsal fin with dark blotch at base between spines I and V. D2, A and V fin well pigmented, C and P with less melanophores present.

## DISCUSSION

Trawl sampling, either using a beam trawl or a bottom trawl, is along with grabs the only common sampling methodology available to sample small benthic fishes at depths below 50 m depth, where standard SCUBA diving techniques, usually combined with anaesthetics, cannot reach (Glavičić et al. 2016). An alternative diving technique to sample small benthic fishes at depths exceeding 50 m has been recently described by Glavičić and Kovačić (2016) based on a Mediterranean example.

In the western Mediterranean, the sampling of deeper bottoms using beam trawl and bottom trawl surveys recently allowed the description of four new small benthic species: the callionymid *Protogrammus alboranensis* Fricke, Ordines, Farias et García-Ruiz 2016, described from a sampling station located at 113 m depth in the Alboran Island (Farias et al. 2016); and *Speleogobius llorisi* (see Kovačić et al. 2016), *Buenia massutii* (see Kovačić et al. 2017), and *Buenia lombartei* (see Kovačić et al. 2018), all of them gobiid species from the circalittoral bottoms or the upper slope (*B. lombartei*) off the Balearic Islands. These surveys also allowed the report of several new records of small benthic fishes from the circalittoral bottoms of the Balearic Islands: i) the callionymid *Callionymus reticulatus* Valenciennes, 1837 (see Fricke and Ordines 2017a), which is the only record of this species in the Mediterranean after the single individual used in the original description of the species by Valenciennes in 1837, collected off the coast of Málaga (Cuvier and Valenciennes 1837: 284); ii) *P. alboranensis*, reported for the first time elsewhere from its type locality (Fricke and Ordines 2017b); and iii) *Buenia affinis* Iljin, 1930, found by Kovačić et al. (2018).

The presently reported study improves the knowledge of small benthic fish biodiversity and distribution by reporting three new records. In the case of the first records of *B. massutii* in the Alboran Sea, off the Iberian Peninsula coast and in the Alboran Island, it is the first time that the species appears elsewhere the type locality, the Balearic Islands (Kovačić et al. 2017). These new records of the species extend not only its geographical distribution but also its depth range and habitat distribution. In the Balearic Islands, this species had been found at depths between 50 and 70 m on red algae beds, mainly maërl and *Peyssonnelia* beds (Kovačić et al. 2017), whereas the presently reported records extended their presence from 81 and 91 m depth in the mainland coast of Alboran and 113 to 125 m in the Alboran Island, and associated in all these areas to coarse sand bottoms with many shell remains of the deep sea oyster *Neopycnodonte cochlear*. The shell remains of this mollusc may increase the complexity of the sandy mud bottoms at depths where red algae beds cannot develop, supplying an alternative habitat for *B. massutii*.

*Odondebuena balearica* was already known in the western Mediterranean but only from Gulf of Lyons, Tyrrhenian Sea, the Balearic Islands, and the Columbretes Islands (Ahnelt et al. 1994, Ahnelt and Dorda 2004), with no western Mediterranean published records after Ahnelt and Dorda's work. The presently provided record extends its distribution westwards and constitutes the first time that the species is recorded from the mainland coast of the Iberian Peninsula.

Finally, *Vanneaugobius dollfusi* was recorded for the first time from the western Mediterranean. This species was previously known only from the Adriatic and the Aegean seas in the Mediterranean (Pallaoro and Kovačić 2000, Ahnelt and Dorda 2004) and from Agadir, the locality of the species' description in the Atlantic coast of Morocco (Van Tassel et al. 1988). The first record from Sicily Strait was submitted to journal and it is currently under review (MK, unpublished data). Although the species had not been recorded before in the western Mediterranean, the abundant samples collected confirmed it is a frequent species in the circalittoral bottoms of the Balearic Islands from around 50 to 100 m depth, particularly over red algae beds such as maërl and *Peyssonnelia* beds, but also over sandy-mud bottoms for the deepest individuals collected. This wide bathymetric range and capability of living in different habitats had already been documented in the Adriatic and the Aegean seas, where this species showed that can be present from around 30 to 160 m depth in different habitats such as sloping to moderately sloping bedrocks, mixed bottoms of bedrock, muddy sand, shell debris gravel, *Osmundaria volubilis* red algae beds and at the foot of vertical cliffs (Pallaoro and Kovačić 2000, Ahnelt and Dorda 2004, Kovačić 2008, Glavičić et al. 2016, Glavičić and Kovačić 2016).

The presented records point out that the three species may be widely distributed in the western Mediterranean, although the depths where they are usually found, and their small size, may have prevented reporting it.

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