

ANNALES

Anali za istrske in mediteranske študije
Annali di Studi istriani e mediterranee
Annals for Istrian and Mediterranean Studies
Series Historia Naturalis, 27, 2017, 1





ANNALES

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

Series historia naturalis, 27, 2017, 1

ISSN 1408-533X

UDK 5

Letnik 27, leto 2017, številka 1

UREDNIŠKI ODBOR/ COMITATO DI REDAZIONE/ BOARD OF EDITORS:	Nicola Bettoso (IT), Christian Capapé (F), Darko Darovec, Dušan Devetak, Jakov Dulčić (HR), Serena Fonda Umani (IT), Andrej Gogala, Daniel Golani (IL), Mitja Kaligarič, Marcelo Kovačič (HR), Andrej Kranjc, Lovrenc Lipej, Alenka Malej, Patricija Mozetič, Martina Orlando-Bonaca, Michael Stachowitsch (A), Tom Turk, Al Vrezec, Danijel Ivajnsič
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 (angl.)
Prevajalci/Traduttori/Translators:	Martina Orlando-Bonaca (sl./it.)
Oblikovalec/Progetto grafico/ Graphic design:	Dušan Podgornik, Lovrenc Lipej
Prelom/Composizione/Typesetting:	Grafis trade d.o.o.
Tisk/Stampa/Print:	Grafis trade d.o.o.
Izdajatelj/Editore/Published by:	Zgodovinsko društvo za južno Primorsko - Koper / Società storica del Litorale - Capodistria©
Za izdajatelja/Per Editore/ Publisher represented by:	Salvator Žitko
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, Fornace/Fornace 41, tel.: +386 5 671 2900, fax 671 2901; e-mail: annales@mbss.org, internet: www.zdjp.si

Redakcija te številke je bila zaključena 15. 06. 2017.

**Sofinancirajo/Supporto finanziario/
Financially supported by:** Javna agencija za raziskovalno dejavnost Republike Slovenije (ARRS), Luka Koper in 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: BIOSIS-Zoological Record (UK); Aquatic Sciences and Fisheries Abstracts (ASFA); Elsevier B.V.: SCOPUS (NL).

Vsi članki so prosto dostopni na spletni strani:

<http://zdjp.si/en/cat/zaloznistvo/periodika/annales-series-historia-naturalis/>

All articles are freely available via website:

<http://zdjp.si/en/cat/zaloznistvo/periodika/annales-series-historia-naturalis/>

VSEBINA / INDICE GENERALE / CONTENTS

FLORA
FLORA
FLORA**Martina ORLANDO-BONACA &
Roberto ODORICO**

Unusual expansion of *Laurencia obtusa* (Hudson) J.V. Lamouroux in the Zambratija Bay (northern Adriatic Sea)
Nenavadno razširjanje alge Laurencia obtusa (Hudson) J.V. Lamouroux v zambratijskem zalivu (severni Jadran) 1

**Nina ŠAJNA, Kristijan ADAMLJE &
Mitja KALIGARIČ**

Dittrichia graveolens – How does soil salinity determine distribution, morphology, and reproductive potential?
Dittrichia graveolens – kako slanost tal določa njeno razširjenost, morfologijo in reproduktivni potencial? 7

Amelio PEZZETTA

Le Orchidaceae del Molise: Aggiornamento sistematico e nuova check-list
Kukavičevke dežele Molize: sistemska dopolnila in nov seznam vrst 13

FAVNA
FAUNA
FAUNA**Ilias FOSKOLOS, Myrto TOURGELI PROVATA &
Alexandros FRANTZIS**

First record of *Conchoderma auritum* (Cirripedia: Lepadidae) on *Ziphius cavirostris* (Cetacea: Ziphiidae) in Greece
Prvi zapis o pojavljanju raka vitičnjaka vrste Conchoderma auritum (Cirripedia: Lepadidae) na Cuvierjevem kljunatem kitu *Ziphius cavirostris* (Cetacea: Ziphiidae) v Grčiji 29

