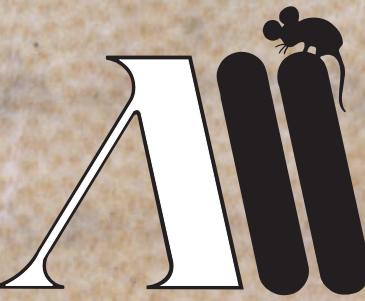


ANNALES



*Analí za istrske in mediteranske študije
Annali di Studi istriani e mediterranei
Annals for Istrian and Mediterranean Studies
Series Historia Naturalis, 31, 2021, 2*



UDK 5

ISSN 1408-533X
e-ISSN 2591-1783



ANNALES

Anali za istrske in mediteranske študije
Annali di Studi istriani e mediterranei
Annals for Istrian and Mediterranean Studies

Series Historia Naturalis, 31, 2021, 2

KOPER 2021

**UREDNIŠKI ODBOR/
COMITATO DI REDAZIONE/
BOARD OF EDITORS:**

Alessandro Acquavita (IT), Nicola Bettoso (IT), Christian Capapé (FR), Darko Darovec, Dušan Devetak, Jakov Dulčić (HR), Serena Fonda Umani (IT), Andrej Gogala, Daniel Golani (IL), Danijel Ivajnšič, Mitja Kaligarič, Marcelo Kovačič (HR), Andrej Kranjc, Lovrenc Lipej, Vesna Mačić (ME), Alenka Malej, Patricija Mozetič, Martina Orlando-Bonaca, Michael Stachowitzsch (AT), Tom Turk, Al Vrezec

**Glavni urednik/Redattore capo/
Editor in chief:**

Darko Darovec

**Odgovorni urednik naravoslovja/
Redattore responsabile per le scienze
naturali/Natural Science Editor:**

Lovrenc Lipej

Urednica/Redattrice/Editor:

Martina Orlando-Bonaca

Lektor/Supervisione/Language editor:

Polona Šergon (sl.), Petra Berlot Kužner (angl.)

Prevajalci/Traduttori/Translators:

Martina Orlando-Bonaca (sl./it.)

**Oblikovalec/Progetto grafico/
Graphic design:**

Dušan Podgornik, Lovrenc Lipej

Tisk/Stampa/Print:

Založništvo PADRE d.o.o.

Izdajatelja/Editori/Published by:Zgodovinsko društvo za južno Primorsko - Koper / Società storica del Litorale - Capodistria[®]Inštitut IRRIS za raziskave, razvoj in strategije družbe, kulture in okolja / Institute IRRIS for Research, Development and Strategies of Society, Culture and Environment / Istituto IRRIS di ricerca, sviluppo e strategie della società, cultura e ambiente[®]**Sedež uredništva/Sede della redazione/
Address of Editorial Board:**

Nacionalni inštitut za biologijo, Morska biološka postaja Piran / Istituto nazionale di biologia, Stazione di biologia marina di Pirano / National Institute of Biology, Marine Biology Station Piran
SI-6330 Piran / Pirano, Fornače/Fornace 41, tel.: +386 5 671 2900,
fax +386 5 671 2901;
e-mail: annales@mbss.org, **internet:** www.zdjp.si

Redakcija te številke je bila zaključena 13. 12. 2021.

**Sofinancirajo/Supporto finanziario/
Financially supported by:**

Javna agencija za raziskovalno dejavnost Republike Slovenije (ARRS), Mestna občina Koper

Annales - Series Historia Naturalis izhaja dvakrat letno.

Naklada/Tiratura/Circulation: 300 izvodov/copie/copies

Revija Annales, Series Historia Naturalis je vključena v naslednje podatkovne baze / La rivista Annales, series Historia Naturalis è inserita nei seguenti data base / Articles appearing in this journal are abstracted and indexed in: BIOSIS-Zoological Record (UK); Aquatic Sciences and Fisheries Abstracts (ASFA); Elsevier B.V.: SCOPUS (NL); Directory of Open Access Journals (DOAJ).

To delo je objavljeno pod licenco / Quest'opera è distribuita con Licenza / This work is licensed under a Creative Commons BY-NC 4.0.



Navodila avtorjem in vse znanstvene revije in članki so brezplačno dostopni na spletni strani <https://zdjp.si/en/p/annalesshn/>
The submission guidelines and all scientific journals and articles are available free of charge on the website <https://zdjp.si/en/p/annalesshn/>
Le norme redazionali e tutti le riviste scientifiche e gli articoli sono disponibili gratuitamente sul sito <https://zdjp.si/en/p/annalesshn/>



VSEBINA / INDICE GENERALE / CONTENTS 2021(2)

BIOINVAZIJA
BIOINVASIONE
BIOINVASION

- Cemal TURAN, Mevlüt GÜRLEK,
Deniz ERGÜDEN & Hakan KABASAKAL**
A New Record for the Shark Fauna
of the Mediterranean Sea: Whale shark,
Rhincodon typus (Orectolobiformes:
Rhincodontidae) 167
Nova vrsta v fnavi morskih psov
Sredozemskega morja: morski pes
kitovec, Rhincodon typus
(Orectolobiformes: Rhincodontidae)

