

# ASSEMBLE



ASSOCIATION OF EUROPEAN MARINE BIOLOGICAL LABORATORIES EXPANDED

**Acronym: ASSEMBLE Plus**

***Title: Association of European Marine Biological Laboratories Expanded***

**Grant Agreement: 730984**

## **Deliverable D23.1**

### **EMBRC Italy TA assessment report**

**September 2022**

**Lead parties for Deliverable: EMBRC Italy**

**Due date of deliverable: M60**

**Actual submission date: M60**

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 730984. This output reflects the views only of the author(s), and the European Union cannot be held responsible for any use which may be made of the information contained therein.

## GENERAL DATA

Acronym: **ASSEMBLE Plus**

Contract N°: **730984**

Start Date: **1<sup>st</sup> October 2017**

Duration: **60 months**

Deliverable number	D23.1
Deliverable title	EMBRC Italy TA Assessment report
Submission due date	M60
Actual submission date	M60
WP number & title	WP23 - TA12 Transnational access to EMBRC Italy
WP Lead Beneficiary	SZN
Participants (names & institutions)	Wiebe Kooistra (SZN) Giorgio Maria Vingiani (SZN) Andrea Tarallo (SZN, until 09/2021) Lucia Bongiorno (ISMAR-Venice) Giulia Maricchiolo (IRBIM-Messina)

### Dissemination Type

Report	<input checked="" type="checkbox"/>
Websites, patent filling, etc.	<input type="checkbox"/>
Ethics	<input type="checkbox"/>
Open Research Data Pilot (ORDP)	<input type="checkbox"/>
Demonstrator	<input type="checkbox"/>
Other	<input type="checkbox"/>

### Dissemination Level

Public	<input checked="" type="checkbox"/>
Confidential, only for members of the consortium (including the Commission Services)	<input type="checkbox"/>



## Document properties

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<b>Version</b>	1.0

## Abstract

**This deliverable describes the outcomes of the trans-national access programme (TNA) offered at EMBRC Italy, in terms of: installations available, applications received and user's projects performed (through on-site and / or remote access), users' profile and other stats (country of origin, career profile, type of organization, satisfaction of the services used).**



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## 1. Introduction

Transnational Access in ASSEMBLE Plus is provided to a total of 36 marine stations in 15 countries. In the whole consortium, the stations provide access to a high diversity of marine environments; from the high Arctic (IOPAN) and Antarctic (UKRI-BAS) to the tropics (IUI and NIOZ-CNSI) and the mid-Atlantic ridge (CCMAR and IMAR). Within mainland Europe, access is provided to the Mediterranean, the Atlantic and the Baltic seas. Habitats comprise estuaries (e.g. SZN, ISMAR, CCMAR, AWI, IOPAN, UG), mega-tidal seas (SBR), cold-water coral reefs (KMRS, NUIG, SAMS), brackish seas and sea ice communities (IOPAN, TSZ, ARI, HBS), near-shore deep sea (HCMR, IMEV, NUIG, UGOT, SAMS) and volcanic seeps (high CO<sub>2</sub> – low pH; HCMR, SZN, IMAR). The TA-providing stations (access providers) have modern research laboratories and a wide array of specialized research facilities to support internal and external users. Several of these also have technological backup of nearby university institutions.

This deliverable describes the outcomes of the transnational access programme (TNA) offered at EMBRC Italy, in terms of: installations available, applications received and user's projects performed (through on-site and / or remote access), users' profile and their stats (country of origin, career profile, type of organization, satisfaction of the services used).

## 2. Objective

This deliverable intends to show the outcomes of the transnational access programme executed at EMBRC Italy, hence contributing to the ASSEMBLE Plus objectives:

- Enhance transnational access to a coordinated set of state-of-the-art European infrastructures for marine biology and ecology
- Improve service provision by these infrastructures in line with their areas of excellence in marine biology and ecology, with emphasis on developing novel key enabling technologies and data solutions
- Strengthen complementarity and interoperability within the consortium and with related infrastructures

## 3. Outcomes of the Transnational Access programme

### 3.1 Overview of the access provider(s)

EMBRC-Italy is organized into an integrated national marine biological resource centre with its access being coordinated via a single-entry point, namely SZN. Through three of its installations (SZN, IRBIM-Messina and ISMAR-Venice) EMBRC-Italy provided access to different Mediterranean ecosystems, and to their biota. SZN provided access to species rich Mediterranean ecosystems including seagrass beds



and a shallow high-CO<sub>2</sub> – low pH volcanic cold seep. SZN led NA1 and contributed to NA3, NA4, JRA1, JRA3 and JRA4.

