

ASSEMBLE



ASSOCIATION OF EUROPEAN MARINE BIOLOGICAL LABORATORIES EXPANDED

NA4.- Long-term sustainability of Marine Biological Stations

Ibon Cancio

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Galway, 11th October 2018



SUSTAINABILITY of RIs IN H2020 PROPOSALS is like **TEENAGE SEX**:

Everyone talks about it, nobody knows how to do it, everyone thinks everyone else is doing it & so everyone claims they are doing it



WP6 (NA4)- OBJECTIVES

- Analyze the past/present scientific, technological & social performance of MBSs

PAST



- Analyze the business models of MBSs Infrastructures & projection into the future.

PRESENT

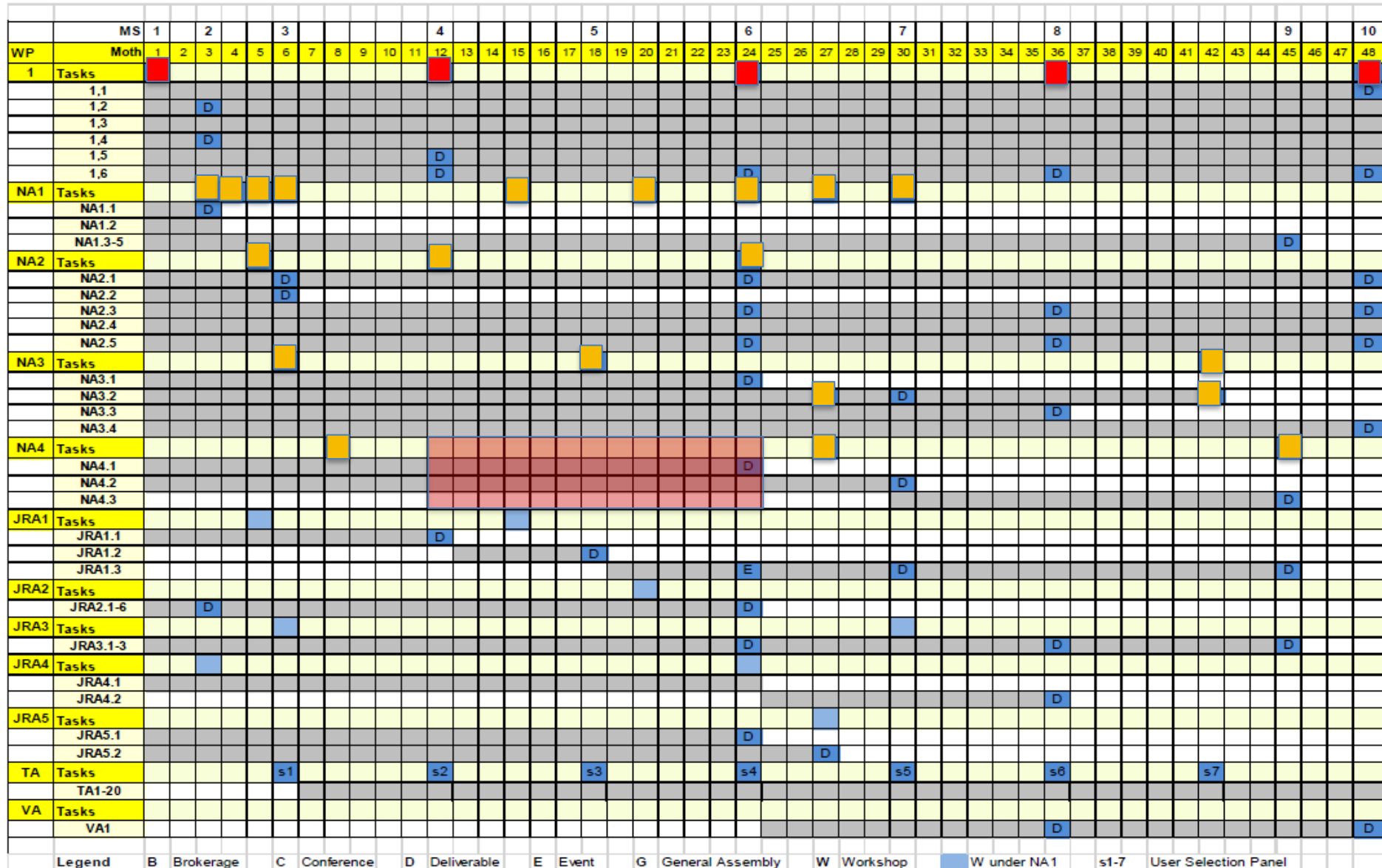


- Negotiate & secure funding streams beyond the H2020 framework.

FUTURE

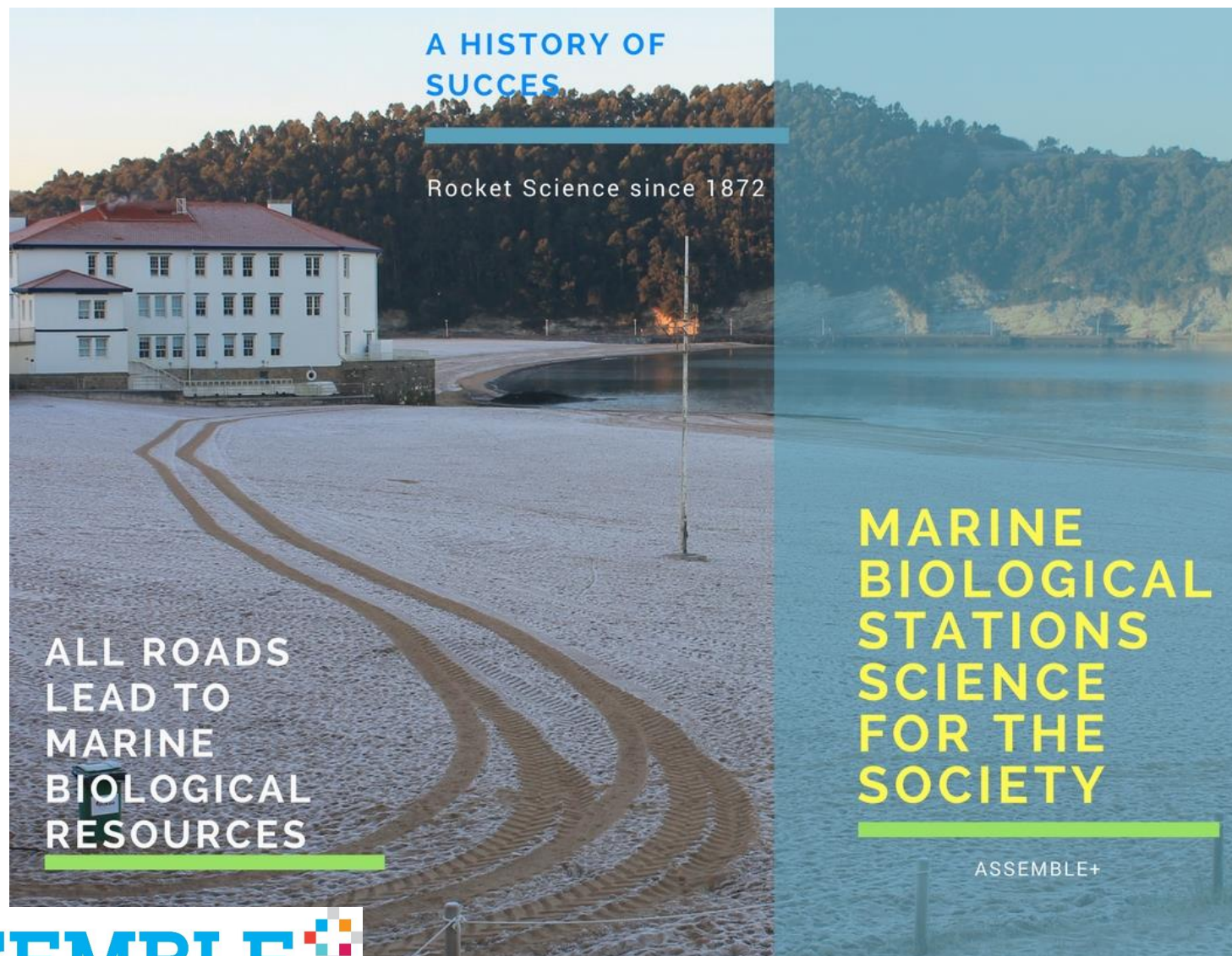


3.1.2. Timing of the different work packages and their components (GANTT chart)



■ General assembly
 ■ Workshop, conference or brockage event

Historical background & socioeconomic impact of MBSs projecting forward their sustainable future



CONTENTS of THE BOOK

Published by the Basque Univ. Press (prioritise control on diffusion)

1.- **HISTORY OF MBSs**, access to biological diversity on site, **organizational issues** and institutional changes (association to Universities, public, private...), tpublic aquarium research institution:

2.- **MARINE BIOLOGY RESEARCH**, MBRs: fundamental research in biological/medical sciences

- .- MBSs the cradle of embryology, rediscovery of genetics, modern microscopy
- .- Fisheries & aquaculture
- .- Environmental biological-observatories
- .- Marine Biotechnology
- .- Rocket Science in the frontiers of biological research
- .- The last frontier in bioprospection and biodiscovery