- Andrea LOMBARDO & Giuliana MARLETTA**
New Evidence of the Ongoing
Expansion of *Okenia picoensis*
Paz-Sedano, Ortigosa & Pola,
2017 (Gastropoda: Nudibranchia) in
the Central-Eastern Mediterranean 173
Novi podatki o širjenju areala vrste Okenia
picoensis Paz-Sedano, Ortigosa & Pola,
2017 (Gastropoda: Nudibranchia) v
srednjem vzhodnem Sredozemskem morju

SREDOZEMSKI MORSKI PSI
SQUALI MEDITERRANEI
MEDITERRANEAN SHARKS

- Hakan KABASAKAL**
A Review of Shark Biodiversity in
Turkish Waters: Updated Inventory,
New Arrivals, Questionable Species,
and Conservation Issues 181
Pregled pestrosti morskih psov v
turških morjih: dopolnjen seznam,
novi prišleki, vprašljive vrste in
naravovarstveni problemi

- Hakan KABASAKAL & Erdi BAYRI**
Great White Sharks, *Carcharodon*
carcharias, Hidden in the Past:
Three Unpublished Records of the
Species from Turkish Waters 195
Trije neobjavljeni primeri pojavitve belega
morskega volka, Carcharodon carcharias,
iz turških voda izbrskani iz preteklosti

IHTIOLOGIJA
ITTOLOGIA
ICHTHYOLOGY

- Malek ALI, Vienna HAMMOUD,
Ola FANDI & Christian CAPAPÉ**
First Substantiated Record of
Crested Oarfish *Lophotus lacepede*
(Osteichthyes: Lophotidae) from the
Syrian Coast (Eastern Mediterranean Sea) 205
Prvi utemeljeni zapis o pojavitvji
čopovke Lophotus lacepede
(Osteichthyes: Lophotidae) ob
sirske obale (vzhodno Sredozemsko morje)

- Mohamed Mourad BEN AMOR,
Khadija OUNIFI-BEN AMOR,
Marouène BDIOUI & Christian CAPAPÉ**
The Second Record of Oilfish,
Ruvettus pretiosus (Gempylidae),
in Tunisian Waters (Central
Mediterranean Sea) 211
Drugi zapis o pojavitvji vrste
Ruvettus pretiosus (Gempylidae)
v tunizijskih vodah (osrednje
Sredozemsko morje)

- Okan AKYOL & Vahdet ÜNAL**
On the Occurrence of *Seriola fasciata*
(Carangidae) in the Eastern
Mediterranean Sea 217
O pojavitvji vrste Seriola fasciata
(Carangidae) v vzhodnem
Sredozemskem morju

- Nassima EL OMRANI,
Hammou EL HABOUZ,
Abdelbasset BEN-BANI,
Abdellatif MOUKRIM,
Roger FLOWER & Abdellah BOUHAIMI**
Age and Growth of the Pouting
Trisopterus luscus (Linnaeus, 1758)
(Pisces, Gadidae) from Moroccan
Central Atlantic Waters 223
Rast in starost francoskega moliča
Trisopterus luscus (Linnaeus, 1758)
(Pisces, Gadidae) v atlantskih
vodah osrednjega Maroka

