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FIRST RECORD OF THE ZEBRA GOBY, *ZEBRUS ZEBRUS* (PISCES: GOBIIDAE), IN THE IONIAN SEA

Marcelo KOVAČIĆ
Natural History Museum Rijeka, Lorenzov prolaz 1, HR-51000 Rijeka
E-mail: Marcelo.Kovacic@public.srce.hr

Simona BUSSOTTI & Paolo GUIDETTI
Laboratory of Zoology and Marine Biology, DiSTeBA, University of Lecce, Via Provinciale Monteroni, I-73100 Lecce, Italy

ABSTRACT

Two specimens of the zebra goby, Zebrus zebrus *(Risso, 1826), were collected in the Ionian Sea. The present finding is the first record for the Ionian Sea and a proof of a continuous distribution of this species between the western and eastern Mediterranean and the Adriatic Seas.*

Key words: *Zebrus zebrus,* first record, morphology, ecology, Ionian Sea

PRIMA SEGNALAZIONE DI GHIOZZETTO ZEBRA *ZEBRUS ZEBRUS* (PISCES: GOBIIDAE) NEL MAR IONIO

SINTESI

Due esemplari di ghiozzetto zebra Zebrus zebrus *(Risso, 1826) sono stati raccolti nel mar Ionio. Tale ritrovamento rappresenta la prima segnalazione per il mar Ionio e conferma la distribuzione continua di tale specie dal Mediterraneo occidentale a quello orientale e al mare Adriatico.*

Parole chiave: *Zebrus zebrus,* prima segnalazione, morfologia, ecologia, mar Ionio

INTRODUCTION

During the last decade, the use of SCUBA techniques has improved knowledge of geographical range and diversity of small gobies in the Mediterranean Sea. Most of these records, however, are from the western Mediterranean (Ahnelt *et al.*, 1994; Stefanni & Mazzoldi, 1999; Herler & Patzner, 2002 and ref. therein) and the Adriatic Seas (Kovačić, 2001, 2002; Herler & Kovačić, 2002; Herler & Patzner, 2002 and ref. therein). The diversity of small gobiid fauna of the other sectors of the Mediterranean is relatively unknown. The aim of this paper is to present the first record of the zebra goby, *Zebrus zebrus* (Risso, 1826), in the Ionian Sea.

MATERIAL AND METHODS

One juvenile of unidentified sex, 13.6+3.2 mm, PC-ZZ1, Torre Inserraglio (SE Italy, SW Apulia, Ionian Sea), 8 November 2002; one juvenile of unidentified sex, 15.6 mm SL with damaged C, PC-ZZ2, Torre Inserraglio (SE Italy, SW Apulia, Ionian Sea), 11 December 2002 (Figs. 1, 2). The two specimens were found in benthic samples taken with a suction sampler. The specimens are deposited at the Museum of Marine Biology in Porto Cesareo. Identification was carried out according to Miller (1986).

Meristic methods as in 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. Terminology of lateral-line system follows Sanzo (1911) and Miller (1986).

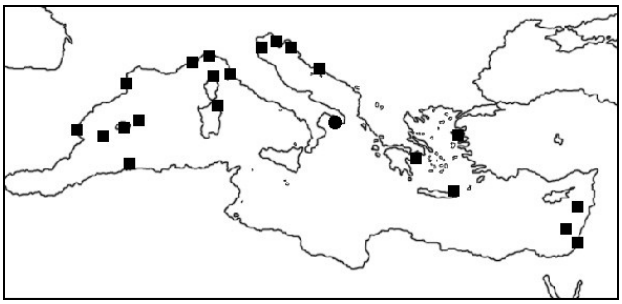

Fig. 1: Map of the past records and the records reported in this paper of** Zebrus zebrus **in the Mediterranean Sea; (■) past records, (●) present record.
Sl. 1: Zemljevid z označenimi lokalitetami v Sredozemskem morju, kjer je bil zebrasti glavač** Zebrus zebrus **odkrit v preteklosti in kot je njegovo pojavljanje opisano v tem članku; (■) pretekli zapisi, (●)zapis v tem članku.