IRBIM-Messina provided access to platforms for microbial and molecular genetics, microscopy, and for handling and maintaining in culture aerobic and anaerobic marine microorganisms. The Institute has mesocosm facilities directly near the coast, available for studying impacts on an ecosystem under field relevant conditions.

ISMAR-Venezia provided access to the Venice lagoon and the open northern Adriatic Sea, to the offshore oceanographic "Acqua Alta" platform and to an LTER station in the North Adriatic (focused on plankton research and biological oceanography), to labs and aquarium facilities.

Each installation included teaching facilities and research units providing high quality science.

### 3.2 Installations offered

EMBRC Italy offered access to three marine stations with a specific set of installations:

#### 3.2.1 Stazione Zoologica Anton Dohrn (SZN)

- Access to laboratories:
  - Sequencing and Molecular Analysis Center (CSAM): Access to experimental unit of services, training and consulting in the field of Molecular Biology and sequencing of DNA sequences
  - Marine Organism Taxonomy (MOTax): Access to counselling unit for the taxonomy and identification of various groups of marine organisms, merging traditional morphological approaches and modern technologies such as electron microscopy and barcoding
  - Advanced Microscopy Center (CeMA): Access to technique expertise and equipment for optical microscopy, conventional fluorescence techniques (epifluorescence or confocal) and electronic microscopy (TEM, SEM)
  - Environmental Monitoring & Analysis (MAA): Access to support for sampling and laboratory activities aimed at determining the main environmental variables and/or performing chemical analyses directly.
  - SZN research laboratories of different research groups
- Access to boats:
  - Coastal research vessels (IRM): Access to ecosystems (Gulf of Naples, Subtidal, LTER MareChiara, Ischia, High CO<sub>2</sub>, low pH)

#### 3.2.2 Istituto per le Risorse Biologiche e le Biotecnologie Marine (IRBIM-Messina)

- Access to IRBIM-Messina facilities:
  - Research laboratories of different research groups
  - Ecosystems (Lesina lagoon) by means of coastal vessel

#### 3.2.3 Istituto di Scienze Marine (ISMAR-Venezia)

- Access to ISMAR-Venice facilities:



- Research laboratories (plankton, benthos, microscopy, molecular and ocean chemistry facilities)
- Ecosystems (Venice lagoon, LTER stations, fixed oceanographic platform Acqua Alta)

## 4. Applications received

### 4.1. Origin country of applicants

EMBRC Italy has received a total of 83 applications in the nine calls of TNA, from a total of 116 applicants. Among these, 82 were based in European countries while 34 were from other non-European countries.

### 4.2. Applicants profile

#### 4.2.1. Home institution type

Applicants were based in academic institutes (universities: 67 applicants, 57.8%; research organizations: 49 applicants, 42.2%).

#### 4.2.2. Career status

The most common career profile of the applicant was that of PostDoc (41 applicants, 35.3%), followed by early career scientist (28 applicants, 24.1%) senior scientist and PhD student (20 applicants; 17.2% each), researcher (4 applicants; 3.4%) and other (3 applicants; 2.6%)

## 5. User hosted and their stats

### 5.1. Projects completed

Overall, EMBRC Italy has hosted 59 projects for a total of 91 users, including a special case of six users of the project Da VINCI (n. 9161), with Dr. Kimberlee Thamatrakoln as the Project Leader. Specifically, SZN hosted 45 projects, IRBIM-Messina 3 and ISMAR-Venezia 11. Users who had access to SZN were 58, 5 for IRBIM-Messina and 16 for ISMAR-Venezia.

A list of projects completed at EMBRC Italy is available in "[Appendix 1 – List of user-projects completed](#)" further below.

A list of publications resulting from completed projects at the moment of the writing of this deliverable is available in "[Appendix 2 – Scientific output of the users](#)".

### 5.2. Installations used

According to Annex 2A of the 3<sup>rd</sup> amendment of the Grant Agreement EMBRC-IT offered to deliver at SZN 452 User Access Days to laboratories and 94 Access Days to boats, at CNR-ISMAR 297 User Access Days and at CNR-IRBIM 245 User Access Days. At the close of the 9th Call, SZN delivered 756 user access days to laboratories, 65 access days to boats. CNR-ISMAR delivered 224 user access days and CNR-IRBIM 44 user access days. Details of Unit costs and total costs can be found in the Table below.