Mourad CHÉRIF, Rimel BENMESSAOUD & Christian CAPAPÉ	Rudi VEROVNIK, Nejc RABUZA, Miroslav REPAR, Matjaž ZADRGAL & Paul TOUT	
Age and Growth Parameters of the Red Mullet <i>Mullus barbatus</i> (Mullidae) from Northern Tunisia (Central Mediterranean Sea)	On the Presence of Two-Tailed Pasha (<i>Charaxes jasius</i> (Linnaeus, 1767), Papilioidea: Nymphalidae) in the Northeastern Adriatic Region	
<i>Starostni in rastni parametri pri navadnem bradaču Mullus barbatus (Mullidae) iz severne Tunizije (osrednje Sredozemsko morje)</i>	235	285
Yana SOLIMAN, Adib SAAD, Vienna HAMMOUD & Christian CAPAPÉ	Viktor BARANOV & Borut MAVRIČ	
Heavy Metal Concentrations in Tissues of Red Mullet, <i>Mullus barbatus</i> (Mullidae) from the Syrian Coast (Eastern Mediterranean Sea)	New Records of Non-Biting Midges (Diptera, Chironomidae) from Marine and Coastal Habitats of the Slovenian Part of the Adriatic Sea	
<i>Vsebnost težkih kovin v tkivih bradača, Mullus barbatus (Mullidae) iz sirske obale (vzhodno Sredozemsko morje)</i>	243	291
Christian CAPAPÉ, Youssouph DIATTA, Almamy DIABY, Sihem RAFRAFI-NOUIRA & Christian REYNAUD	<i>Nove najdbe trzač (Diptera, Chironomidae) iz morskih in obmorskih habitatov v slovenskem delu Jadran</i>	
Record of a Single Clasper Specimen in <i>Zanobatus schoenleinii</i> (Chondrichthes: Zanobatidae) from the Coast of Senegal (eastern tropical Atlantic)	FLORA	
<i>Najdba primerka vrste Zanobatus schoenleinii (Chondrichthes: Zanobatidae) le z enim klasperjem iz senegalske obale (vzhodni tropski Atlantik)</i>	FLORA	
FAVNA	FLORA	
FAVNA		
FAVNA		
Ana FORTIČ, Domen TRKOV, Lovrenc LIPEJ, Marco FANTIN & Saul CIRIACO	Amelio PEZZETTA, Marco PAOLUCCI & Mario PELLEGRINI	
New Evidence of the Occurrence of <i>Knoutsodonta pictoni</i> (Nudibranchia, Onchidorididae) in the Northern Adriatic	Le Orchidaceae del sito di interesse comunitario "Monte Pallano e Lecceta d'Isca d'Archi" e delle zone limitrofe	
<i>Novi podatki o pojavljanju vrste Knoutsodonta pictoni (Nudibranchia, Onchidorididae) v severnem Jadranu</i>	301	
Noureddine BENABELLAH, Djillali BOURAS, Mohammed RAMDANI & Nicolas STURARO	<i>Kukavičevke območja, pomembnega za skupnost "Monte Pallano e Lecceta d'Isca d'Archi" in sosednjih območij</i>	
Biodiversity and Structural Organization of Mollusk Communities in the Midlittoral Coastal Area Between Bouzedjar and Arzew (Western Algeria)	DELO NAŠIH ZAVODOV IN DRUŠTEV ATTIVITÀ DEI NOSTRI ISTITUTI E SOCIETÀ ACTIVITIES BY OUR INSTITUTIONS AND ASSOCIATIONS	
<i>Biodiverziteta in struktura združbe mehkužcev v bibavičnem območju med predeloma Bouzedjar in Arzew (zahodna Alžirija)</i>		
267		
Jadran FAGANELI	Marina DERMASTIA, Tina ELERŠEK, Jadranka JEZERŠEK, Lučka KAJFEŽ BOGATAJ, Matjaž KUNTNER, Tamara LAH TURNŠEK, Matjaž LIČER, Lovrenc LIPEJ, Miha MIKELJ, Izidor OSTAN OŽBOLT, Maja RAVNIKAR, Katja SINUR, Darja STANIČ, Timotej TURK DERMASTIA, AI VREZEC	
<i>V spomin prof. dr. Jožetu Štirnu (1934-2021)</i>	Okoljski manifest	
	315	
IN MEMORIAM		
Jadran FAGANELI		
<i>V spomin prof. dr. Jožetu Štirnu (1934-2021)</i>	321	
Kazalo k slikam na ovitku	326	
<i>Index to images on the cover</i>	326	

received: 2021-05-12

DOI 10.19233/ASHN.2021.21

NEW EVIDENCE OF THE ONGOING EXPANSION OF *OKENIA PICOENSIS* PAZ-SEDANO, ORTIGOSA & POLA, 2017 (GASTROPODA: NUDIBRANCHIA) IN THE CENTRAL-EASTERN MEDITERRANEAN

Andrea LOMBARDO & Giuliana MARLETTA

Department of Biological, Geological and Environmental Sciences - University of Catania, 95124 Catania, Italy
e-mail: andylombardo94@gmail.com; giuliana.marletta@phd.unict.it

ABSTRACT

The present note reports new findings of the nudibranch *Okenia picoensis* in the Mediterranean Sea. This species was described from Pico Island (Azores, Atlantic Ocean) in 2017, and subsequently, in the last few years, it has been reported in some areas of the Mediterranean Sea. Hereby, we document new records of *O. picoensis*, reported between March and May 2021 along the central-eastern coast of Sicily (Ionian Sea) which could suggest a possible establishment of the species in this area.

Key words: Goniodorididae, Heterobranchia, Ionian Sea, Mollusca, new reports

NUOVE PROVE DELLA CONTINUA ESPANSIONE DI *OKENIA PICOENSIS* PAZ-SEDANO, ORTIGOSA & POLA, 2017 (GASTROPODA: NUDIBRANCHIA) NEL MEDITERRANEO CENTRO-ORIENTALE

SINTESI

La presente nota riporta alcuni nuovi ritrovamenti nel Mediterraneo del nudibranco *Okenia picoensis*. Questa specie è stata descritta nel 2017 per l'Isola di Pico (Azzorre, Oceano Atlantico) e, successivamente, durante gli ultimi anni è stata riportata in alcune aree del Mediterraneo. Con la presente, documentiamo nuove segnalazioni di *O. picoensis*, avvenute tra marzo e maggio 2021 lungo la costa centro-orientale della Sicilia (Mar Ionio), che potrebbero indicare un possibile insediamento di questa specie in quest'area.

