

Art & Science across Italy

IV Edizione (2022-2024)

## Il restauro delle coste rocciose

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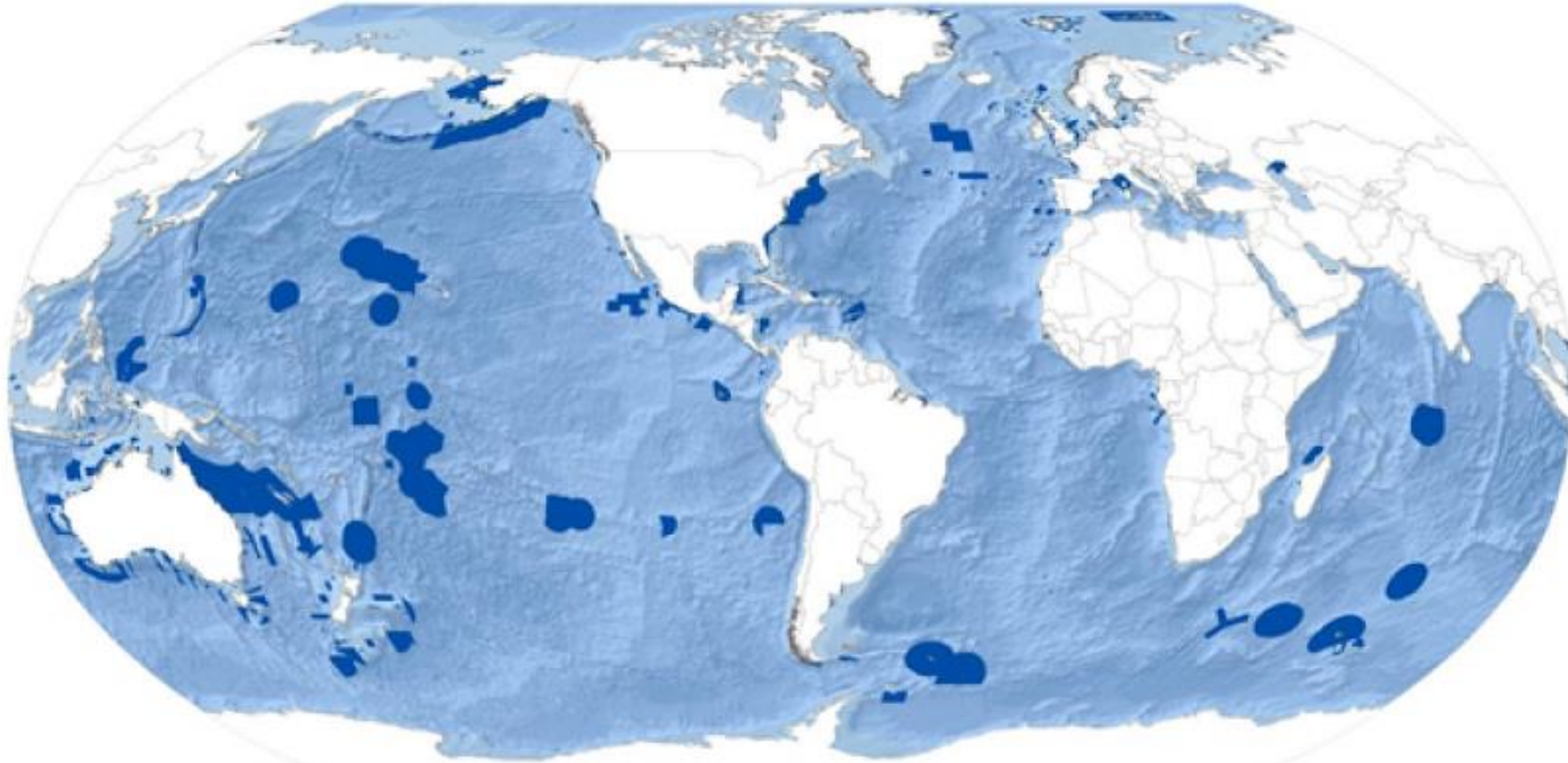