IHTIOLOGIJA
ITTILOGIA
ICHTHYOLOGY**Khadija OUNIFI-BEN AMOR, Mohamed Mourad BEN AMOR, Sihem RAFRAFI & Christian CAPAPÉ**

First confirmed record of wedge sole *Dicologlossa cuneata* (Soleidae) from the Tunisian coast (central Mediterranean)
Prvi zabeležen primer pojavljanja morskega lista vrste Dicologlossa cuneata (Soleidae) iz tunizijske obale (osrednje Sredozemsko morje) 37

Sihem RAFRAFI-NOUIRA, Olfa EL KAMEL-MOUTALIBI, Khadija OUNIFI-BEN AMOR, Mohamed Mourad BEN AMOR & Christian CAPAPÉ

A case of hermaphroditism in the common eagle ray *Myliobatis aquila* (Chondrichthyes: Myliobatidae), reported from the Tunisian coast (central Mediterranean)
Primer hermafroditizma pri navadnem morskem golobu Myliobatis aquila (Chondrichthyes: Myliobatidae) ob tunizijski obali (osrednje Sredozemsko morje) 43

**SREDOZEMSKI MORSKI PSI
SQUALI MEDITERRANEI
MEDITERRANEAN SHARKS****Hakan KABASAKAL**

Notes on historical and contemporary catches of lamniform sharks in Turkish waters
Zapisi o historičnih in sodobnih ulovih morskih volkov (Lamniformes) v turških vodah 51

Christian CAPAPÉ & Malek ALI

Record of dicephalus embryo in longnose spurdog *Squalus blainvillei* (Chondrichthyes: Squalidae) from the Syrian coast (eastern Mediterranean)
Zapis o dvoglavem primerku rjavega trneža Squalus blainvillei (Chondrichthyes: Squalidae) iz sirske obale (vzhodno Sredozemsko morje) 59

RECENTNE SPREMEMBE V SREDOZEMSKI
BIODIVERZITETI
CAMBIAMENTI RECENTI NELLA BIODIVERSITÀ
MEDITERRANEA
RECENT CHANGES IN THE MEDITERRANEAN
BIODIVERSITY

**Šihem RAFRAFI-NOUIRA, Khadija OUNIFI-BEN
AMOR, Mohamed Mourad BEN AMOR &
Christian CAPAPÉ**

Abundant records of red-eye round herring
Etrumeus golanii (Osteichthyes: Clupeidae)
from the Tunisian coast (central Mediterranean)
Številne najdbe vrste *Etrumeus golanii*
(Osteichthyes: Clupeidae) ob tunizijski obali
(osrednje Sredozemsko morje) 65

Aytaç ÖZGÜL & Okan AKYOL

On the occurrence of the smallscale codlet,
Bregmaceros nectabanus (Bregmacerotidae),
off the Urla coast in Izmir Bay (Aegean Sea,
eastern Mediterranean)
Pojavljanje vrste *Bregmaceros nectabanus*
(Bregmacerotidae), v vodah blizu Urle
v Izmirskem zalivu (Egejsko morje, vzhodno
Sredozemlje) 69

OCENE IN POROČILA
RECENSIONI E RELAZIONI
REVIEWS AND REPORTS

Domen TRKOV

Na Morski biološki postaji obeležili dan
biotske raznovrstnosti 77

Navodila avtorjem 79

Istruzioni per gli autori 81

Instruction to authors 83

Kazalo k slikam na ovitku 86

Index to images on the cover 86

UNUSUAL EXPANSION OF *LAURENCIA OBTUSA* (HUDSON) J.V. LAMOUREUX IN THE ZAMBRATIJA BAY (NORTHERN ADRIATIC SEA)

Martina ORLANDO-BONACA

Marine Biology Station, National Institute of Biology, SI-6330 Piran, Fornače 41
E-mail: martina.orlando@nib.si

Roberto ODORICO

SHORELINE Soc.Coop., AREA Science Park, IT-34149 Trieste, Padriciano 99
e-mail: roberto.odorico@shoreline.it