Installation	Type of access	Units offered	Unit cost €	Sum €	Units delivered	Sum €
SZN	to labs: user day	452	500	226000	756	378000
SZN	to boats: day	94	1115	104810	65	72475
CNR-ISMAR	to all: user day	297	360	106929	224	80640
CNR-IRBIM	to all: user day	245	350	85750	44	15400
Total		1088		523489	1089	546515

The installations used were:

SZN Access to laboratories comprised 756 access units, which is more than the 452 originally planned. SZN was able to accommodate the higher than expected number of user access days to its installations. This extra access compensated the lower than expected number of requests for access to CNR-IRBIM. This was mitigated partly by proposing Users to do carry out their project at CNR-IRBIM instead of at SZN because IRBIM was actually more suited for their project than SZN. This was gladly accepted in a few cases.

Service staff within SZN's Research Infrastructure department's Units: molecular sequencing & analysis centre (CSAM) delivered 80 user access days, classical and molecular taxonomy (MOTax) 78, the advanced microscopy centre (CeMA) 52, and environmental monitoring & analysis (MAA) 3. Within the scientific departments, the research laboratories delivered the remaining 543 user access days.

### 5.3. User satisfaction

Overall, users have positively evaluated the services offered (Good: 20.4%; Very Good: 69.4%) by EMBRC-Italy installations. A minor part of users (10.2%) were mildly satisfied with the services.

The element that emerged more frequently as a source of doubts is the post-access financial management. This may be due to the different regulations of the reimbursement procedures between EMBRC-Italy and Users' Home Institute/Country. All the users declared that their projects would not have been possible without the support of ASSEMBLE Plus, mainly due to their inability to pay travel & subsistence for one or more of the group members.





#### 5.4. Projects not completed or cancelled

Of the total 82 applications that passed the eligibility and technical feasibility checks and the scientific evaluation, 15 projects were cancelled (18.29%) and 9 (10.97% were rejected because of financial constraints, which only involved projects proposed in the 9<sup>th</sup> Call.

## 6. Use of resources

Beneficiary / Linked Third Party	Declared	short name of the installation(s)	explanations of tasks
Wiebe Kooistra	0 PM	SZN	Coordination of TNA to SZN, ISMAR and IRBIM  <i>Note: PM dedicated to the aforementioned task are covered by the regular monthly salary of Wiebe.</i>

## 7. Conclusion

The three marine installations involved in ASSEMBLE Plus project (SZN, IRBIM-Messina and ISMAR-Venezia) were able to spend all the budget that was allocated by EMBRC-Italy, completing a high number of projects that delivered a total amount of 145 scientific publications at the time of writing this report (09.2022).

In particular, SZN was among the installations receiving the largest numbers of hosted projects and users in the entire ASSEMBLE Plus project. To assess the impact of user-groups of more than two persons, SZN agreed with the coordinator to host a large project, coordinated by Dr. Kimberlee Thamatrakoln. The project involved high-scientific-impact research conducted by a team of seven Users, collaborating with several members of the SZN staff, and making use of multiple research services.

Overall EMBRC-Italy was able to carry out the pipeline, procedures and best practices designed and planned during the ASSEMBLE Plus WP3 NA1, bringing satisfactory results both in terms of number of projects and scientific production.



## 8. Appendices

### 8.1. List of user-projects completed at EMBRC Italy

Access provider	Project title	Project acronym	Application number	Project leader	Other team members
IRBIM	Biodiversity and population connectivity of sparid fish parasites in the Mediterranean Sea	SParaFish	407	Simona Georgieva	
IRBIM	Molecular systematics and biogeography of <i>Cystoseira</i>	CYSTEMATIC	324	João Neiva	Cristina Paulino
IRBIM	Physiological responses of Mediterranean kelp species to climate change	MediKelps	8423	Neusa Martins	Luis Barreto
ISMAR	Atlantic Cumulative Effects Assessment from Ocean Energy	AtlantiC-OcEan	12082	Daniel Depellegrin	
ISMAR	Biological roughness and habitat mapping for seabed flux exchanges in Venice Lagoon, Italy	BRAHMS	10732	Hachem Kassem	Carl Amos
ISMAR	Development of an in-situ eDNA analysis approach for multidisciplinary biodiversity assessment	Min-eDNA	20080	Maddalena Tibone	Bernardette O'Neil
ISMAR	Fish Activity Rhythms in the Adriatic at Diel And Yearly time scales	FARADAY	9827	Jacopo Aguzzi	Marco Francescangeli
ISMAR	Marine biodiversity monitoring and surveillance using invertebrate-derived DNA (iDNA) trapped by resident filter-feeders	iDNA trap	13434	David Stanković	Luca Mirimin
ISMAR	Microbiome composition of sea urchin <i>Paracentrotus lividus</i> from different populations (Mediterranean, Atlantic)	PALIMI	11184	Georgia Tarifa	
ISMAR	Microbiome composition of sea urchin <i>Paracentrotus lividus</i> from different populations (Mediterranean, Atlantic) in correlation to the seasonal temperatures	PALIMI	13227	Georgia Tarifa	
ISMAR	Molecular ecology of the bacterial pathogen <i>Legionella</i> in the Venice lagoon	LEVEL	20068	Shira Ninio	
ISMAR	North Adriatic Phytoplankton Assemblages	NAPA	381	Ivano Vascotto	
ISMAR	Scenario-based analysis of cumulative effects and spatial	ENSYSTRA	8476	Laura Gusatu	