Parole chiave: Goniodorididae, Heterobranchia, mar Ionio, Mollusca, nuove segnalazioni

INTRODUCTION

Until recently, the genus *Okenia* Menke, 1830 (Nudibranchia Goniodorididae) consisted of six species inhabiting the Mediterranean Sea, namely *O. aspersa* (Alder & Hancock, 1845), *O. elegans* (Leuckart, 1828), *O. hispanica* Valdés & Ortea, 1995, *O. mediterranea* (Ihering, 1886), *O. longiductis* Pola, Paz-Sedano, Macali, Minchin, Marchini, Vitale, Licchelli & Crocetta, 2019, and *O. problematica* Pola, Paz-Sedano, Macali, Minchin, Marchini, Vitale, Licchelli & Crocetta, 2019 (Pola et al., 2019). However, between 2020 and 2021, another species of the genus, *O. picoensis* Paz-Sedano, Ortigosa & Pola, 2017, was recorded for the first time in the basin (Orfanidis et al., 2021; Crocetta et al., 2021). This species was originally described from Pico Island (Azores, Portugal, Atlantic Ocean) (Paz-Sedano et al., 2017). At morphological level, *O. picoensis* presents a mantle covered by spicules and the edge of the notum with five lateral papillae, symmetrically distributed on each side of the body. The papillae are usually distributed as follows: the two anteriormost are in front of the rhinophores, the two posteriormost, which are the longest, are behind the gills, and along each side of the notum, between the rhinophores and the gills, there are three lateral papillae. Moreover, there is also a single dorsal papilla, which originates from an evident ridge located between the rhinophores and the gills. The rhinophores present from seven to nine lamellae, while the gills are four and of similar shape as the papillae (Paz-Sedano et al., 2017).

Tab. 1: Reports of *Okenia picoensis* in the Mediterranean Sea.

Tab. 1: Lokalitete, kjer je bila vrsta *Okenia picoensis* potrjena v Sredozemskem morju.

Date	Location	Number of specimens	Depth (m)	Temperature (°C)	References
6 Nov. 2020	Čirkewwa, Malta	unknown	29	21	Orfanidis et al. (2021)
18 Nov. 2020	Wied iż-Żurrieq, Malta	unknown	23	21	Orfanidis et al. (2021)
24 Nov. 2020	Čirkewwa arch, Malta	unknown	17	21	Orfanidis et al. (2021)
17 Jan. 2021	Wied iż-Żurrieq, Malta	unknown	27	16	Orfanidis et al. (2021)
1 March 2021	Granada, Spain	1	16	15	Orfanidis et al. (2021)
6 March 2021	Acque Fredde, Italy	1	21.9	14	Crocetta et al. (2021)
14 March 2021	Ognina, Italy	1	21.2	14	Present study (Fig. 2A)
18 March 2021	Scalo Pennisi, Italy	2	14.9 – 21.4	14	Present study (Fig. 2B, C)
27 March 2021	Santa Maria La Scala, Italy	1	20	14	Present study (Fig. 2D)
1 May 2021	Bellatrix, Italy	1	15.9	16	Present study (Fig. 2E)
4 May 2021	Scalo Pennisi, Italy	3	15 – 22.3	15	Present study (Fig. 2F, G, H)