ABSTRACT

*The paper reports an unusual expansion of the red alga *Laurencia obtusa* in shallow waters of the Zambratija Bay (northern Adriatic Sea). The large population of *L. obtusa* was never observed during underwater surveys conducted in recent years. In this area, benthic communities dominated by brown algae from the genus *Cystoseira* were present. The authors therefore assume that some environmental factors have probably changed and have favoured the extension of this red alga. The hypothesis for this phenomenon takes into account the possibility that the establishment of the invasive green alga *Caulerpa cylindracea* in the Zambratija bay has had a negative impact on native macroalgal assemblages.*

Key words: *Laurencia obtusa*, monospecific population, Zambratija Bay, Adriatic Sea

ESPANSIONE INSOLITA DI *LAURENCIA OBTUSA* (HUDSON) J.V. LAMOUREUX NELLA BAIA DI ZAMBRATTIA (ADRIATICO SETTENTRIONALE)

SINTESI

*L'articolo riporta un'insolita espansione dell'alga rossa *Laurencia obtusa* in acque poco profonde della baia di Zambrattia (Adriatico settentrionale). Ampi popolamenti di *L. obtusa* non sono mai stati osservati durante le indagini subacquee effettuate negli ultimi anni. In quest'area erano presenti comunità bentoniche dominate da alghe brune del genere *Cystoseira*. Gli autori pertanto suppongono che alcuni fattori ambientali siano cambiati e abbiano favorito l'estensione di quest'alga rossa. L'ipotesi per questo fenomeno prende in considerazione la possibilità che l'insediamento dell'alga verde invasiva *Caulerpa cylindracea* nella baia di Zambrattia abbia avuto un impatto negativo sulle associazioni macroalgali autoctone.*

Parole chiave: *Laurencia obtusa*, popolamento monospecifico, baia di Zambrattia, mare Adriatico

INTRODUCTION

The red alga *Laurencia obtusa* (Hudson) J.V. Lamouroux is commonly found in the Adriatic Sea, from the northern to the central and southern part of the basin (Avčin *et al.*, 1973, 1974; Matjašič *et al.*, 1975; Giaccone, 1978; Munda, 1979; Vukovič, 1980, Gómez Garreta *et al.*, 2001; Antolić *et al.*, 2011; Curiel *et al.*, 2012). The species usually grows on rocky substrata moderately exposed to wave actions in the lower mediolittoral belt, and with other photophilous taxa in the association *Cystoseiretum crinitae* Molinier 1958 in the upper infralittoral belt (Giaccone *et al.*, 1994). However, it was found also on rocky outcrops in the lower infralittoral and circalittoral belts in the northern Adriatic Sea (Curiel *et al.*, 2012).

According to the available literature, *L. obtusa* was never found forming dense and extended monospecific populations in the Adriatic Sea. However, dense stands of *Laurencia* species were reported for the Florida Bay (Zieman *et al.*, 1989) and for the Gulf of Siam in the South China Sea (Latypov, 1986). The aim of the present paper is to report the finding of a dense monospecific population of *L. obtusa* in the Zambratija Bay (northern Adriatic Sea) and to discuss the possible factors that led to this phenomenon.

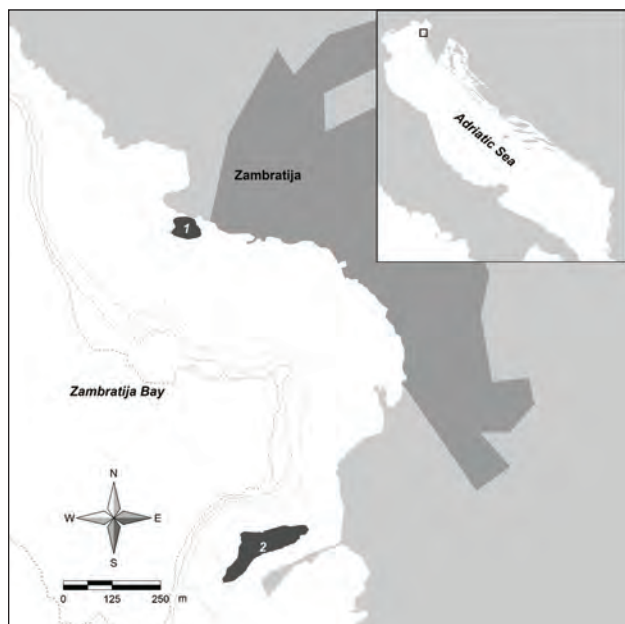


Fig. 1: The map of the Zambratija Bay with the sites (1 and 2) where a dense monospecific population of *Laurencia obtusa* were found.