	conflicts from offshore renewable energy transitions in the North Sea				
ISMAR	Transcriptome and microbiome response of the endemic Mediterranean reef-builder coral <i>Cladocora caespitosa</i> to heat stress	Coral Heat	8410	David Stanković	Andreja Ramsak
SZN	A high resolution cellular atlas of the sea urchin embryo	ATURCHIN	310	Pedro Martinez	
SZN	Assessing species boundaries: Copepod population structure in transitional climate areas in the Southwestern Atlantic and Mediterranean Sea	COPNET	12902	Erica Caroline Becker Maria	
SZN	Assessing the respiratory, gut and skin health status of sea turtles of the Eastern Mediterranean	MICROST	13121	Dalit Meron	Danny Morick
SZN	Assessment of parasites and pathologic conditions of the striped clam <i>Chamelea gallina</i> populations	GALLINA	12491	Seila María Díaz Costas	
SZN	Benthic diatoms of the Gulf of Naples: morphology and molecular approaches	BEDIAMM	8385	Paola Cardenas	
SZN	Benthic foraminiferal metabarcoding and morphology-based assessment in hydrothermal areas around Ischia Island: the evaluation of the effects of ocean acidification	BFOA	13444	Jan Pawlowski	
SZN	Benthic monitoring of highly polluted Gulf of Bagnoli (Italy) using eDNA	BeDNA	399	Jan Pawlowski	Fabrizio Frontalini
SZN	Characterization of the epizoic microbiota of the Mediterranean sea turtles	MICROTURL	330	Suncica Bosak	Klara Filek
SZN	Chemosynthetic Symbioses of the Gulf of Naples	SymbioVent	12037	Harald Gruber-Vodicka	Nikolaus Leisch
SZN	Coccolithophore diversity and seasonality at LTER station Mare Chiara (Naples)	CoccoNaple	418	Sabine Keuter	
SZN	Combining Topographical and Current information to identify important foraging habitats for Seabirds across coastal environments	TOCUBIRD	271	James Waggitt	Shaun Fraser
SZN	Comparative study of <i>Pseudo-nitzschia</i> assemblage from Central Adriatic and Tyrrhenian Sea (or other local marine environment): morphological and molecular approach	PSEUDO-COMP	8406	Jasna Arapov	Sanda Skejić