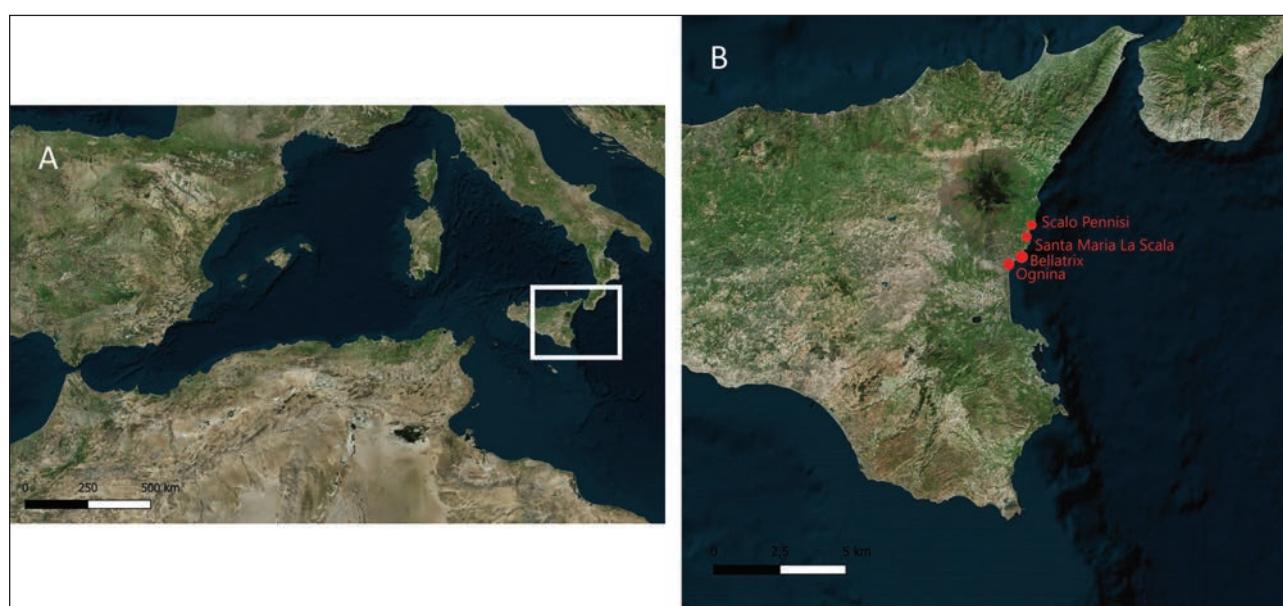


Fig. 1: A) Geographical location of the study area. B) Detail of the study areas (Scalo Pennisi, Santa Maria La Scala, Bellatrix, Ognina) where specimens of *Okenia picoensis* were found.

Sl. 1: A) Geografski položaj raziskanega območja. B) Detajli raziskanih predelov (Scalo Pennisi, Santa Maria La Scala, Bellatrix, Ognina), kjer so bili najdeni primerki vrste *Okenia picoensis*.

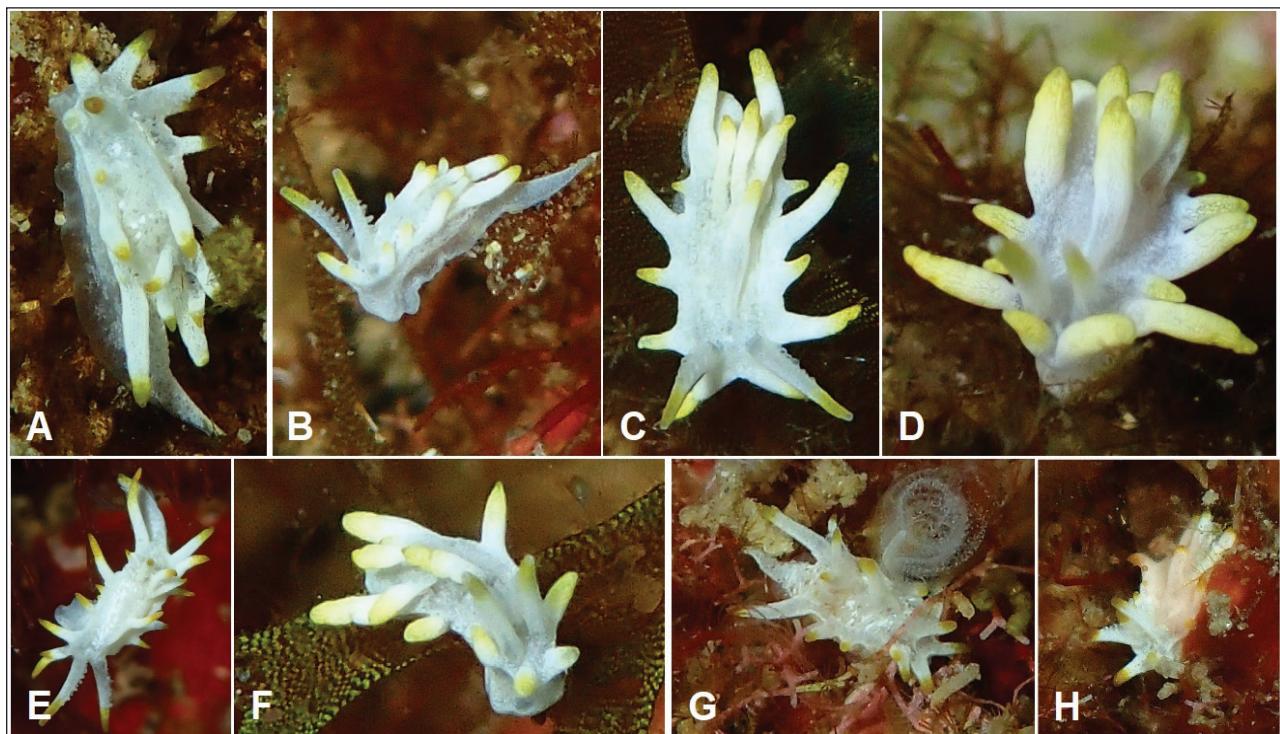


Fig. 2: The eight specimens of *Okenia picoensis* found along the central-eastern coast of Sicily (Italy). A) The specimen found in Ognina (Photo by A. Lombardo); B) The first specimen seen in Scalo Pennisi (Photo by A. Lombardo); C) The second specimen from Scalo Pennisi (Photo by A. Lombardo); D) The specimen observed in Santa Maria La Scala (Photo by G. Marletta); E) The specimen found in Bellatrix (Photo by A. Lombardo); F) The third specimen found in Scalo Pennisi (Photo by A. Lombardo); G) The fourth specimen from Scalo Pennisi (Photo by A. Lombardo); H) The fifth specimen from Scalo Pennisi (Photos by A. Lombardo).