Sl. 1: Zemljevid zambratijskega zaliva z označenima lokalitetama (1 in 2), kjer je bila ugotovljena gosta monospecifična populacija vrste *Laurencia obtusa*.

MATERIAL AND METHODS

The Zambratija Bay is located in the northwestern part of the Istrian peninsula, near Cape Savudrija, in Croatia (Fig. 1). The sea bottom is predominantly rocky, locally mixed sandy-rocky (Sladonja & Banovac-Kuča, 2014). A recent study concerning the reduction of chlorophyll *a* concentrations in a wider area, consistent with the decrease in concentrations of phosphate and ammonia (Solidoro *et al.* 2009; Mozetič *et al.* 2012), underlined the oligotrophication of the whole northern Adriatic basin over the last decade (Mozetič *et al.* 2010).

In September 2016, during a scuba diving survey in the upper-infralittoral belt of the Zambratija Bay, a dense monospecific population of *L. obtusa* were found. The area covered by the species was photographed and filmed. Its extension was measured by the use of satellite imagery (Google Earth) and the GIS program Manifold®.

Fresh samples were taken to the laboratory of the Marine Biology Station (NIB) in Piran and fixed in 4% formaldehyde solution. The species identification was made using a stereomicroscope Olympus SZH-ILLK, and a microscope Olympus BX51, and was in accordance with Falace *et al.* (2013) and Rodríguez-Prieto *et al.* (2013).

RESULTS AND DISCUSSION

In the middle part of the Zambratija Bay, a dense monospecific population of the invasive non-indigenous species *Caulerpa cylindracea* Sonder was found in 2016, but the record is not new, since the Zambratija Bay is currently considered the northernmost site where the establishment of *C. cylindracea* was confirmed earlier (Sladonja & Banovac-Kuča, 2014; Iveša *et al.*, 2015). But at two sites, which can be considered the entrance and the exit points of the bay, a dense monospecific population of *L. obtusa* (Fig. 2) were recorded for the first time. The two sites were characterized by carpets of interwoven thalli of this red alga, where holes made by fish species were evident (Fig. 3). In these cavities the presence of blennies was observed, mostly *Parablennius tentacularis* (Brünnich, 1768) and *Parablennius rouxi* (Cocco, 1833). The extension of the area covered by *L. obtusa* was estimated to be about 3215 m² at site 1 and 11618 m² at site 2 (Fig. 1), in a depth range from 1.0 m to 2.5 m. When thalli of *L. obtusa* were manually lifted from the substrate, thalli of *Halimeda tuna* (J. Ellis & Solander) J.V. Lamouroux were found at the sea bottom. The segments of thalli of this green alga were mostly whitish, which is normal after the release of gametes, when the outer involucres remain light due to the presence of calcium carbonate in cell walls (Lipej *et al.*, 2016). However, in this case the whitish colour of thalli could also be related to the overgrowing by *L. obtusa* and the consequent reduction of the light that reaches the green alga.



Fig. 2: Details of the apical portion of *Laurencia obtusa*; scale bar: 5 mm (photo: Martina Orlando-Bonaca).

Sl. 2: Podrobnosti apikalnega dela vrste *Laurencia obtusa*; velikostna lestvica: 5 mm (foto: Martina Orlando-Bonaca).