Access to MBSs for the scientific community of users

3.- **SHOWCASING MBSs IN EUROPE**

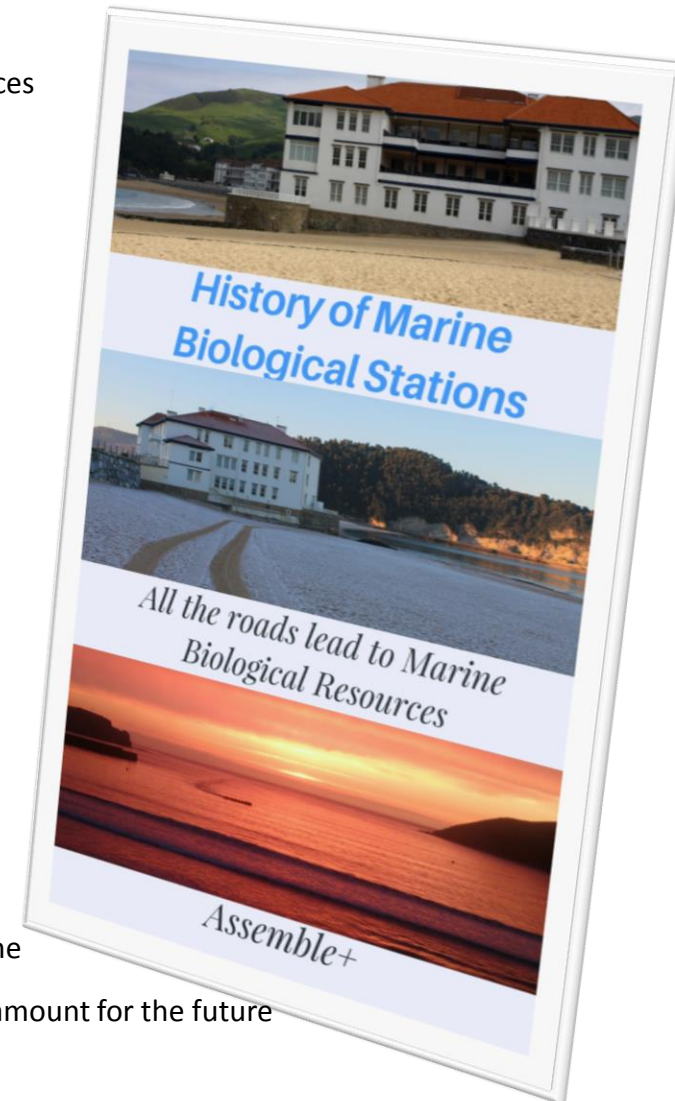
- .- Roscoff
- .- SZN
- .- MBA
- .- SAMS
- .- VLIZ
- .- IUI Eilat
- .- Newly created stations: PiE-UPV/EHU and ECIMAT
- .- Arctic and Antactic Statlons

4.- **TEACHING & OUTREACH, SCIENCE DISEMINATION, CITIZEN SCIENCE**

5.- **SOCIO/ECONOMIC IMPACT OF MBSs EMBEDDED IN SMALL COMUNITIES**

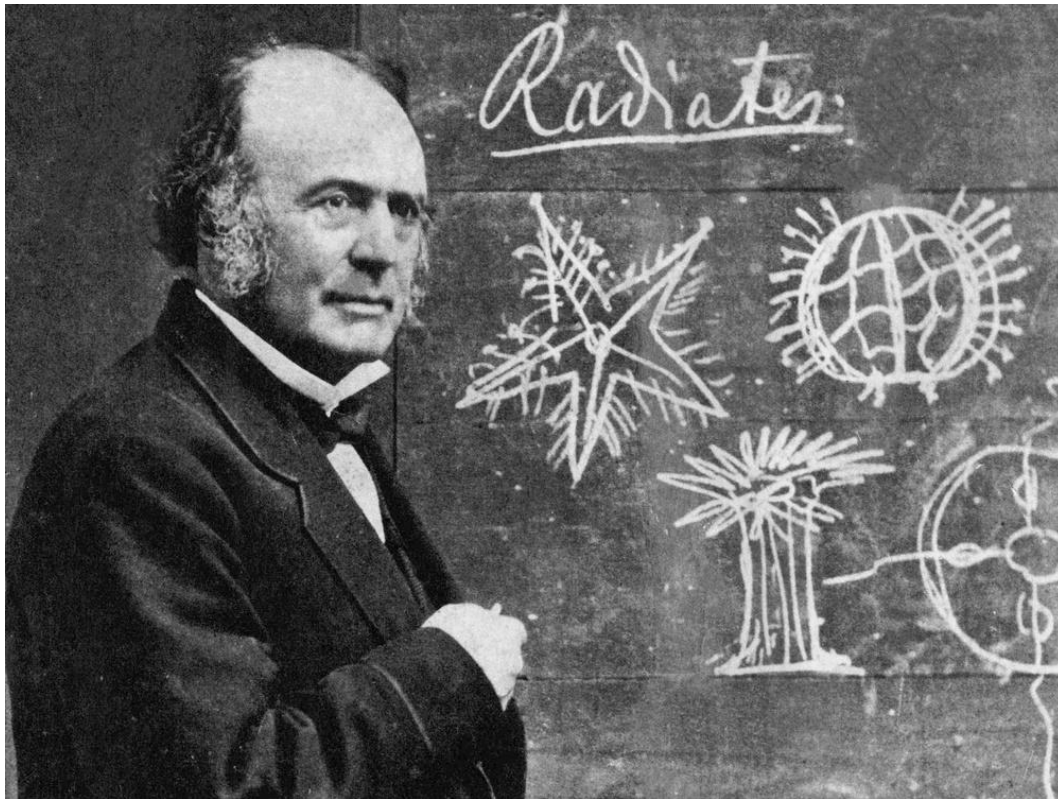
6.- **ASSOCIATIONS OF MBSs** (forming of community): NAML, MARS and WAMS, Euromarine

7.- **EVOLVING MBSs IN THE XXist CENTURY**: Redefining the concept for MBSs, EMBRC paramount for the future

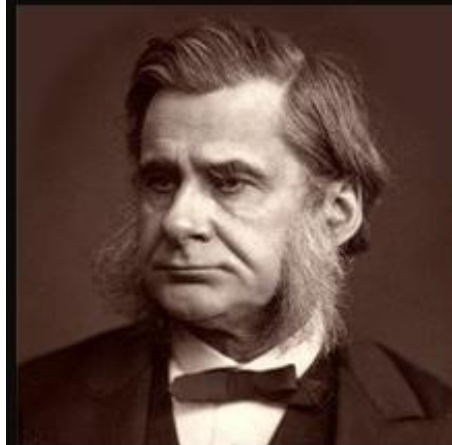


Why Marine Stations

Louis Agassiz: “*Study Nature not Books*”



Thomas Huxley
& placing the
laboratory in
the centre of
science



In truth, the laboratory is the forecourt of the temple of philosophy, and whoso has not offered sacrifices and undergone purification there has little chance of admission into the sanctuary.