Sl. 2: Osem primerov vrste *Okenia picoensis*, najdenih vzdolž srednje vzhodne obale Sicilije (Italija). A) Primerek najden na lokaliteti Ognina (Foto: A. Lombardo); B) Prvi primerek, opažen na lokaliteti Scalo Pennisi (Foto: A. Lombardo); C) Drugi primerek, opažen na lokaliteti Scalo Pennisi (Foto: A. Lombardo); D) Primerek, opažen na lokaliteti Santa Maria La Scala (Foto: G. Marletta); E) Primerek, najden na lokaliteti Bellatrix (Foto: A. Lombardo); F) Tretji primerek, opažen na lokaliteti Scalo Pennisi (Foto: A. Lombardo), G) Četrти primerek, opažen na lokaliteti Scalo Pennisi (Foto: A. Lombardo), H) Peti primerek, opažen na lokaliteti Scalo Pennisi (Foto: A. Lombardo).

This species displays two different chromatic patterns (Paz-Sedano et al., 2017; Orfanidis et al., 2021): one with a bright yellow body and orange-tipped papillae, and one with a white body and yellow-tipped papillae.

Since its first finding in the Azores, this species seems to have appeared suddenly and almost simultaneously in several areas of the Mediterranean: it was recorded four times in Malta in November 2020 and January 2021 (Orfanidis et al., 2021), and then twice in March 2021, once in Granada (Spain) and once in Santa Tecla (Italy) (Orfanidis et al., 2021; Crocetta et al., 2021) (Tab. 1).

This short note reports eight new records of *O. picoensis* from the central-eastern coast of Sicily (Ionian Sea, Italy) and discusses the species' spread and possible ways of entering the Mediterranean Sea.

MATERIAL AND METHODS

Scuba diving observations of *O. picoensis* specimens were carried out in four areas located along the central-eastern coast of Sicily (Fig. 1A, B): Ognina ($37^{\circ}31'50.4''N$ – $15^{\circ}07'10.8''E$) and Bellatrix ($37^{\circ}32'03.2''N$ – $15^{\circ}07'35.2''E$), located in the municipality of Catania, and Scalo Pennisi ($37^{\circ}38'23.2''N$ – $15^{\circ}11'04.6''E$) and Santa Maria La Scala ($37^{\circ}36'46.5''N$ – $15^{\circ}10'31.4''E$), located in the municipality of Acireale.

The specimens of *O. picoensis* were identified *in vivo* and photographed with underwater cameras Olympus TG-4 and Olympus TG-6. During the scuba dives (carried out between 9 and 11:30 a.m.), the depth and the substrates, where the specimens were encountered, and their activities during the spotting were annotated.

RESULTS

Throughout March and May 2021, a total of eight specimens were observed in the examined areas (Fig. 2). The specimens were detected in a range of depth of 14.9 – 21.4 m on rocky bottoms covered by photophilous seaweeds. Specifically, one individual was found on a thallus of a *Halopteris filicina* (Grateloup) Kützing, one specimen was detected on a filamentous red alga, two specimens were spotted on thalli of *Dictyota dichotoma* (Hudson) J. V. Lamouroux, two individuals were observed embedded in a filamentous tangle of brown and red seaweeds covered by detritus, and two specimens were found on a small rocky wall covered by a turf of red algae and tunicsates.

Most of the specimens presented a couple of papillae in front of the rhinophores, three papillae on each side of the notum and a couple of papillae (the most elongated) behind the gills. There was also a dorsal papilla in front of the gills and the rhinophores had from six to nine lamellae. Nevertheless, two individuals, one found in Scalo Pennisi (Fig. 2C) and one found in Bellatrix (Fig. 2E), displayed a higher number of papillae bordering the notum: 12 and 14, respectively. Moreover, a specimen observed in Scalo Pennisi displayed a different organization of the papillae (Fig. 2F). Indeed, although the specimen had two anteriormost and two posteriormost papillae, like the other specimens, it presented only two lateral papillae on each side of the notum.

Finally, two individuals observed in Scalo Pennisi (Fig. 2G, H) were found sited near each other and, in one of them, it was possible to count the papillae: two were in front of the rhinophores, three on each side of the notum, and two most elongated ones behind the gills. Overall, all the found specimens exhibited a white chromatic pattern with yellow-tipped papillae.