RESULTS

Morphology

The specimens are characterized by: anterior nostril short, tubular, with tentacle from inner part of rim. Branchiostegal membrane attached to entire side of isthmus. Fins: D1 VI; D2 I/11; A I/9; C 16 branched rays, 14 articulated rays; P 17-18 (both sides: 17 and 17: 1, 17 and 18: 1); V I/5+I/5. Damaged fins did not influence the counting, except C branched rays in specimen PC-ZZ2. P uppermost rays free from membrane; V complete, with anterior transverse membrane. Body with ctenoid scales, LL 31 and 33, TR 11. Head, predorsal area and breast naked. Colour preserved: body fawn, 8 vertical dark bars. Head with three transverse bars spreading from each eye over cheek and snout. Predorsal area and operculum pigmented. Underside of head and breast pigmented. D1 with two longitudinal bands; D2 with three to four longitudinal bands; C with vertical dark strips, the most intensive strip along origin, the others poorly visible; P with vertical dark strip along origin, the rest of fin colourless; A and V colourless, except dots along A base. Head with anterior and posterior oculoscapular, and preopercular canals, with pores σ, λ, κ, ω, α, β, ρ, ρ^1, ρ^2, and γ, δ, ε respectively. Rows and number of sensory papillae as follows: *preorbital*: *r* (3-4), s^1 (1-2), s^2 (1-2), s^3 (1-2), c^1 (2), c^2 (2), c_1 (2-4), c_2 (2); *suborbital*: *1* (4-5), *2* (5), *3* (2-4), *4* (3-4), *5s* (2-3), *5i* (2-3), *6s* (3), *6i* (3-4), *7* (1-2), *b* (5-6), *d* (13); *preoperculo-mandibular*: *e* (24-26), *i* (14-15), *f* (3); *oculoscapular*: x^1 (5), x^2 (3), *tr* (2), *z* (3), *q* (2), *y* (1), as^1 (6), as^2 (8), la^1 (2), la^2 (2); *opercular*: *ot* (12), *os* (4), *oi* (3-4); *anterior dorsal*: *n* (4-6), *g* (6), *o* (6), *m* (3), *h* (8). *Oculoscapular* rows x^1, x^2, *y*, as^1, as^2, as^3, la^1, la^2 and *anterior dorsal* rows *g, o, m, h* (specimen PC-ZZ1) and *oculoscapular* rows *tr*, la^3 and *suborbital* row *d* (specimen PC-ZZ2) were not visible probably due to skin damage. Seven transverse suborbital rows of sensory papillae; last row represented by a single papilla near pore α; four before, two below longitudinal row *b*. Row *b* anteriorly beginning before rear border of the eye. Suborbital row *d* continuous.

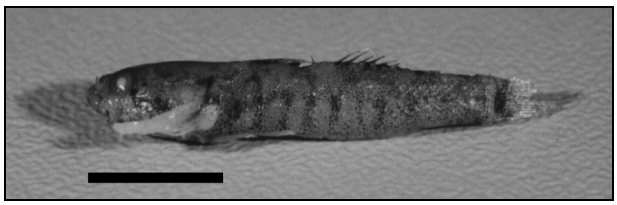

Fig. 2:** Zebrus zebrus**, juvenile of unidentified sex, 15.6 mm SL collected at Torre Inserraglio, SE Italy (Ionian Sea), 11 December 2002. Scale = 5 mm.
Sl. 2:** Zebrus zebrus**, mladostni osebek neugotovljenega spola, 15,6 mm SL, ujet 11. decembra 2002 v bližini kraja Torre Inserraglio, JV Italija (Jonsko morje). Merilo = 5 mm.