SZN	Conservation of the biomineralization toolkit across life history stages in sea urchins	BioMinCon	13365	Jeffrey Thompson	
SZN	Cryptic speciation and larval ecology shifts in marine snail of the genus <i>Rissoa</i>	RiSpec - Rissoa Speciation	62	Maria Vittoria Modica	
SZN	Determination of Cryodamages in Sea urchin eggs using TEM and SEM	CRYODAMAGE	10946	Sara Campos	Estefania Paredes
SZN	Development of a novel biomarker for microplastics in marine environments	AS_biomark	253	Lion Novak	
SZN	Development of gene editing using CRISPR-Cas9 for the emerging diatom model system for life cycle regulation <i>Cylindrotheca closterium</i>	CRISPI	8453	Gust Bilcke	Sien Audoor
SZN	Diatom TAXonomy and Ecological Dynamics	DITAX	13117	Yoav Avrahami	
SZN	Diatom Virus Interactions in Natural Communities	Da VINCi	9161	Kimberlee Thamatrakoln	Kay Bidle
SZN	Effects of microplastics on the development of sea urchins ( <i>P. lividus</i> )	PlastUrDev	257	Eva Jimenez Guri	Flora Rendell-Bhatti
SZN	environmental DNA as a monitoring tool for deep-sea fish and sharks: ConDor sEaMount as a case study	TANDEM	276	Diana Catarino	
SZN	Evo-devo of the deuterostome hematopoietic system	EVOBLOOD	19912	Juan Pascual-Anaya	
SZN	EVOLution of REgeneration and REproduction in syllid annelids: an OMICS approach	EvoRe2omics	9842	Patricia Alvarez-Campos	Aida Verdes
SZN	FACS isolation and transcription profiling of ciliary band neurons in sea urchin larvae	FACSseq1	267	Cedric Patthey	
SZN	Foraminifera in Naples experiencing systematic toxicity	FINEST	11247	Michael Lintner	
SZN	Ichthyoplankton Biodiversity on the Atlantic seamount Condor using DNA metabarcoding	IBAC	58	Diana Catarino	
SZN	Identification of <i>Pseudo-nitzschia</i> strains from the Southeast Pacific (Chilean coastal and offshore waters)	PseuSEPa	13346	Peter von Dassow	
SZN	Kinorhynch phylogenomics based on transcriptomic sequence data	KinoTrans	350	Martin Sørensen	Maria Herranz Matesanz
SZN	Local adaptation in different marine habitats	ADAMAR	12026	Katerina Vasileiadou	
SZN	Long-term Diversity Shifts in the South Eastern Mediterranean Copepod Assemblages (SEMCOP)	SEMCOP	13488	Tamar Guy-Haim	Ximena Velasques-Dubinsky



SZN	Metabarcoding analysis of diatoms to explore phenology and phylogenetic diversity	MAD-EPPD	415	Mariarita Caracciolo	Nathalie Simon
SZN	Microbiome composition of sea urchin <i>Paracentrotus lividus</i> from different populations (Mediterranean, Atlantic) in correlation to the seasonal temperatures	PALIMI	13227	Georgia Tarifa	
SZN	Morphological characterization of new COastal HETerocapsa Species	COHETES	11280	Nagore Sampedro	
SZN	Potential use of putative neutral and adaptive genome data on <i>Posidonia oceanica</i> management and conservation	UMBRAL	13029	Maria Dolores Belando Torrentes	
SZN	Reconstructing acclimatory responses of Mediterranean marine calcifiers to ocean acidification via an integrated structural, mineralogical, microbiological, metabolic and isotopic approach	ReMedCalOA	9434	Blanca Figuerola	Elisenda Ballesté
SZN	Role of signalling pathways in adult sea urchin skeletal growth	ASke	420	Jeffrey Thompson	Paola Oliveri
SZN	Search for molecular markers of resistance to <i>Perkinsus olseni</i> infection in <i>Ruditapes decussatus</i>	Tools4Breed	8254	Sergio Fernandez-Boo	Ana Cavadas
SZN	Species-specific effect of diatoms on larval settlement in the marine worm <i>Platynereis dumerilii</i>	SPEC-ID	13405	Elizabeth Williams	
SZN	The effect of ocean acidification on seagrass community metabolism	ECo-MOAR	8205	Dirk Koopmans	Lauren Arrington
SZN	The impact of chronic ocean acidification on the ecosystem functions	DiveEcoFun	12990	Lucia Porzio	Shigeki Wada
SZN	Transmitters in the control of sea urchin embryo cytoskeleton	TCSUEC	8460	Yuri Shmukler	Denis Nikishin
SZN	Uncovering host-specificity in tetractinellid sponges	HosTec	19963	Cristina Díez Vives	
SZN	Unlocking the Pharmaceutical Potential of Marine Dissolved Organic matter	pharmaDOM	11484	Teresa S. Catalá	
SZN	Vertical distribution of diatom parasites in coastal environments	Verdi	305	Albert Reñé	Esther Garcés