DISCUSSION

Considering that the origin of distribution of *O. picoensis* is in the Azores, it is probable for this species to have entered the Mediterranean through the Gibraltar Strait. Indeed, this species likely arrived to the Mediterranean basin during the veliger stage through an anthropogenic vector (e.g., ballast waters, attached to ships' keels) or through natural dispersal (e.g., currents). In recent years, three other species of Nudipleura, two originally described in the Macaronesia and one distributed in this region, have been found along the central-eastern coast of Sicily: *Pleurobranchus wirtzi* Ortea, Moro & Caballer, 2014, *Taringa tritorquis* Ortea, Perez & Llera, 1982 (Lombardo & Marletta, 2019; 2020a; Gerovasileiou et al., 2020), and *Aporodoris millegiana* (Alder & Hancock, 1854) (Lombardo & Marletta, 2020b). Therefore, the occurrence of *O. picoensis* in this area could strengthen the evidence that in the last decade, the barriers to dispersal which prevented

the spread of some Atlantic species into the Mediterranean (the Canary Current, Saharan upwelling, and the Almería-Oran Front) experienced a weakening, probably due to the global climatic change (Valdés et al., 2013).

In the Mediterranean, *O. picoensis* was suddenly and for a brief period (November 2020–May 2021), observed in several areas located far apart (south Spain and Malta/Sicily). Therefore, as suggested for *Aplysia dactylomela* Rang, 1828 (Valdés et al., 2013), this species was probably transported as veliger by the powerful Algerian Current, which took it directly into the Central Mediterranean; there the sub-basin scale gyre eddies associated with the Algerian Current transferred these pelagic larvae into the Sicily Channel, where the Mid-Mediterranean Jet rapidly splits into two main branches affecting the North African coast and southern Sicily. This hydrodynamic pattern could thus explain why this species was found both in Malta and along the central-eastern coast of Sicily. Regarding the latter area, the finding of several specimens during March and May (Crocetta et al., 2021; present study), indicate that *O. picoensis* may have found favourable conditions for its growth and development. Indeed, the wide thermal range in which this species was found (from 14 to 21°C) (Orfanidis et al., 2021; Crocetta et al., 2021; present work) might be indicative of a high level of adaptability of this nudibranch to temperature. Consequently, it is likely that in the near future this species could easily establish and settle in this and other areas of Mediterranean.

Regarding the ecology of the species, the information in both its native and expanded range of distribution is incomplete. In fact, the observations on *O. picoensis* only concern its seasonality and bathymetric range. In its native area, this nudibranch was found in June and November, between 8 and 30 m of depth (Paz-Sedano et al., 2017), while in the Mediterranean, it was observed in November, January, March, and May, between 14.9 and 29 m of depth (Orfanidis et al., 2021; Crocetta et al., 2021; present work). Furthermore, differently from its native area, where both *O. picoensis* chromatic patterns were seen, in the Mediterranean only the white morph has hitherto been found. In addition, through the present study it has been observed that the number of lateral papillae in *O. picoensis* can probably vary according to the size of the animal and does not seem to be constant as instead reported by Paz-Sedano et al. (2017).

In conclusion, the finding of this nudibranch in the Mediterranean Sea may be further proof of how the seawater of this Basin is experiencing a warming trend. Furthermore, in the central-eastern coast of Sicily, only two species belonging to the genus *Okenia* – *O. problematica* and *O. longiductis* – had been previously reported by Lombardo and Marletta (2020b; 2020c; 2021). Considering that in this area these latter species seem to be rare, and with no other relatives to this genus, *O. picoensis*, which is probably more competitive, might easily establish in the local marine communities, successfully reproduce, and spread elsewhere.

NOVI PODATKI O ŠIRJENJU AREALA VRSTE *OKENIA PICOENSIS* PAZ-SEDANO, ORTIGOSA & POLA, 2017
(GASTROPODA: NUDIBRANCHIA) V SREDNJEM VZHODNEM SREDOZEMSKEM MORJU

Andrea LOMBARDO & Giuliana MARLETTA

Department of Biological, Geological and Environmental Sciences - University of Catania, 95124 Catania, Italy
e-mail: andylombardo94@gmail.com; giuliana.marletta@phd.unict.it

POVZETEK

*V prispevku avtorja poročata o novih najdbah vrste gološkrgarja *Okenia picoensis* v Sredozemskem morju. To vrsto so opisali z otoka Pico (Azori, Atlantski ocean) v 2017, naknadno, v naslednjih nekaj letih, pa so o njej poročali v nekaterih predelih Sredozemskega morja. Avtorja sta med marcem in majem 2021 zbrala podatke o novih najdbah vrste O. picoensis vzdolž srednje vzhodne obale Sicilije (Jonsko morje), ki kažejo na možno ustalitev vrste na tem območju.*

Ključne besede: Goniodorididae, Heterobranchia, Jonsko morje, Mollusca, novi zapis