The wide population of *L. obtusa* was never observed during underwater surveys conducted in recent years. In this area, benthic communities dominated by brown algae from the genus *Cystoseira* (mainly *C. compressa* (Esper) Gerloff & Nizamuddin), *Padina pavonica* (Linnaeus) Thivy, and *H. tuna* were present (*pers. obs.*). Therefore, we assume that some environmental factors have probably changed and have favoured the extension of this red alga. Our hypothesis for this phenomenon takes into account the possibility that the establishment of the invasive green alga *C. cylindracea* in the Zabratiya bay has had a negative impact on native macroalgal assemblages, as reported by Bulleri *et al.* (2010). According to Bulleri *et al.* (2016), the species is able to enhance the competitive ability of algal turfs in respect to canopy-forming and encrusting macroalgae, by the alteration of some abiotic factors, like the enhanced trapping of sediments. Therefore, the spreading of *C. cylindracea* in the Zabratiya bay, may have led to the disappearance of *Cystoseira* spp. and other canopy forming macroalgae, with the consequent dense growth

of the lower vegetation cover. Such significant changes at the community level may have favoured the unusual formation of monospecific stands of *L. obtusa*. Additionally, Bulleri *et al.* (2016) reported that at pristine sites, the prevention of the re-invasion of *C. cylindracea* on experimental cleared plots, had favoured the recovery of canopy-forming and encrusting macroalgae.

However, in order to test this hypothesis, other sites along the Istrian coast, where the establishment of *C. cylindracea* was already confirmed (Sladonja & Banovac-Kuča, 2014; Iveša *et al.*, 2015), should also be surveyed in the nearby future. This is needed to verify all the changes in the composition and density of native macroalgal assemblages.

ACKNOWLEDGEMENTS

The authors would like to thank dr. Monica Moras and her students Elisabetta Borlina, Antonio Callegaro, Giacomo Cattaruzza, Elena Del Pup, Anthea Isola, Veronica Mariuz, Stefania Mazzega, Francesco Porracin

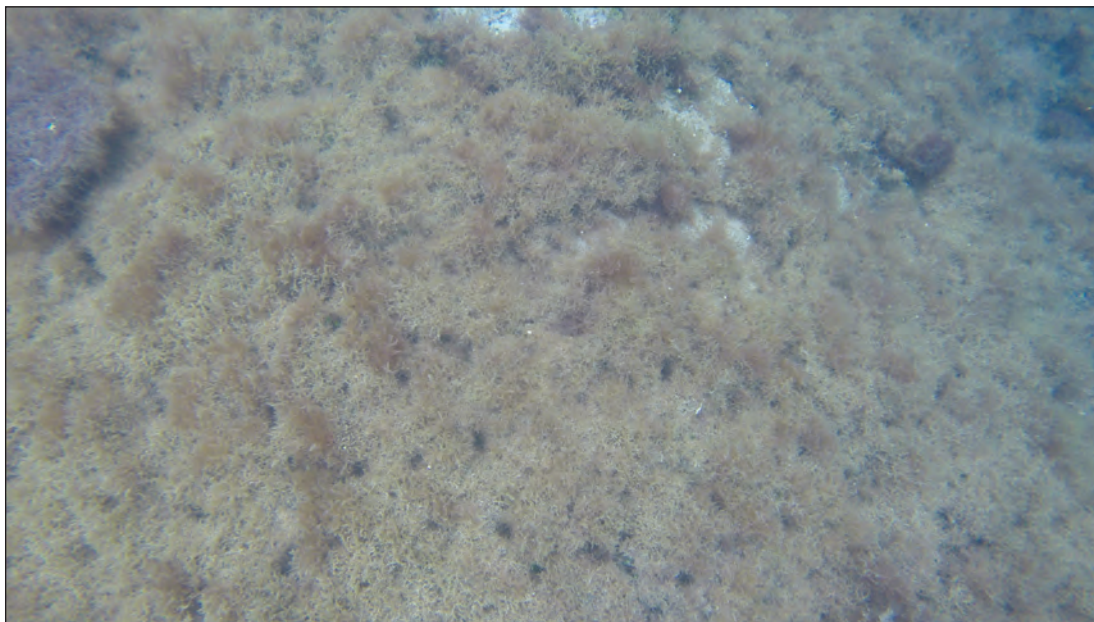


Fig. 3: A dense monospecific population of *Laurencia obtusa* were found in the Zambratija Bay (northern Adriatic Sea) in September 2016. The holes in the carpet of interwoven thalli were made by fish species, mainly blennies (photo: Monica Moras).