European MBSs as of 1910



Disko Island 1906

GREENLAND



Ark at Granton, Millport,
Oban (SAMS), 1883

Bangor Queens College 1903

Saturn RDS, 1899

Plymouth (MBA), 1881

Tatihou Dinard, 1881

Roscoff, 1872

Concarneau, 1859

Arcachon,
1863

Banyuls,
1881

Palma, 1906

Naples, 1872

Algiers, 1889

Trondheim,
1900

Bergen,
1891

Aberdeen, 1898

Gatty, St. Andrews, 1896

Port Eryn, 1892

Lowestoft (MBA), 1902

Wimereux,
1873

Tatihou Dinard, 1881

Roscoff, 1872

Concarneau, 1859

Arcachon,
1863

Banyuls,
1881

Palma, 1906

Naples, 1872

Algiers, 1889

Drobak, 1894

Börno, 1902

Kristineberg, 1877

Nyborg, DZS, 1889

Kiel, 1871

Helgoland, 1892

Den Helder (NIOZ), 1890

Ostend, VLIZ 1843

Le Portel, 1888

Luc-sur-mer, 1874

Sète,
1879

Monaco, 1910

Villefranche, 1880-82

Tamaris, 1900

Trieste, 1875

Rovigno, 1892

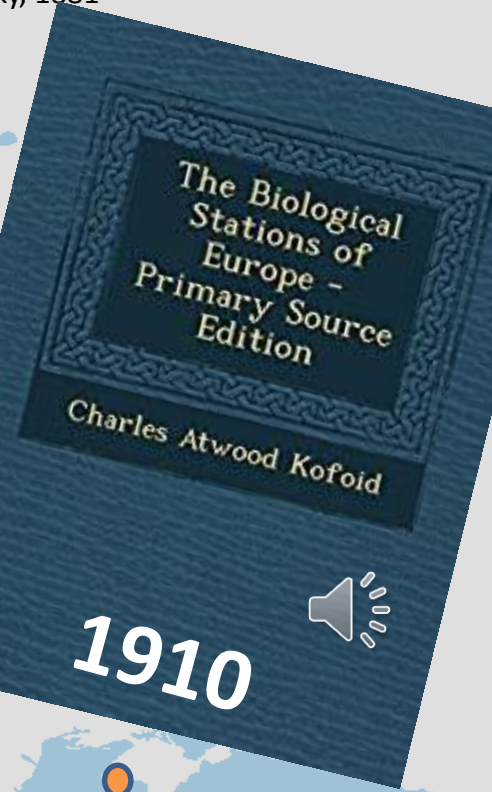
Fiume, 1876

Kovda, 1908, 1911

Murmansk,

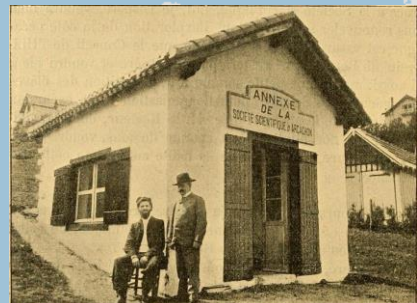
Solovetsky, 1881

Tvarminne, 1902



1910

ICES  ICES
CIEM
established
in 1902



WORLD DISTRIBUTION OF MBSs



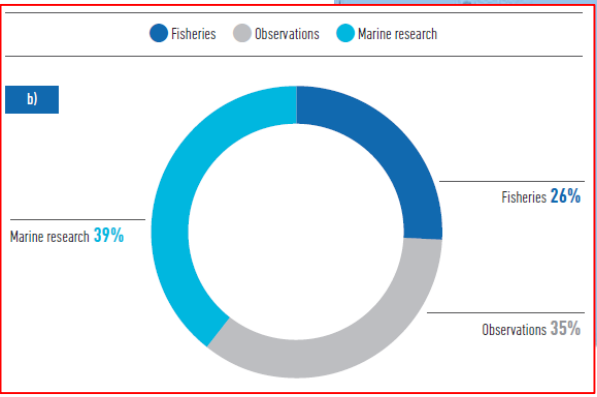
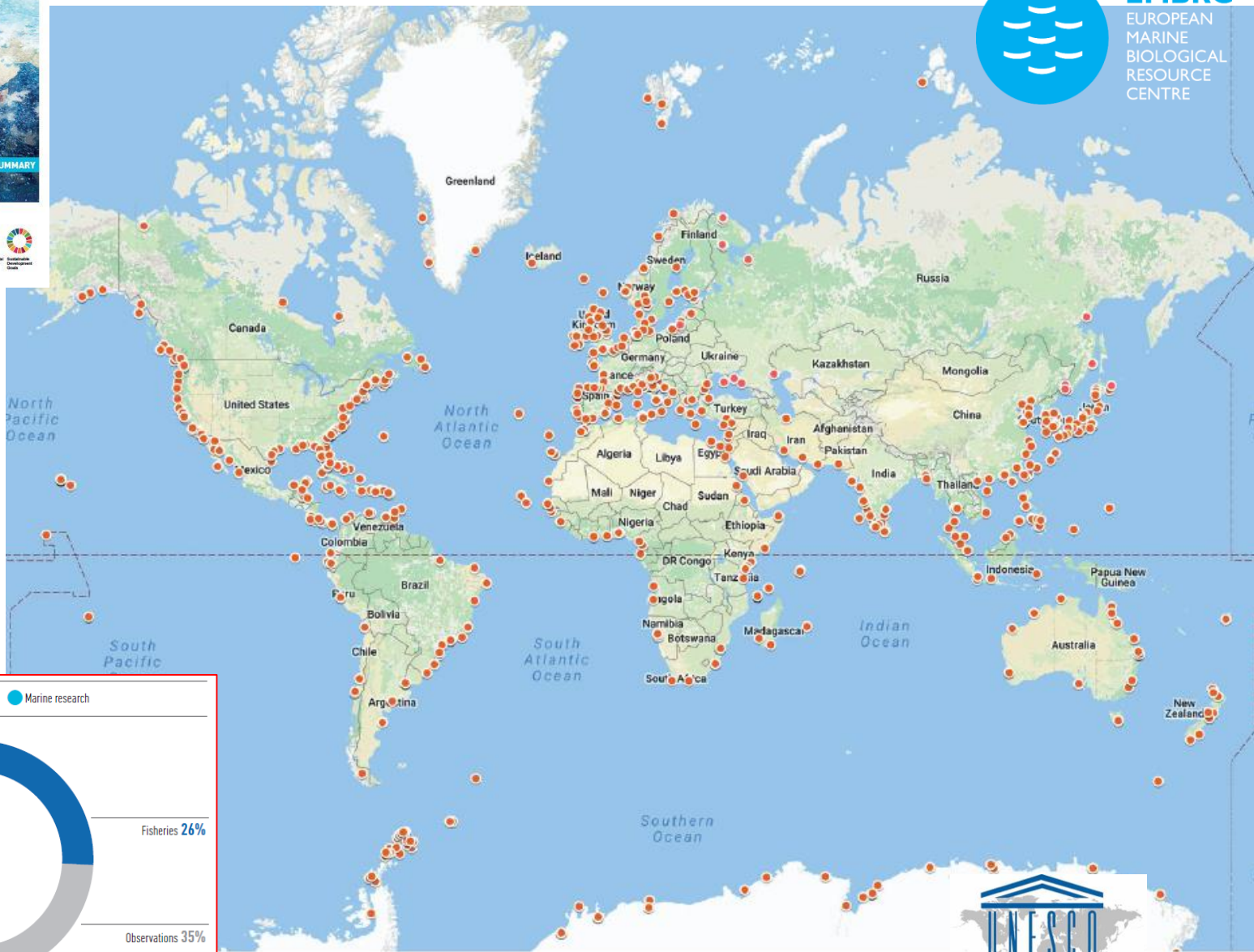
Global Ocean Science Report

EXECUTIVE SUMMARY

The Current Status of Ocean Science around the World

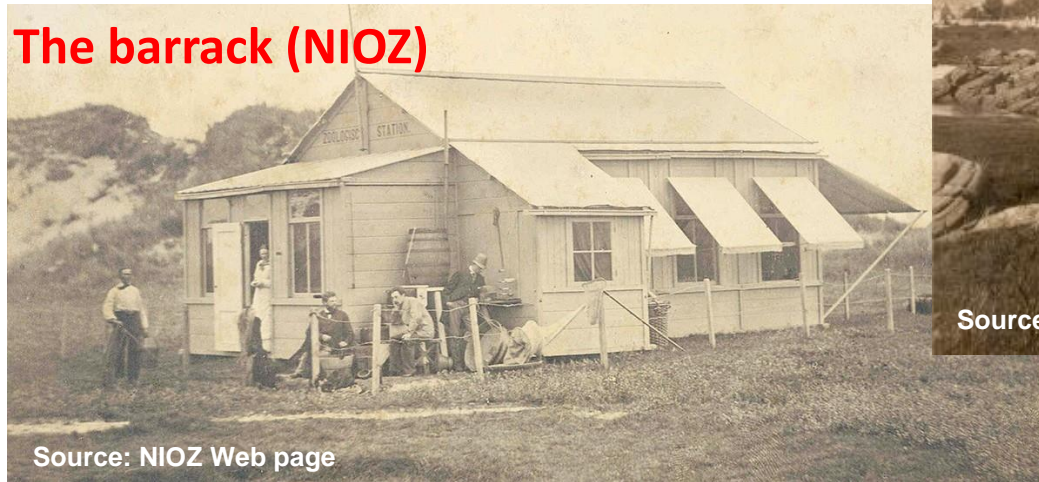


784 marine stations in 98 countries



MOVABLE INFRASTRUCTURES

The barrack (NIOZ)



Source: NIOZ Web page

The Ark (SAMS)



Source: SAMS Web page

CASTLES, MONASTERIES, VILLAS, WAREHOUSES, BOAT HOUSES



<http://littorina.info/english.html>



Danish Marine Station

Source: Wikipedia



Solovetsky



operations, the great improvements in transportation and fishing, and the increasing demand for the products of the sea have made imperative a scientific basis for aquiculture. The interests of the sea are to be fully reaped and its resources to be left unimpaired for the future. The pollution of the lakes and streams by municipal, industrial, and chemical wastes, and the effects of overfishing threaten to exterminate the native fishes and to destroy entirely a source of great pleasure and profit to the human race. To meet these exigencies created by the rapid advance in our civilization a new type of station is now in the process of evolution, one, moreover, which is no longer merely a biological station, but rather a station equipped for the solution of biological problems with the aid of all pertinent sciences. The causal analysis of the problems surrounding a living organism in its environment calls for exact and thorough knowledge of both the animal and its environing factors, and necessitates the aid of chemical, physical, hydrographical, and meteorological research in close correlation with the biological and subordinate to it. The biological sta



1910

Women also pioneers in Marine Biological Stations



Sofia Pereiaslavitseva
(1849-1903)
Sevastopol Biological
Station (Director 1878-
1888)



Ida H. Hyde (1857-
1945). Naples Table Ass.
for Promoting Scientific
Research by
Women
(1897-1933)



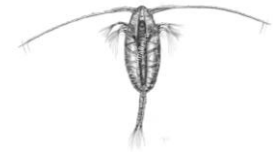
Sheina M. Marshall
(1896 –1977)
Millport (Deputy Director)



Joan Ruderman
(1948)
Woods Hole MBL
(President 2102-14)