REFERENCES

- Crocetta F., S. Al Mabruk, E. Azzurro, R. Bakiu, M. Bariche, I. Batjakas, T. Bejaoui, J. Ben Souissi, J. Cauchi, M. Corsini-Foka, A. Deidun, J. Evans, J. Galdies, R. Ghanem, T. Kampouris, S. Katsanevakis, G. Kondylatos, L. Lipej, A. Lombardo, G. Marletta, E. Mejdanis, S. Nikolidakis, P. Ovalis, L. Rabaoui, M. Ragkousis, M. Rogelja, J. Sakr, I. Savva, V. Tanduo, C. Turan, A. Uyan & A. Zenetos (2021):** New Alien Mediterranean Biodiversity Records (November 2021). Mediterranean Marine Science, 22(3), 724-746. doi: <https://doi.org/10.12681/mms.26668>.
- Gerovasileiou, V., O. Akyol, Z. Al-Hosne, R. Alshikh Rasheed, E. Ataç, G. Bello, I. Ćetković, M. Corsini Foka, F. Crocetta, F. Denitto, P. Guidetti, B. Gül, G. Insacco, C. Jimenez, C. Licchelli, L. Lipej, A. Lombardo, E. Mancini, G. Marletta, N. Michailidis, A. Pešić, D. Poursanidis, W. Refes, H. Sahraoui, I. Thasitis, F. Tiralongo, Z. Tosunoğlu, D. Trkov, A. Vazzana & B. Zava (2020):** New records of rare species in the Mediterranean Sea (May 2020). *Mediterr. Mar. Sci.*, 21(2), 340-359. <https://doi.org/10.12681/mms.22148>.
- Lombardo, A. & G. Marletta (2019):** A new Atlantic immigrant in the Mediterranean Sea: *Pleurobranchus wirtzi* Ortea, Moro et Caballer, 2014 (Gastropoda Pleurobranchida). *Biodivers. J.*, 10(3), 275-278. <https://doi.org/10.31396/Biodiv.Jour.2019.10.3.275.278>.
- Lombardo, A. & G. Marletta (2020a):** New records of *Biuve fulvipunctata* (Baba, 1939) (Gastropoda: Cephalaspidea) and *Taringa tritorquis* Ortea, Perez and Llera, 1982 (Gastropoda: Nudibranchia) in the Ionian coasts of Sicily, Mediterranean Sea. *Biodivers. J.*, 11(2), 587-591. <https://doi.org/10.31396/Biodiv.Jour.2020.11.2.587.591>.
- Lombardo, A. & G. Marletta (2020b):** First record of *Aporodoris millegrana* (Alder et Hancock, 1854) (Gastropoda Heterobranchia Nudibranchia) in the Ionian Sea, central Mediterranean Sea. *Biodivers. J.*, 11(4), 875-878. <https://doi.org/10.31396/Biodiv.Jour.2020.11.4.875.878>.
- Lombardo, A. & G. Marletta (2020c):** The biodiversity of the marine Heterobranchia fauna along the central-eastern coast of Sicily, Ionian Sea. *Biodivers. J.*, 11(4), 861-870. <https://doi.org/10.31396/Biodiv.Jour.2020.11.4.861.870>.
- Lombardo, A. & G. Marletta (2021):** New Findings of Nudipleura (Mollusca: Gastropoda) along the central-eastern coast of Sicily (Ionian Sea). *Thalass. salentina*, 43, 71-82. <https://doi.org/10.1285/i15910725v43p71>.
- Orfanidis, S., A. Alvito, E. Azzurro, A. Badreddine, J. Ben Souissi, C. Chamorro, F. Crocetta, C. Dalyan, A. Fortič, L. Galanti, K. Geyran, R. Ghanem, A. Goruppi, D. Grech, S. Katsanevakis, E. Madrenas, F. Mastrototaro, F. Montesanto, M. Pavičić, D. Pica, L. Pola, M. Pontes, M. Ragkousis, A. Rosso, L. Sánchez-Tocino, J. M. Tierno De Figueroa, F. Tiralongo, V. Tirelli, S. Tsoli, S. Tunçer, D. Vrdoljak, V. Vuletin, J. Zaouali & A. Zenetos (2021):** New Alien Mediterranean Biodiversity Records (March 2021). *Mediterr. Mar. Sci.*, 22(1), 180-198. <https://doi.org/10.12681/mms.25294>.
- Paz-Sedano, S., D. Ortigosa & M. Pola (2017):** A new *Okenia* Menke, 1830 from the Azores Islands, Portugal (Mollusca, Nudibranchia, Goniodorididae). *Spixiana*, 40(1), 13-22.
- Pola, M., S. Paz-Sedano, A. Macali, D. Minchin, A. Marchini, F. Vitale, C. Licchelli & F. Crocetta (2019):** What is really out there? Review of the genus *Okenia* Menke, 1830 (Nudibranchia: Goniodorididae) in the Mediterranean Sea with description of two new species. *PLoS ONE*, 14(5), e0215037. <https://doi.org/10.1371/journal.pone.0215037>.
- Valdés, A., J. Alexander, F. Crocetta, M.B. Yoke , S. Giacobbe, D. Poursanidis, A. Zenetos, J.L. Cervera, M. Caballer, B.S. Galil & P.J. Sembri (2013):** The origin and dispersal pathway of the spotted sea hare *Aplysia dactylomela* (Mollusca: Opisthobranchia) in the Mediterranean Sea. *Aquat. Invasions*, 8(4), 427-436. <https://doi.org/10.3391/ai.2013.8.4.06>.