## 8.2. Scientific output of the users at EMBRC Italy

Authors	Title	Year of publication	Type of publication	DOI	Open Access?
Diogo, P.; Martins, G.; Quinzico, I.; Nogueira, R.; Gavaia, P.J.; Cabrita, E.	Electric ultrafreezer (- 150 °C) as an alternative for zebrafish sperm cryopreservation and storage	2018	Journal article	10.1007/s10695-018-0500-6	N
Rodriguez-Riveiro, R.; Heres, P.; Paredes, E.	Cryopreservation of Blue mussel ( <i>Mytilus galloprovincialis</i> ) trochophore larvae and larval rearing development	2018	Book/ Monograph	-	Y
Rodriguez-Riveiro, R.; Heres, P.; Paredes, E.	Cryopreservation of mussel trochophore larvae and long-term effects: from larval rearing to settlement	2018	Book/ Monograph	-	Y
Heres, P.; Rodriguez-Riveiro, R.; Troncoso, J.; Paredes, E.	Toxicity tests of cryoprotecting agents for <i>Mytilus galloprovincialis</i> (Lamarck, 1819) early developmental stages	2019	Journal article	10.1016/j.cryobiol.2019.01.001	Y
Paredes, E.; Bellas, J.	The Use of Cryopreserved Biological Material for Water Quality Assessment	2019	Journal article	10.3389/fmars.2019.00454	Y
Rodriguez-Riveiro, R.; Heres, P.; Troncoso, J.; Paredes, E.	Long term survival of cryopreserved mussel larvae ( <i>Mytilus galloprovincialis</i> )	2019	Journal article	10.1016/j.aquaculture.2019.734326	N
Heres, P.; Paredes, E.	Cryopreservation of clams for conservation of threatened fishing resources	2020	Ephemera		Y



Medrano, A.; Hereu, B.; Mariani, S.; Neiva, J.; Pagès-Escolà, M.; Paulino, C.; Rovira, G.; Serrão, E.A.; Linares, C.	Ecological traits, genetic diversity and regional distribution of the macroalga <i>Treptacantha elegans</i> along the Catalan coast (NW Mediterranean Sea)	2020	Journal article	10.1038/s41598-020-76066-6	Y
Mulas, Martina; Neiva, Joao; Sadogurska, Sofia S.; Ballesteros, Enric; Serrao, Ester A.; Rilov, Gil; Israel, Alvaro	Genetic affinities and biogeography of putative Levantine-endemic seaweed <i>Treptacantha rayssiæ</i> (Ramon) M.Mulas, J.Neiva & A.Israel, comb. nov. (Phaeophyceae)	2020	Journal article	10.5252/cryptogamie-algologie2020v41a10	N
Waggitt, J.J.; Torres, R.; Fraser, S.	Foraging seabirds respond to an intermittent meteorological event in a coastal environment	2020	Journal article	-	Y
Becker, EC, Mazzocchi, MG, de Macedo-Soares, LCP, Brandao, MC, Freire, AS	Latitudinal gradient of copepod functional diversity in the South Atlantic Ocean	2021	Journal article	10.1016/j.poccean.2021.102710	Y
Cavaliere, M, Angeles, IB, Montresor, M, Bucci, C, Brocani, L, Balassi, E, Margiotta, F, Francescangeli, F, Bouchet, VMP, Pawlowski, J, Frontalini, F	Assessing the Ecological Quality Status of the Highly Polluted Bagnoli Area (Tyrrhenian Sea, Italy) using Foraminiferal eDNA Metabarcoding	2021	Journal article	10.1016/j.scitotenv.2021.147871	N
Cavaliere, M, Angeles, IB, Montresor, M, Bucci, C, Brocani, L, Balassi, E, Margiotta, F, Francescangeli, F, Bouchet, VMP, Pawlowski, J, Frontalini, F	Assessing the ecological quality status of the highly polluted Bagnoli area (Tyrrhenian Sea, Italy) using foraminiferal eDNA metabarcoding	2021	Journal article	10.1016/j.scitotenv.2021.147871	Y



Dominic Olver, Pablo Heres, Estefania Paredes, James Benson	Time Dependent Osmotic Damage in Sea Urchin Oocytes	2021	Meeting Abstract	10.1016/j.cryobiol.2020.10.120	Y
Gusatu, LF, Menegon, S, Depellegrin, D, Zuidema, C, Faaij, A, Yamu, C	Spatial and temporal analysis of cumulative environmental effects of offshore wind farms in the North Sea basin	2021	Journal article	10.1038/s41598-021-89537-1	Y
João Miranda Neiva	DNA Barcoding Of Atlantic <i>Cystoseira</i> Sensu Lato Supports Taxonomic Re-Arrangements And Reveals Novel Biogeographic Insights	2021	Meeting Abstract	-	Y
Sabine Keuter, Jeremy R. Young, Gil Koplovitz, Adriana Zingone and Miguel J. Frada	Novel heterococcolithophores, holococcolithophores and life cycle combinations from the families Syracosphaeraceae and Papposphaeraceae and the genus <i>Florisphaera</i>	2022	Journal article	10.5194/jm-40-75-2021	Y