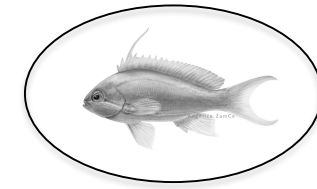


**Woman's Education
Association of Boston**

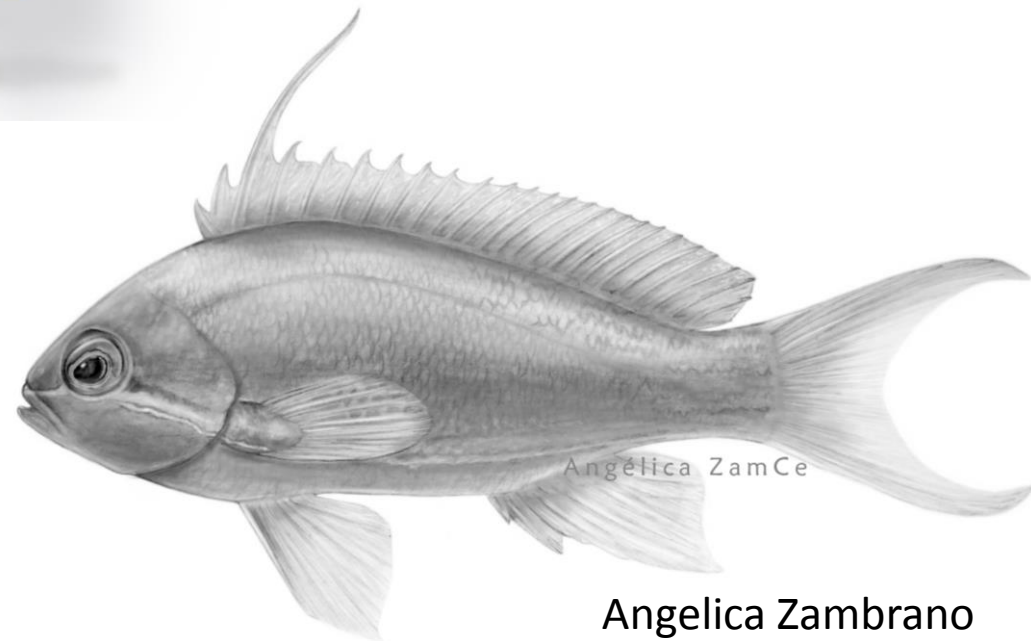




IUI-Eilat



Scientific illustrations for the book

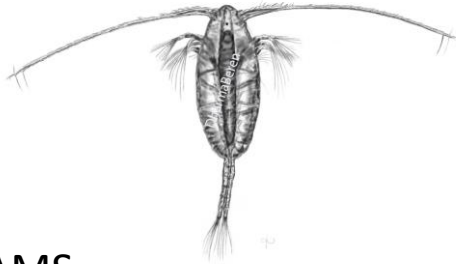


Arctic



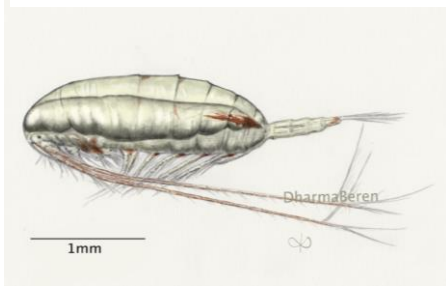
DharmaBeren

4



4

SAMS



1mm

DharmaBeren

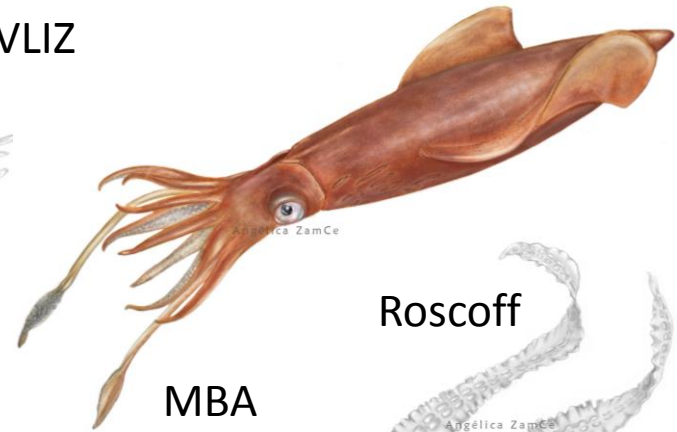
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DharmaBeren

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VLIZ



Angélica ZamCe

Roscoff



Angélica ZamCe

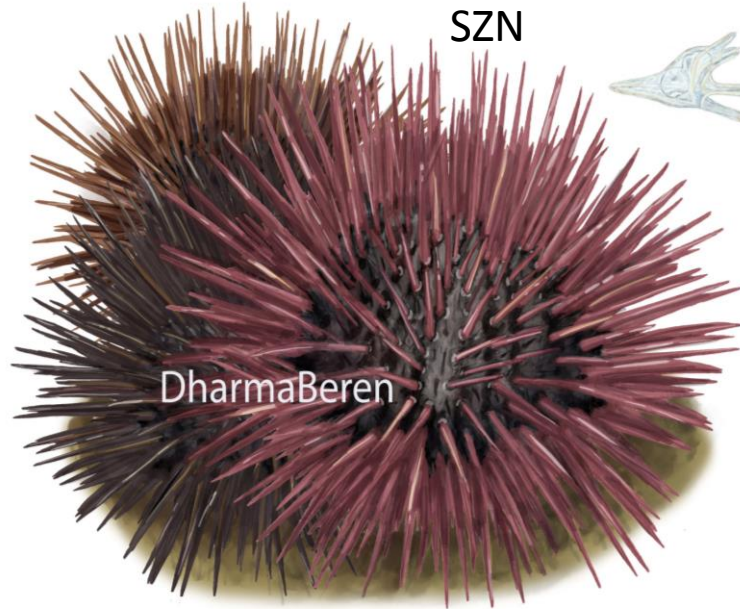
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MBA



