ASSEMBLE

ASSOCIATION OF EUROPEAN MARINE BIOLOGICAL LABORATORIES EXPANDED

Acronym: ASSEMBLE Plus

Title: Association of European Marine Biological Laboratories Expanded

Grant Agreement: 730984

Deliverable D28.1

SOI TA assessment report

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GENERAL DATA

Acronym: **ASSEMBLE Plus**

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Dissemination Type

Report	☒
Websites, patent filling, etc.	☐
Ethics	☐
Open Research Data Pilot (ORDP)	☐
Demonstrator	☐
Other	☐

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Public	☒
Confidential, only for members of the consortium (including the Commission Services)	☐

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Document properties

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Abstract

This deliverable describes the outcomes of the trans-national access programme (TNA) offered at SOI, 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_2 – 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.

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2. Objective

This deliverable intends to show the outcomes of the transnational access programme executed at SOI, 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;
- Lay the logistical and strategic foundations to expand the coverage of the European Marine Biological Resource Centre (EMBRC) in both its scope and its geographical distribution and to consolidate its long-term sustainability.

3. Outcomes of the Transnational Access programme

3.1 Overview of the access provider

SOI is infrastructure partner of EMBRC-UK. It is an interdisciplinary research institute, hosting the "Marine Alliance for Science and Technology for Scotland" (MASTS), a £18 million Scottish Government Initiative. It gives access to ecosystems, being at easy distance of a variety of North Sea habitats including rocky coast, estuaries and sandy beaches including areas of special scientific interest and

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conservation for habitats, birds and seals. The Isle of May and the Bass Rock, internationally important sites for seabirds and seals. The biological resources offered include benthic biota, North Sea fish and crustaceans as well as specialised requirements such as amphioxus and zebra and puffer fish.

SOI offered a diverse set of facilities for marine biology, being supplied of 250000 gallons of filtered seawater per day. The aquarium comprises an ambient seawater circulation for fish and invertebrates, environmentally controlled warm water and cold-water recirculation systems and a Home Office Licensed facility. The largest seal experimental facility in Europe comprises a main 40 m pool and ancillary pools for behavioural and physiological studies. A flume for sediment studies, laminar flow hoods for tissue culture and laser scanning confocal light and scanning electron microscopy. SOI provide as well facilities for the design and manufacture of animal-borne sensors and instrumentation and laboratories for molecular, physiological, behavioural and ecological studies

3.2 Installations offered

SOI offered access to a specific set of installations:

- Advanced microscopy: light, confocal, fluorescence, SEM. All of them as on-site service.
- Ecosystems: Coastal research vessels for seals capture and 5-m RIB equipped with hydrophone
- Seal pool: pool facility with support
- Aquarium: Extensive seawater pool facility for marine research and equipment testing, licenced by EU regulatory body to carry out scientific research with seals.

4. Applications received

4.1. Origin country of applicants

SOI has received a total of 8 applications during the nine calls of TNA. Among these, 6 applicants were based in European countries while 2 applicants came from other non-European countries.

4.2. Applicants profile

4.2.1. Home institution type

Applicants were mostly based in academic institutes (universities: 63.6%; research organizations: 27.3%).

4.2.2. Career status

The most recurring career profile of the applicant was early career scientist (45.5%), postdoc (27.3%), PhD student (18.2%), senior (9.1%).

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5. User hosted and their stats

5.1. Projects completed

Overall, SOI has hosted 2 projects for a total of 3 users. All the projects were carried out on-site. The list of projects completed at SOI is available in "Appendix 1 – List of user-projects completed" further below.

5.2. Installations used

The installation used in all the projects was "Ecosystem", which provided 40 units of access (user /day).

5.3. User satisfaction

Overall, users have positively evaluated the services offered (Very good: 66.7%; Good: 33.3%). Comments from the users were the following:

- no further suggestions can be made to facilitate access and make it more pleasant and comfortable and professional as we had the pleasure to experience. Big THANKS to the whole team at SAMS and CCAP!!
- The access provided us not only with superb scientific exchange but also with the possibility for a new scientific network!
- We are very pleased with our TA and would like that the Assemble Plus will continue in the future.

5.4. Projects not completed or cancelled

COVID was a major reason for cancelled programmes but also the fact that the delay led to changes in objectives and funding profiles makings some work less of a priority.

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6. Use of resources

Beneficiary / Linked Third Party	**PM**	**short name of the installation(s)**	**explanations of tasks**
USTAN	0.45	Ecosystem	PAM, determine photosynthetic activity of biofilms
USTAN	0.45	Ecosystem	MagPI, determine biofilm strength
USTAN	0.45	Ecosystem	CSM; Determine sediment resistance to erosion
USTAN	0.23	Advanced microscopy	LTSEM; Advanced microscopy
USTAN	2.5	Ecosystem	Building and maintenance of biofilm incubation systems, post analysis of samples and preparation of paper
USTAN	0.4	Ecosystem	Transformation of the bacterial strains
USTAN	0.3	Ecosystem	Inoculum at preparative and work volumes
USTAN	0.3	Ecosystem	Induction with IPTG at OD 0.6 and harvest of 37°C samples
USTAN	0.2	Ecosystem	Harvest of 20°C samples and cell lysis and SDS-PAGE Gel test (part 1)
USTAN	0.1	Ecosystem	SDS-PAGE Gel test (part 2)

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7. Conclusion

Experiences gained regarding giving access to users

We learned that the detail and organisation required to host visiting scientists had to be extremely detailed. Unless great care was taken there were often issues that arose that had not been predicted. However, this was a rapid learning process and it became clear that it was beneficial to both parties to fully understand the capabilities of the visitors and the equipment and support that could be provided by the host. In conclusion, this was an extremely valuable experience and very beneficial for future TNA programmes

Difficulties encountered and overcome

As above, the major difficulties encountered were due to the logistic requirements of the experimental system in terms of the ambition of the visiting researchers. These difficulties were rapidly overcome due to good communication and understanding of the available capability and what it could deliver within the relatively short time span of the TNA programme.

Reflections on collaborations or strict service use in terms of benefits for institute and in-house scientists, future collaborations with users

There was some bureaucracy in terms of agreeing contracts etc which made the process slightly more difficult than perhaps it should have been. However, this is difficult to overcome since that is a legal framework under which such visiting work can be conducted. it is important that health and safety and for example insurance issues are fully understood and resolved before work commences. Experience of this programme will hopefully make these administrative hurdles seem less severe in the future.

Other impacts

The other impact of the work includes extension of our academic networks and increase in the reputation of the facilities and capabilities of the institute in addition to that the scientific publication between the members of the team was produced and it was valuable in providing training for El early career researchers joining the team and participating in the planning execution and final delivery of a scientific product, up application in a well ranked journal.

Rimmer, JEV, Hubas C, Wyness AJ, Jesus B, Hartley M, Blight AJ, Prins A, Paterson DM, 2022. The response of microphytobenthos to physical disturbance, herbicide, and titanium dioxide nanoparticle exposure Marine Pollution Bulletin 185 (2022) 114348, https://doi.org/10.1016/j.marpolbul.2022.114348.

8. Appendices

8.1. List of user-projects completed at SOI

- Project title: Anti-Inflammatory Marine microalgal Enzyme Characterization (AIMEC). Users: Giorgio Maria Vingiani, (SZN, IT).
- Project title: Microphytobenthos Biofilm structure and function under environmental challenge (MicroBE). Users: Cédric Hubas, Antoine Prins (Musèum National d'Histoire Naturelle, FR). Services used: Aquaria and tanks.

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