Ecological distribution

The two specimens of *Z. zebrus* were collected in shallow (5-7 m depth) sub-vertical rocky substrates exposed to wave action and characterised by the presence of boulders of various size with flourishing benthic cover. In particular, the specimen PC-ZZ2 was collected in a rocky reef dominated by filamentous brown algae *(e.g. Ectocarpus* and *Sphacelaria* sp.), filamentous green algae *(e.g. Bryopsis*, *Cladophora* and *Chaetomorpha* spp.), encrusting calcified red algae *(e.g. Lithophyllum frondosum, L. incrustans)* and the sponge *Crambe crambe*. The specimen PC-ZZ1, instead, was collected in rocky reef affected by discharges of an outfall. Red algae of the genera *Pterocladiella* and *Gelidium*, and the brown algae *Colpomenia sinuosa*, in this case, accounted for a significant fraction of the benthic cover (see Terlizzi *et al.,* 2002 for details).

DISCUSSION

The present record of *Z. zebrus* for the Ionian Sea suggests that the distribution of this species is fairly continuous along the Mediterranean coasts. Previous records came from the north-western part of the basin, the Adriatic and the Aegean Seas, and the Levantine basin (Fig. 1) (Miller, 1977; Ahnelt, 1990; Ahnelt & Patzner, 1996; Kovačić, 1997).

The specimens collected in the Ionian Sea generally correspond in body morphology, head and fins, squamation, colouration, and in lateral line system to populations of *Z. zebrus* from the other parts of Mediterranean basin. The present specimens differ from species description (Miller, 1977, 1986) in the lower number of sensory papillae in rows. However, the collected specimens were juveniles. The increase in the number of sensory papillae in rows during juvenile growth is known for some gobiid species (Kovačić, 2004).

As regards the habitat occupation, it has to be noted that *Z. zebrus* is reported to live in a large spectrum of habitats from about 0 to 10 m depth, like seagrasses and/or in estuarine habitats (Tortonese, 1975), various rocky habitats (*e.g.* boulders, holes, cavities, small caves, bedrock, sands with individual stones, in some cases in association with sea urchins; Ahnelt & Patzner, 1996; Kovačić, 1997; Patzner, 1999a, b), and intertidal pools (Ahnelt, 1990; Nieto & Alberto, 1992; Miller, 1977). The evidences reported here and the literature data suggest that *Z. zebrus* is able to thrive in many habitat types at shallow depth (approximately down to 10 m). These relatively scarce habitat preferences and the increasing number of records year by year lead to conclude that *Z. zebrus* is likely to be far more common in the Mediterranean Sea than currently thought.

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PRVI PODATEK O ZEBRASTEM GLAVAČU *ZEBRUS ZEBRUS* (PISCES: GOBIIDAE) IZ JONSKEGA MORJA

Marcelo KOVAČIĆ
Prirodoslovni muzej Rijeka, Lorenzov prolaz 1, HR-51000 Rijeka, CROATIA.
E-mail: Marcelo.Kovacic@public.srce.hr

Simona BUSSOTTI & Paolo GUIDETTI
Laboratory of Zoology and Marine Biology, DiSTeBA, University of Lecce, Via Provinciale Monteroni, I-73100 Lecce, Italy

POVZETEK

Avtorji poročajo o prvem odkritju zebrastega glavača Zebrus zebrus *v Jonskem morju. V vodah jugozahodne Apulije (Jonsko morje) sta bila na plitvi kamniti podlagi, prekriti z makroalgami, ujeta dva primerka zebrastega glavača. Glede na podatke, objavljene v tem članku, in podatke iz literature je mogoče sklepati, da ta vrsta lahko uspeva v plitvi vodi mnogih habitatnih tipov (do približno 10 m). Avtorji navajajo meristične podatke o obeh primerkih zebrastega glavača. Sicer pa se osebki, ujeti v Jonskem morju, morfološko in barvno na splošno ujemajo s populacijami te vrste iz drugih delov Sredozemskega morja, najnovejše odkritje pa je dokaz o kontinuirani razširjenosti te vrste med zahodnim in vzhodnim Sredozemskim morjem in Jadranom.*

Ključne besede: *Zebrus zebrus,* prvi podatek, morfologija, ekologija, Jonsko morje

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