Angélica ZamCe

SZN



DharmaBeren



PIE & ECIMAT



4

Antarctic



Angélica ZamCe



DharmaBeren

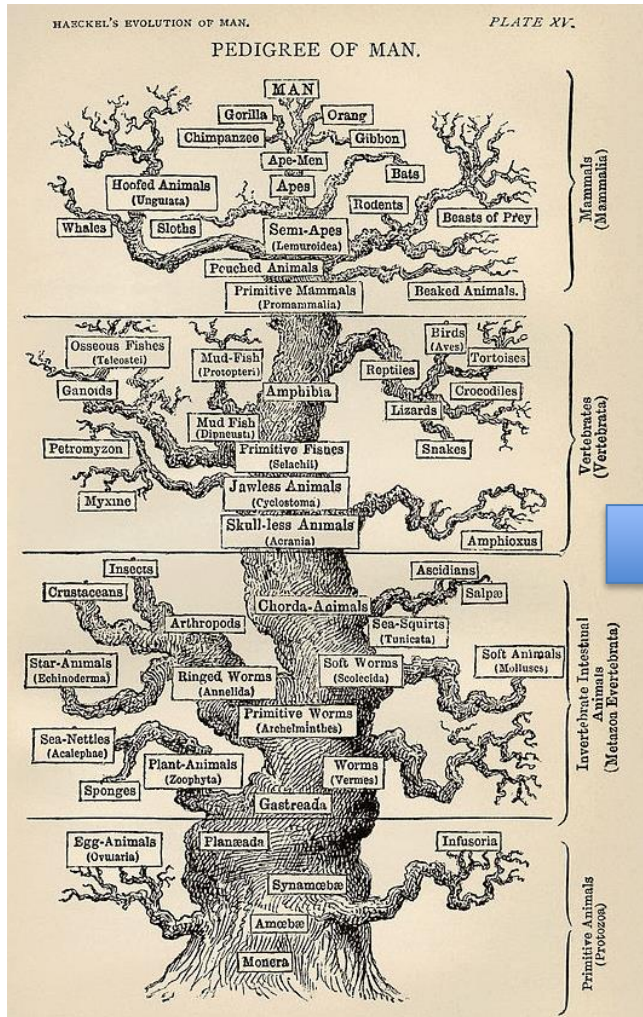
Angélica Zambrano

9

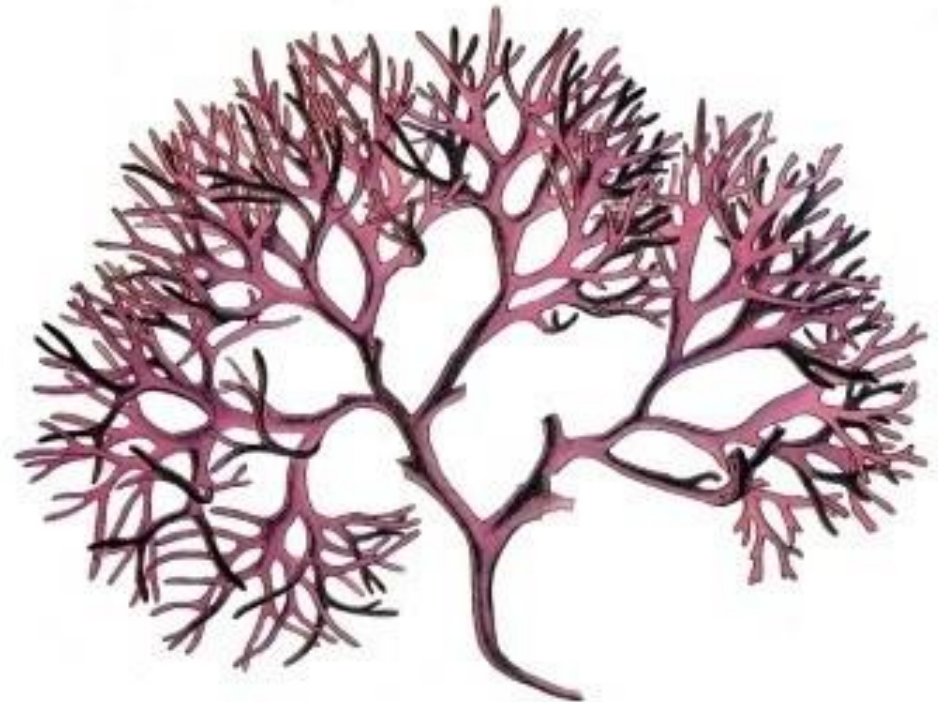
Angélica Zambrano and Inma Martin

Scientific illustrations for the book **ASSEMBLE**

Haeckel's tree of life

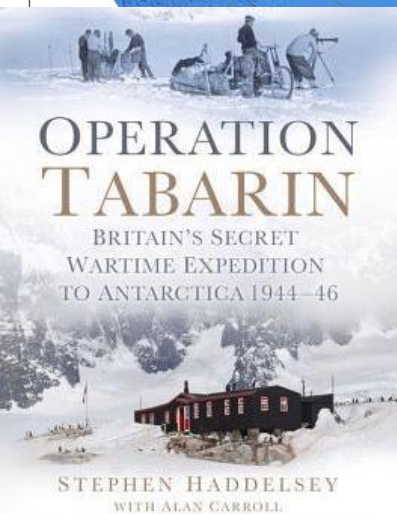
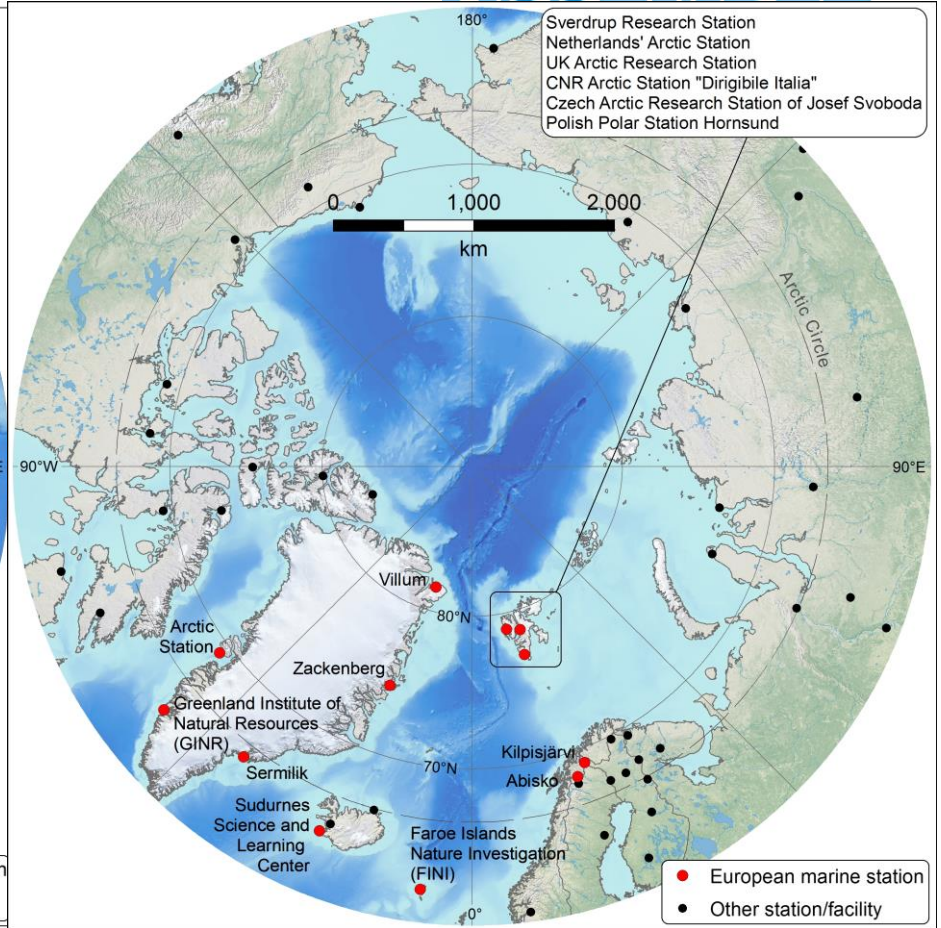
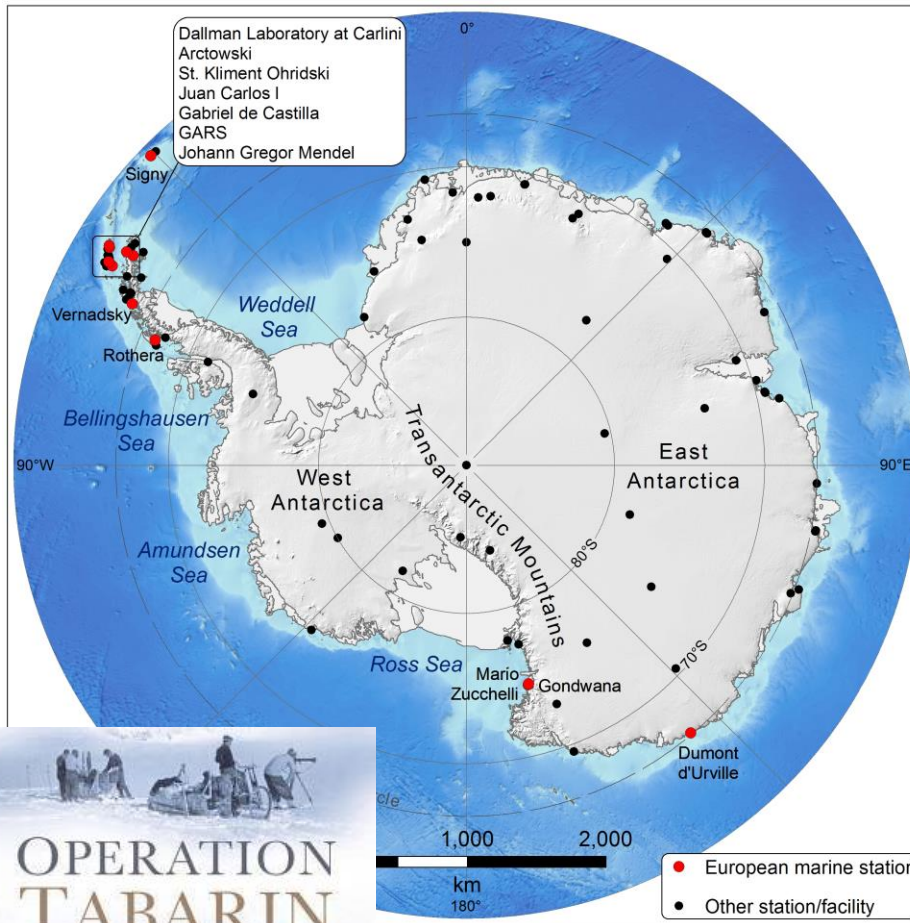


Assemble+'s algae of life



Chondrus crispus
(Irish Moss)

Arctic and Antarctic stations





The Nobel Prize in Chemistry 2004

Aaron Ciechanover, Avram Hershko, Irwin Rose



ASSEMBLE 

Avram Hershko - 2004



Avram Hershko

Born: 31 December 1937, Karcag, Hungary

Affiliation at the time of the award: Technion - Israel Institute of Technology, Haifa, Israel

Prize motivation: "for the discovery of ubiquitin-mediated protein degradation"

Field: biochemistry



**Ubiquitin
in *Spisula
solidissima***

**Interview on his
access experience at
Woods Hole MBL**

Task 2 - Mid- & long-term sustainability of MBSs

(Lead: UPMC, Partners: EHU, NIB, NIOZ, UH, IOPAN, NUI, GU, HCMR, HUJI, SZN, UiB, CCMAR, SAMS, UGOT, MBA, AWI, VLIZ)

1.- **SWOT analysis** on MBSs' mission & strategic plan (Adapted to current strategic research environment?). **internal audit on (dis)advantages, opportunities & threats**, and plan for a thorough analysis of business plans.



Workshop, May 2018



2.- How are MBSs performing today (**present**), and what are their prospects (**future**)?
Internal analysis to be streamlined through periodic questionnaires:

- 1-Organizational structure;
- 2-Products, programs and services;
- 3-Funding streams;
- 4-Customer and Market analysis;
- 5-Marketing;
- 6-Competitors;
- 7-Performance & metrics for evaluation (KPIs).

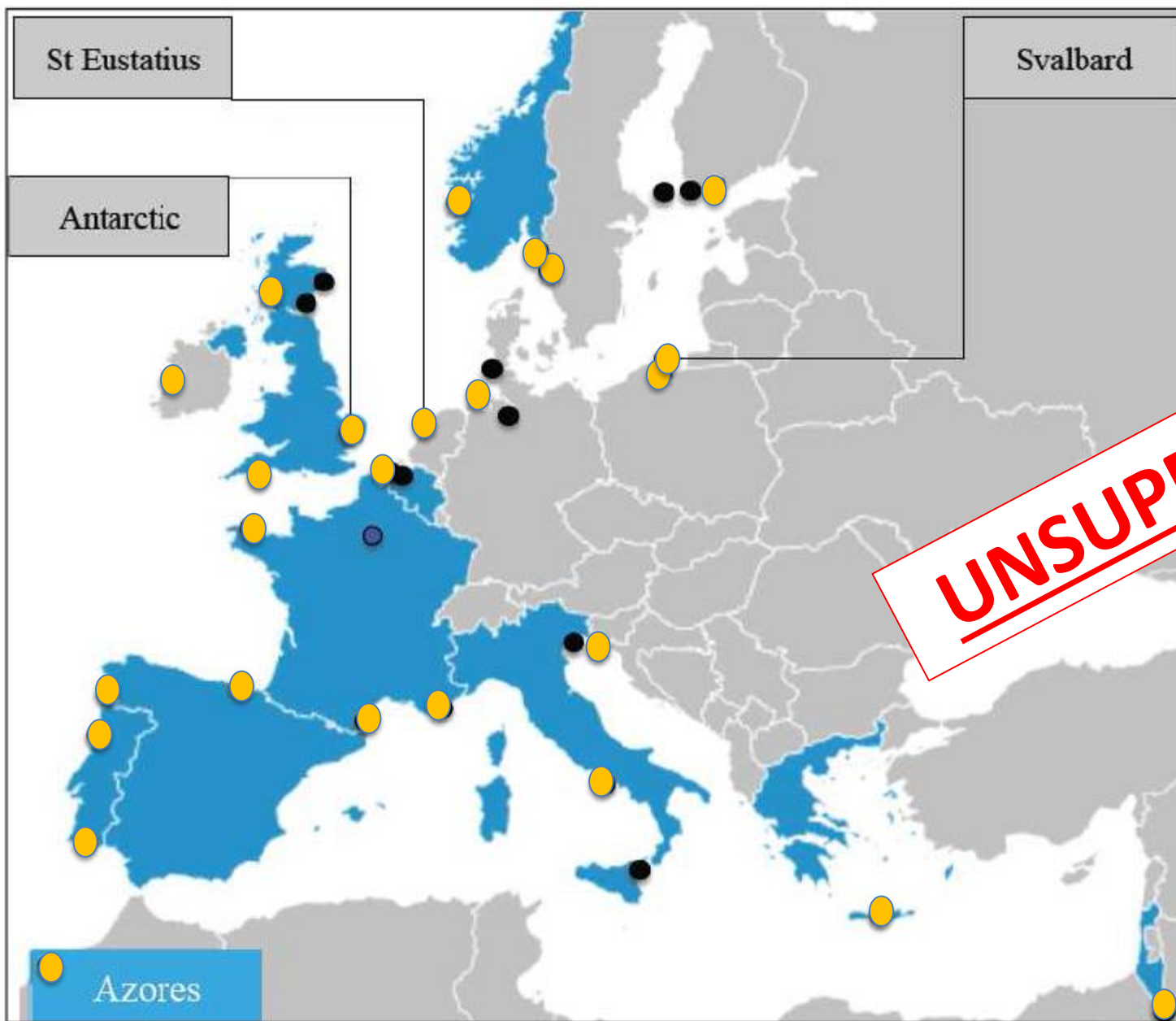


A **benchmarking analysis** with an external audit (subcontracted) for a **non-biased conclusion** (M30).