Sl. 3: Gosta monospecifična populacija vrste *Laurencia obtusa*, opažena v zambratijskem zalivu (severni Jadran) septembra 2016. Rove v preprogi steljk so naredile ribe, predvsem babice (foto: Monica Moras).

from the Liceo Scientifico Vendramini (Pordenone, Italy) that collaborated in the field work during their summer campus. Special thanks go to Milijan Šiško for the preparation of Figure 1, and to two anonymous reviewers for their suggestions and comments.

The first author acknowledges the financial support from the Slovenian Research Agency (research core funding No. P1-0237).

NENAVADNO RAZŠIRJANJE ALGE *LAURENCIA OBTUSA* (HUDSON) J.V. LAMOUREUX V ZAMBRATIJSKEM ZALIVU (SEVERNI JADRAN)

Martina ORLANDO-BONACA

Marine Biology Station, National Institute of Biology, SI-6330 Piran, Fornače 41
E-mail: martina.orlando@nib.si

Roberto ODORICO

SHORELINE Soc.Coop., AREA Science Park, IT-34149 Trieste, Padriciano 99
e-mail: roberto.odorico@shoreline.it

POVZETEK

Avtorja poročata o nenavadnem razširjanju rdeče alge *Laurencia obtusa* v plitvinah zambratijskega zaliva (severni Jadran). V zadnjih letih nista nikoli imeli priliko opazovati velike populacije te alge. V tem predelu so prevladovale rjave alge iz rodu *Cystoseira*. Avtorja domnevata, da so spremembe v okoljskih dejavnikih verjetno spodbudile razširjanje te rdeče alge. Ta hipoteza vključuje možnost, da je do tega pojava prišlo zaradi naselitve invazivne zelene alge *Caulerpa cylindracea* v zambratijskem zalivu, ki je imela negativen vpliv na samoniklo skupnost makroalg.

Ključne besede: *Laurencia obtusa*, monospecifična populacija, zambratijski zaliv, Jadransko morje