PRESENT

Task 2 - Mid- & long-term sustainability of MBSs

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UNSUPERVISED

**SWOT
analyses
provided by
25 marine
stations**

Task 2 - Mid- & long-term sustainability of MBSs

Workshop: SWOT analysis of marine biological stations 23 May 2018, Piran, Slovenia by Ibon Cancio

An important workshop for the project took place in Piran, Slovenia in May. Its aim was to comparatively analyse the SWOT analyses provided by 25 marine biological stations featuring in EMBRC-ERIC and ASSEMBLE Plus between December 2017 and January 2018. In total, 33 participants representing 19 marine stations and different Slovenian institutions took part in the workshop.

Ibon Cancio presented the main results of the Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis exercise and pointed out the commonalities and specificities that could be used to foster greater collaboration between the marine stations and contribute towards their future sustainability (as individuals and as a cohort):

- The commonalities included funding issues, regional implications in their sustainability, the need for capacity and the quality of staff.
- The results of the comparative SWOT analysis should be published as a position paper.
- Many commonalities exist in strengths and weaknesses and this will be better addressed through internationalisation and collaboration, trans-regionally and trans-nationally.
- To foster the challenges of the European blue growth strategy, there are development needs in technology transfer and connectivity with the private sector.
- Only EMBRC-ERIC stations mentioned EMBRC-ERIC positively in their SWOT analysis; however, prospects for future integration of non-member countries are high in Slovenia, Finland, Sweden and Poland.

based on the business model of EMBRC-ERIC; results of the OECD research infrastructure impact; and the CANVAS tool for business model analysis. The latter was presented by Aleardo Furlani (European Multidisciplinary Seafloor and water column Observatory ERIC), who challenged managers and operators of marine stations suggesting that they needed a change in mindset regarding their users.

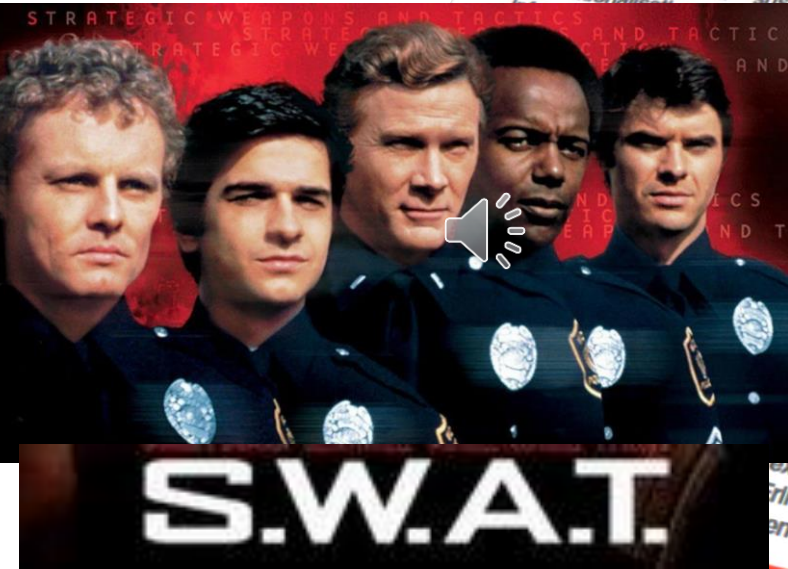


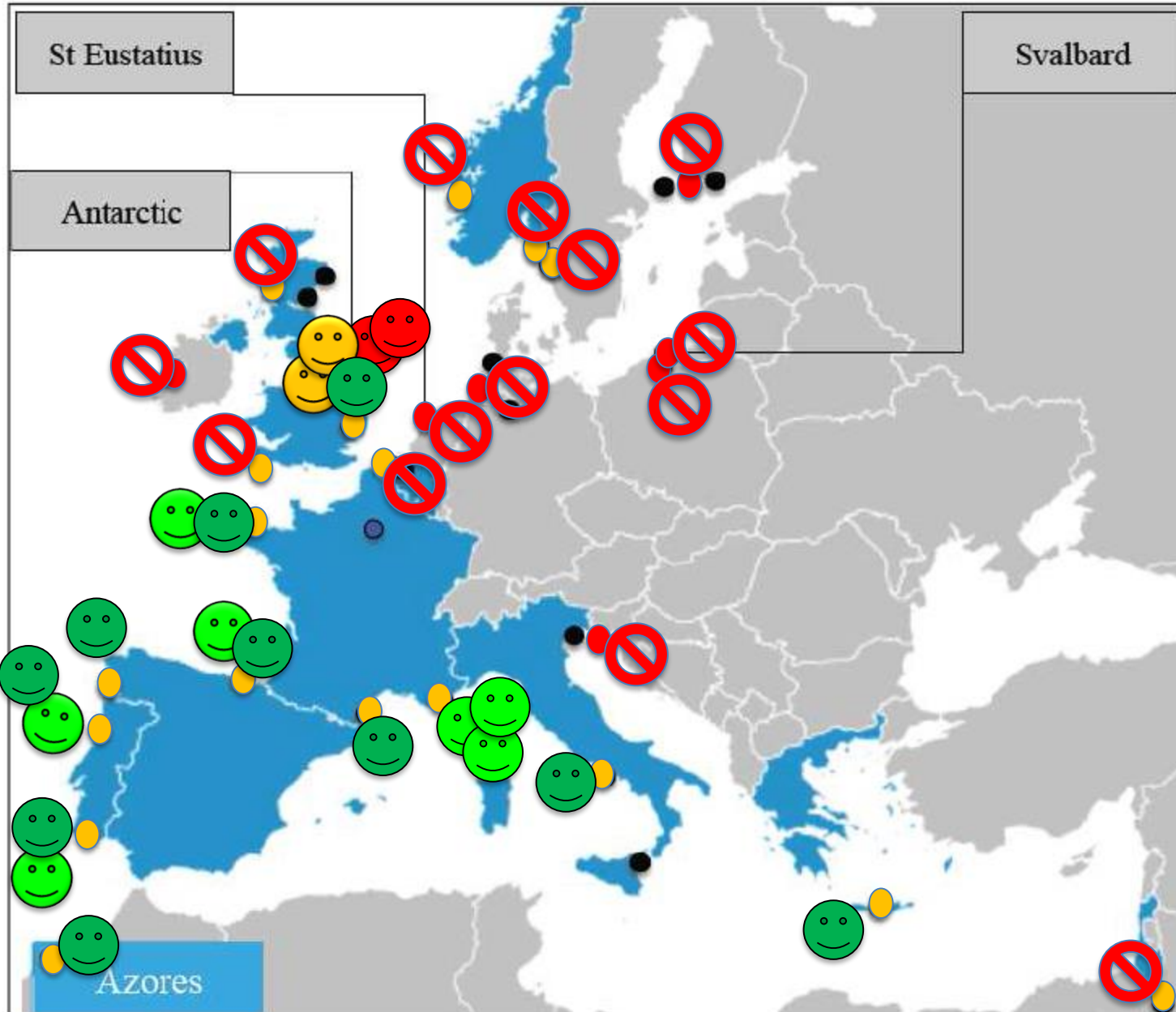
Photo credit: Andreja Ramšak






PRESENT

Main common themes highlighted in SWOTs:

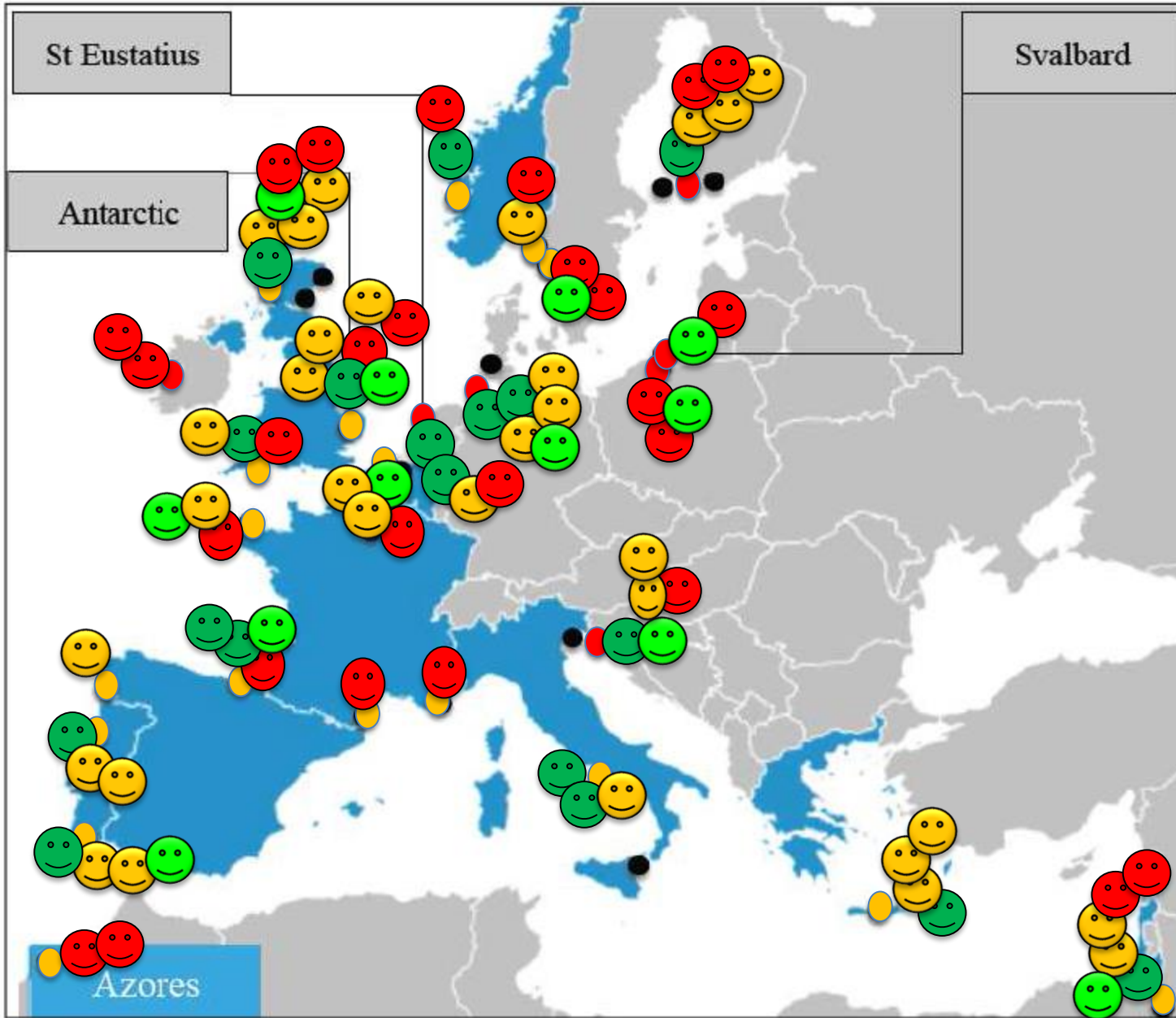
- .- Prominence
- .- Infrastructure & services
- .- Funding streams, budgetary issues
- .- Human resources
- .- Governance, organization & strategy
- .- Relationship to University vs independence
- .- Teaching/training
- .- Regions
- .- TT and innovation
- .- Outreach and citizens

EMBRC as a driving force? as an Horizon?

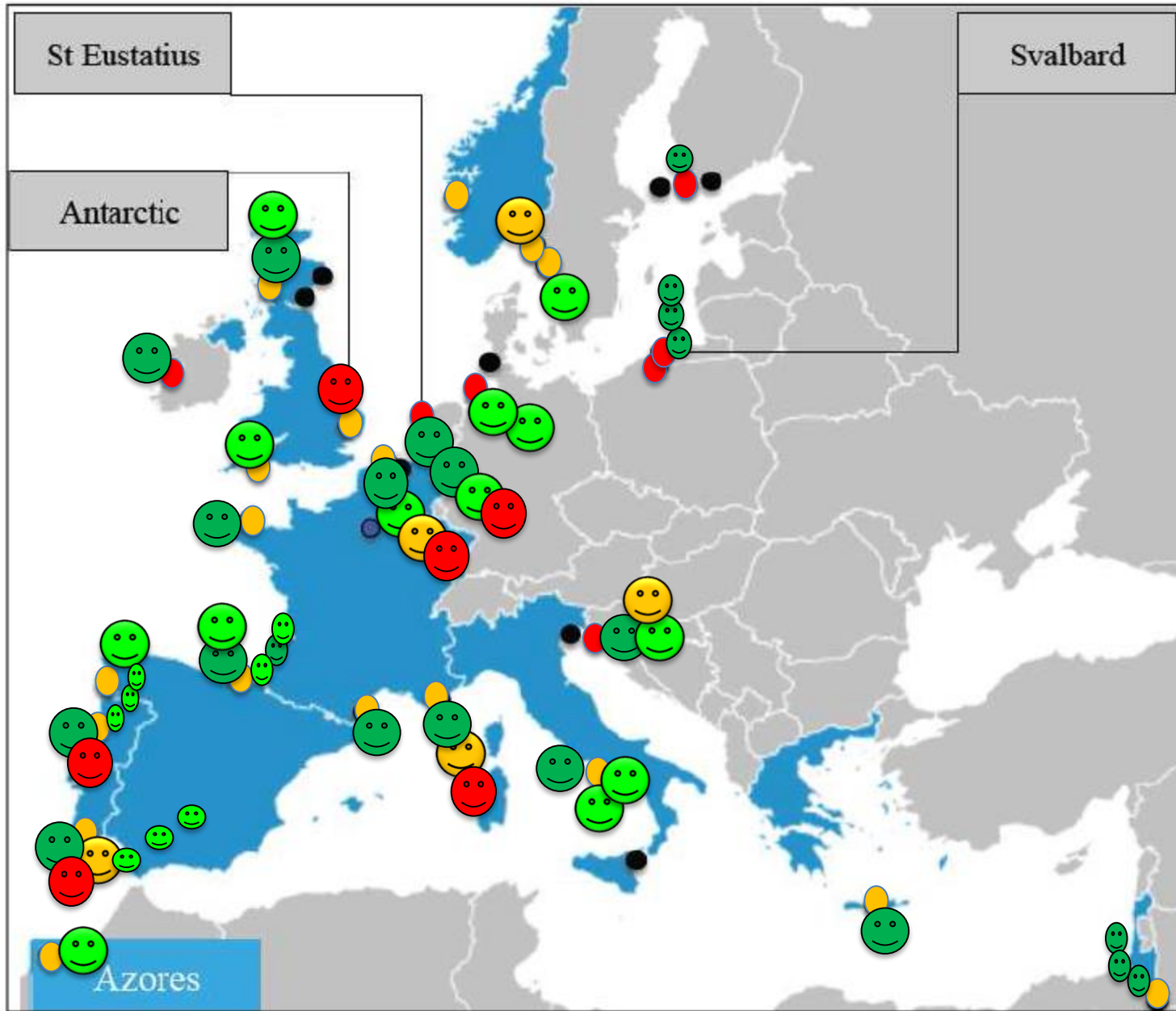







-  **S**
-  **O**
-  **W**
-  **T**
-  Not mentioned at all

Funding streams, financing...



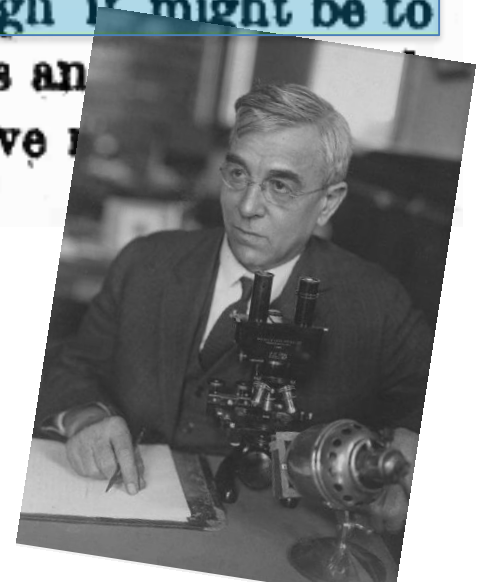
Regions



-  S
-  O
-  W
-  T
-  Transregional

**Green
smashes!!**

The great research stations of Europe are supported largely, and often almost exclusively (except in Great Britain), by state and local funds. This is made possible in European countries by the recognition on the part of the state of the relation of research to higher education in biological sciences and by the centralized forms of administration of educational policies and funds. At some time, possibly not far distant, it may be found advisable that our own Federal Government should assume through some central agency the adequate support of two great research stations, one on the Atlantic and one on the Pacific, as an integral part of our system of higher education. It is obvious that such stations should be free from the domination of economic interests, though it might be to the great advantage of both if the fisheries interests and stations should stand in an advisory and cooperative relationship with another.



Task 2 - Mid- & long-term sustainability of MBSs

(Lead: UPMC, Partners: EHU, NIB, NIOZ, UH, IOPAN, NUI, GU, HCMR, HUJI, SZN, UiB, CCMAR, SAMS, UGOT, MBA, AWI, VLIZ)

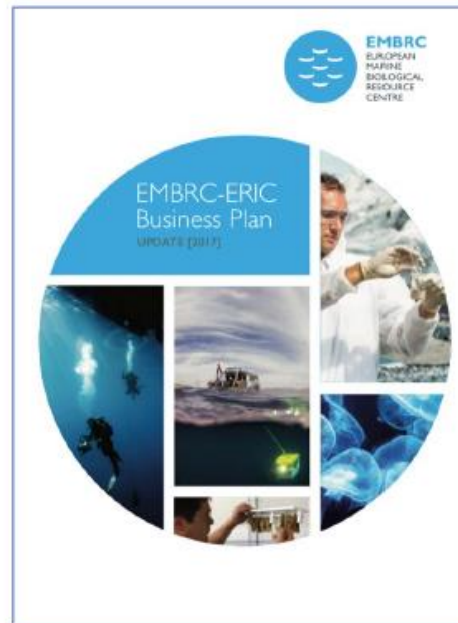


EMBRC-ERIC Business Planning

EMBRC is one of the few RIs updating their PP Business Plan after the Preparatory Phase



*EMBRC Business Plan 2013,
ThornDyke et al., November 2013*



*The 'EMBRC-ERIC Business Plan Update 2017,
Nardello et al., 2017*

"The 'EMBRC-ERIC Business Plan Update 2017' represents a reference model to give as benchmark to other ERICs."