REFERENCES

- Antolić, B., A. Špan, A. Žuljević, V. Nikolić, I. Grubelić, M. Despalatović & I. Cvitković (2011):** A checklist of the benthic marine macroalgae from the eastern Adriatic coast: III. Rhodophyta 1: Ceramiales. *Acta Adriatica*, 52(1), 67-86.
- Avčín, A., I. Keržan, L. Kubik, N. Meith-Avčín, J. Štirn, P. Tušnik, T. Valentinčič, B. Vrišer & A. Vukovič (1973):** Akvatični ekosistemi v Strunjanskem zalivu I.: preliminarno poročilo. V: Akvatični sistemi v Strunjanskem zalivu I: skupno delo. Prispevki k znanosti o morju. Inštitut za biologijo univerze v Ljubljani, Morska biološka postaja Portorož, 5, 168-216.
- Avčín, A., N. Meith-Avčín, A. Vukovič & B. Vrišer (1974):** Primerjava bentoških združb Strunjanskega in Koprškega zaliva z ozirom na njihove polucijsko pogojene razlike. *Biol. vestn.*, 22(2), 171-208.
- Bulleri, F., D. Balata, I. Bertocci, L. Tamburello & L. Benedetti-Cecchi (2010):** The seaweed *Caulerpa racemosa* on Mediterranean rocky reefs: from passenger to driver of ecological change. *Ecology*, 91(8), 2205-2212 DOI 10.1890/09-1857.1.
- Bulleri, F., F. Badalamenti, L. Iveša, B. Mikac, L. Musco, A. Jaklin, A. Rattray, T. Vega Fernandez & L. Benedetti-Cecchi (2016):** The effects of an invasive seaweed on native communities vary along a gradient of land-based human impacts. *PeerJ*, 4:e1795; DOI 10.7717/peerj.1795.
- Curiel, D., A. Falace, V. Bandelj, S. Kaleb, C. Solidaro & E. Ballesteros (2012):** Species composition and spatial variability of macroalgal assemblages on biogenic reefs in the northern Adriatic Sea. *Botanica Marina*, 55(6), 625-638.
- Falace, A., G. Alongi, S. Kaleb & M. Cormaci (2013):** Guida illustrata alle alghe del Golfo di Trieste. Daewin Edizioni, Roma, 168 pp.
- Giaccone, G. (1978):** Revisione della flora marina del Mare Adriatico. *Annuario Parco Marino Miramare*, 6(19), 1-118.
- Giaccone, G., G. Alongi, F. Pizzuto & A.V.L. Cossu (1994):** La Vegetazione marina bentonica fotofila del Mediterraneo, 2: Infralitorale e Circolitorale: proposte di aggiornamento. *Bollettino dell'Accademia Gioenia di scienze naturali*, 27(346), 111-157.
- Gómez Garreta, A., T. Gallardo, M.A. Ribera, M. Cormaci, G. Furnari, G. Giaccone & C.-F. Boudouresque (2001):** Checklist of the Mediterranean seaweeds. III. Rhodophyceae Rabenh. 1. Ceramiales Oltm. *Botanica Marina*, 44, 425-460.
- Iveša, L., T. Djakovac & M. Devescovi (2015):** Spreading patterns of the invasive *Caulerpa cylindracea* Sonder along the west Istrian Coast (northern Adriatic Sea, Croatia). *Mar. Environ. Res.*, 107, 1-7.
- Latypov, Yu.Ya. (1986):** Coral Communities of the Namsu Islands (Gulf of Siam, South China Sea). *Mar. Ecol. Progr. Ser.*, 29, 261-270.
- Lipej, L., M. Orlando-Bonaca & B. Mavrič (2016):** Biogenic formations in the Slovenian sea. *Nacionalni inštitut za biologijo, Morska biološka postaja, Piran*, 204 pp.
- Matjašič, J., J. Štirn, A. Avčín, L. Kubik, T. Valentinčič, F. Velkoverh & A. Vukovič (1975):** Flora in favna Severnega Jadrana, prispevek 1. Slovenska akademija znanosti in umetnosti. Razred za prirodoslovne vede, 54 pp.
- Mozečić, P., C. Solidoro, G. Cossarini, G. Socal, R. Precali, J. Francé, F. Bianchi, C. De Vittor, N. Smolaka & S. Fonda Umani (2010):** Recent trends towards oligotrophication of the northern Adriatic: evidence from chlorophyll a time series. *Estuaries and Coasts*, 33, 362-375.
- Mozečić, P., J. Francé, T. Kogovšek, I. Talaber & A. Malej (2012):** Plankton trends and community changes in a coastal sea (northern Adriatic): bottom-up vs. top-down control in relation to environmental drivers. *Estuarine, coastal and shelf science*, 115, 138-148.
- Munda, I.M. (1979):** Some Fucacean associations from the vicinity of Rovinj, Istrian Coast, Northern Adriatic. *Nova Hedwigia*, 31, 607-666.
- Rodríguez-Prieto, C., E. Ballesteros, F. Boisset, & J. Alfonso-Carrillo (2013):** Guía De Las Macroalgas Y Fanerógamas Marinas Del Mediterráneo Occidental. Ediciones OMEGA, Barcelona, 656 pp.
- Sladonja, B. & V. Banovac-Kuča (2014):** New records of *Caulerpa cylindracea* Sonder (Caulerpales, Chlorophyta) in Istria, Croatia. *Annales, Series historia naturalis*, 24(2), 115-120.
- Solidoro, C., M. Bastianini, V. Bandelj, R. Codermatz, G. Cossarini, D. Melaku Canu, E. Ravagnan, S. Salon & S. Trevisani (2009):** Current state, scales of variability, and trends of biogeochemical properties in the northern Adriatic Sea. *Journal of Geophysical Research*, 114, C07S91, doi: 10.1029/2008JC004838.
- Vukovič, A. (1980):** Asociacije morskih bentoških alg v Piranskem zalivu. *Biol. vestn.*, 28(2), 103-124.
- Zieman, J.C., J.W. Fourqurean & R.L. Iverson (1989):** Distribution, abundance and productivity of seagrasses and macroalgae in Florida bay. *Bulletin of marine science*, 44 (1), 292-311.