(Antonella Calvia-Götz, EU Investment Bank)

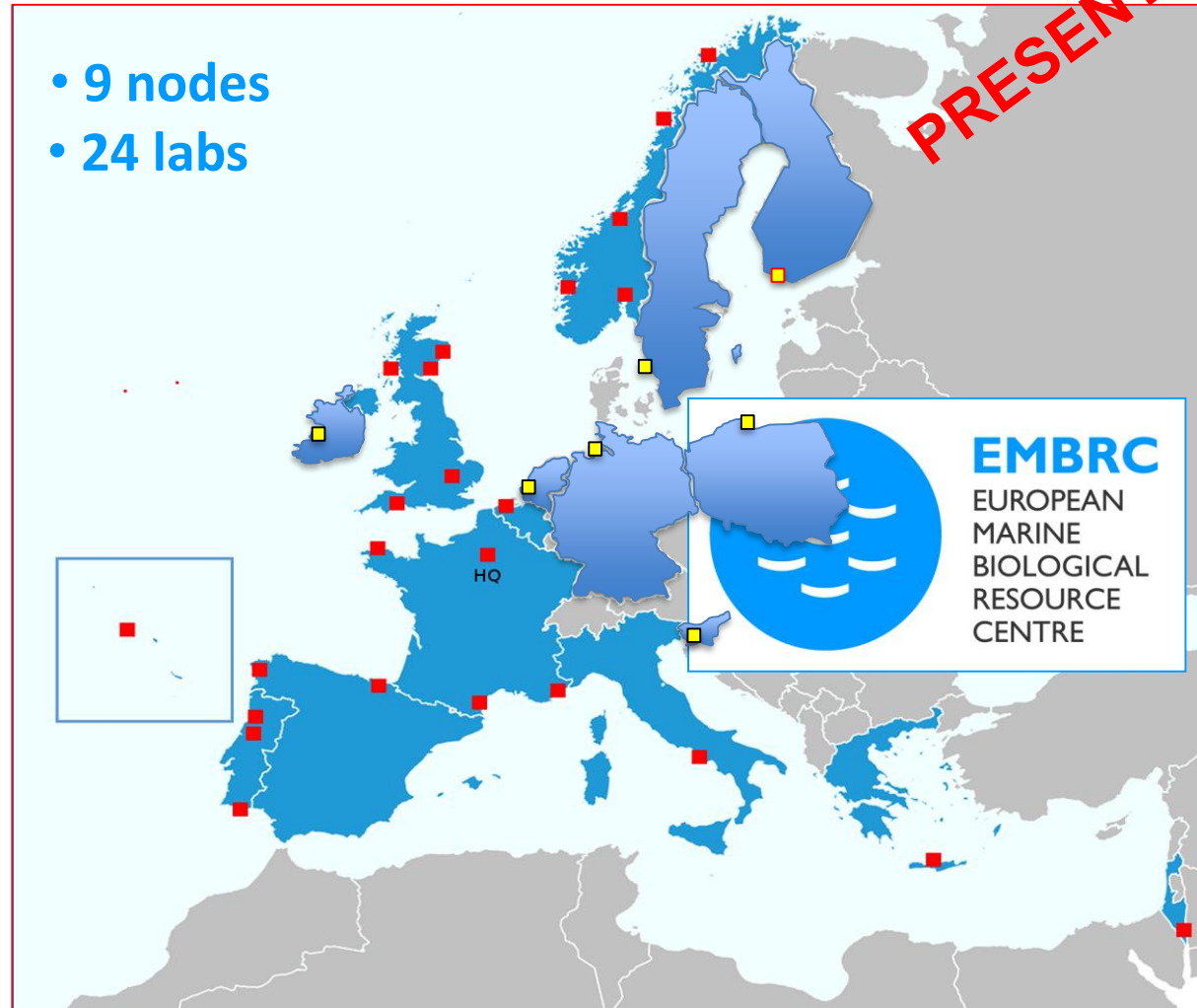
Task 2 - Mid- & long-term sustainability of MBSs

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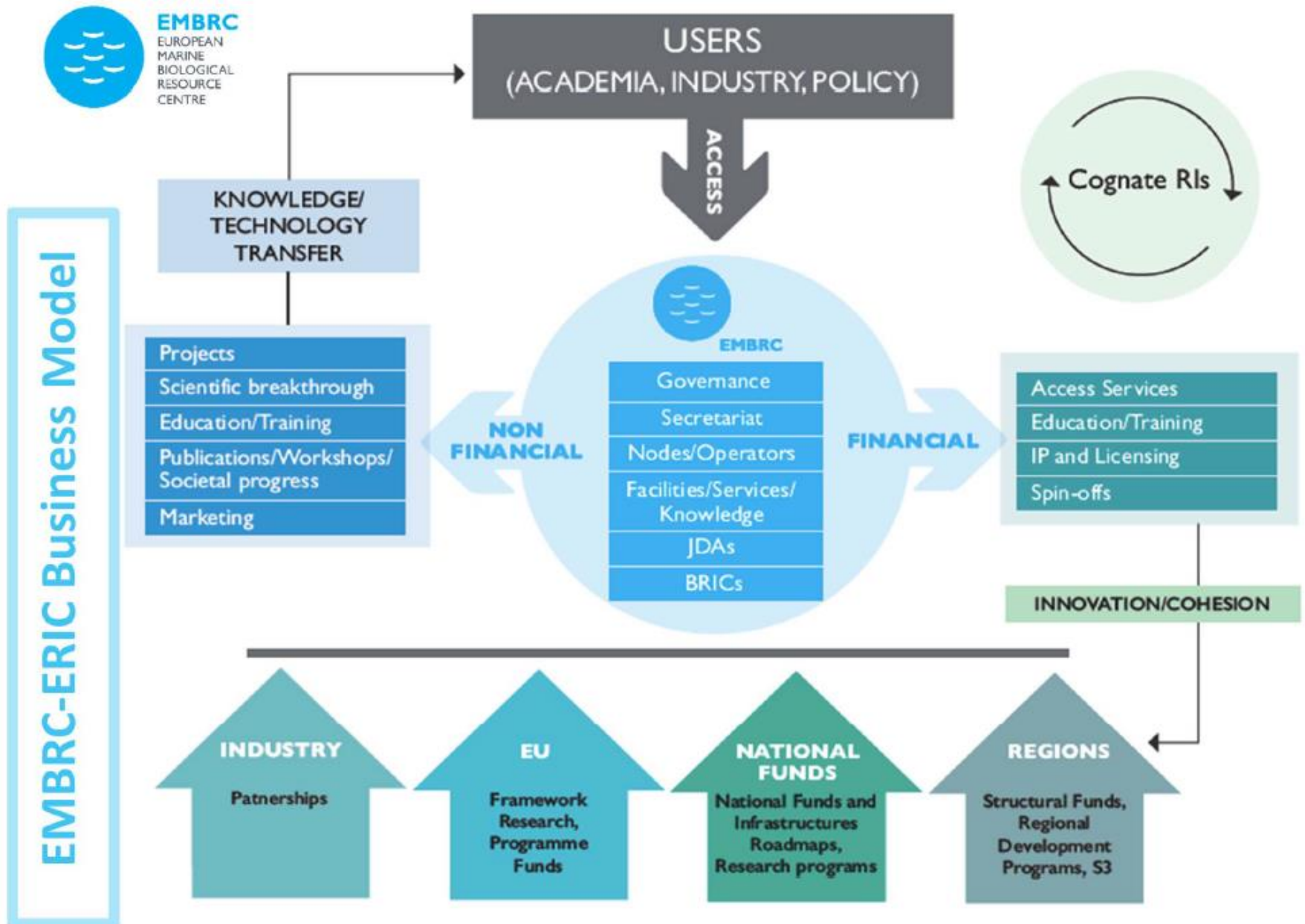
A realistic **business plan** for the “ecosystem of mature European MBSs, including **EMBRC**”, will be shaped for the future with a **common set of tested KPIs** to monitor performance.



A **conference (M27)** of the ASSEMBLE+ community (MBSs directors + national/regional stakeholders) hosting integration of new countries into EMBRC (**EMBRC+**).



EMBRC-ERIC BUSINESS MODEL



BIOLOGICAL STATIONS OF EUROPE.

the most expensive one to equip and maintain and the one which gives it least publicity. The biological station is a unique agency in biological research, indispensable in the equipment of a nation for the upbuilding of leaders in biological teaching and in the development and expansion of the spirit of research. It fulfills this function by placing the investigator in the place of greatest advantage with respect to the living material which he seeks to control and providing the opportunity for long-continued and close observation and experiment upon abundant and varied material. Not the least valuable factor is the stimulus of contact with other investigators engaged in other lines of research. This factor alone places a limit upon the number of separate research stations which can be maintained to advantage. The larger the station, the more national its clientele, the greater its value to the investigator in respect.



ASSEMBLE



ASSOCIATION OF EUROPEAN MARINE BIOLOGICAL LABORATORIES EXPANDED

Thank You

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Study Nature not books

Louis Agassiz



@Assembleplus

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