Università  
di Genova

DISTAV DIPARTIMENTO  
DI SCIENZE DELLA TERRA,  
DELL'AMBIENTE E DELLA VITA

# Protezione e conservazione del mare

## Official MPA Map



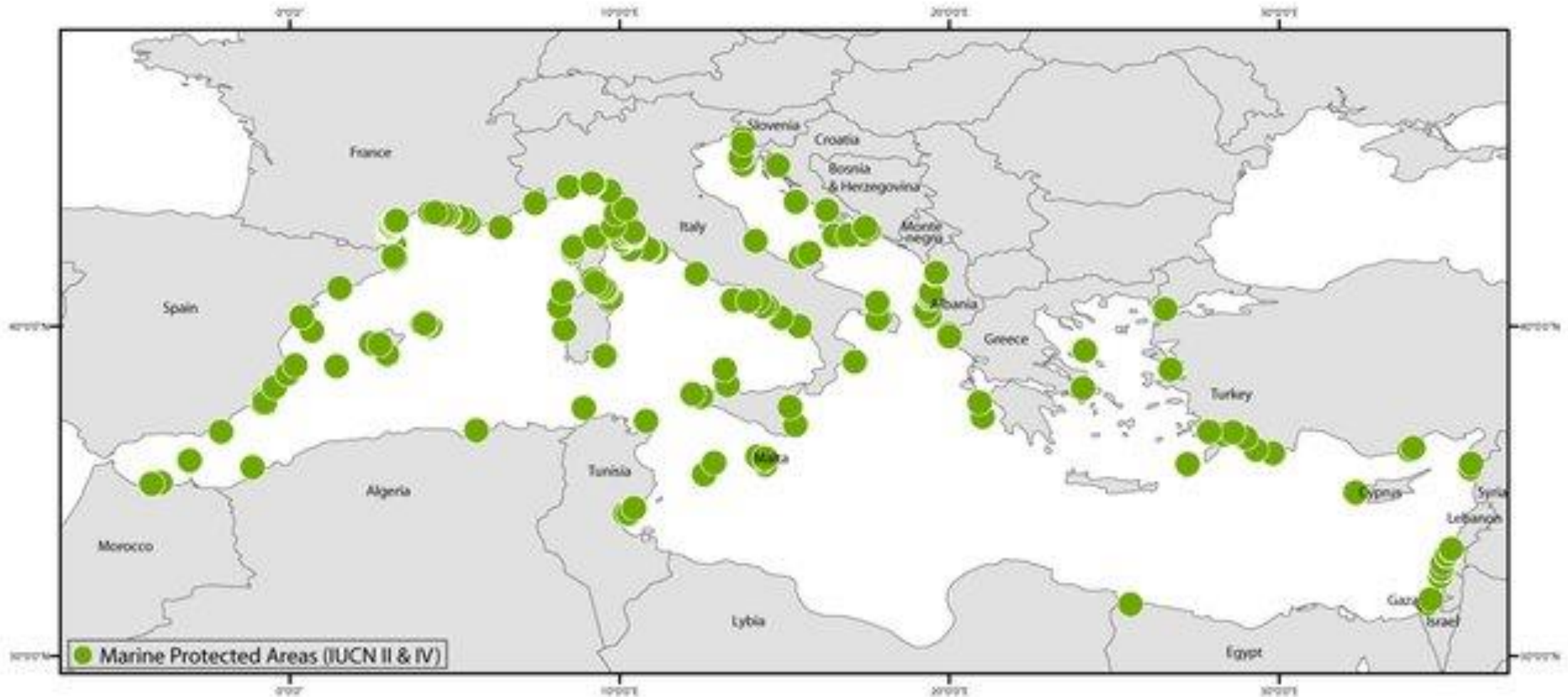
Source: UNEP-WCMC AND IUCN (2017). Protected Planet: The World Database on Protected Areas (WDPA) [On-line].  
September, 2017, Cambridge, UK: UNEP-WCMC. Available at [www.protectedplanet.net](http://www.protectedplanet.net)



**6.35% of the Global Ocean covered by protected areas**  
**1.89% exclusively no-take.**



# II Mediterraneo



# E' sufficiente?



## Conservazione vs Restauro Ecologico

A detailed illustration of an underwater ecosystem. The scene is filled with various types of coral, including branching and brain coral, and large seaweed-like plants. Numerous fish of different species and sizes are swimming throughout the water. The overall color palette is a range of blues and greens, creating a serene and naturalistic atmosphere.

# EU Environmental Legislation

Year	Policy	Scope (exact extracts from policy text)
1979	Birds Directive	<ul style="list-style-type: none"> <li>• <b>conservation</b> of all species of naturally occurring birds</li> <li>• measures to maintain the <b>population of the species</b> referred to in Article 1</li> </ul>
1992	Habitats Directive	<ul style="list-style-type: none"> <li>• measures ... to maintain or restore, at favourable <b>conservation status</b>, natural habitats and species of wild fauna and flora</li> </ul>
2000	Water Framework Directive	<ul style="list-style-type: none"> <li>• prevents further deterioration and protects and enhances the status of aquatic ecosystems</li> <li>• achieve the objective of at least <b>good water status</b></li> </ul>
2002	Working document Natura 2000 network	<ul style="list-style-type: none"> <li>• community-wide <b>network</b> of nature protection areas</li> <li>• ... to assure the long-term survival of Europe's most valuable and threatened species and habitats.</li> </ul>
2006	Proposed Soil Framework Directive	<ul style="list-style-type: none"> <li>• preservation of <b>soil functions</b></li> <li>• current scientific knowledge on soil biodiversity and its behaviour is too limited to allow for specific provisions</li> </ul>
2008	Marine Strategy Framework Directive	<ul style="list-style-type: none"> <li>• applying an <b>ecosystem-based approach</b> to the management of human activities while enabling a sustainable use of marine <b>goods and services</b></li> </ul>

conserving  
single  
species

conserving  
status of  
communities  
of species

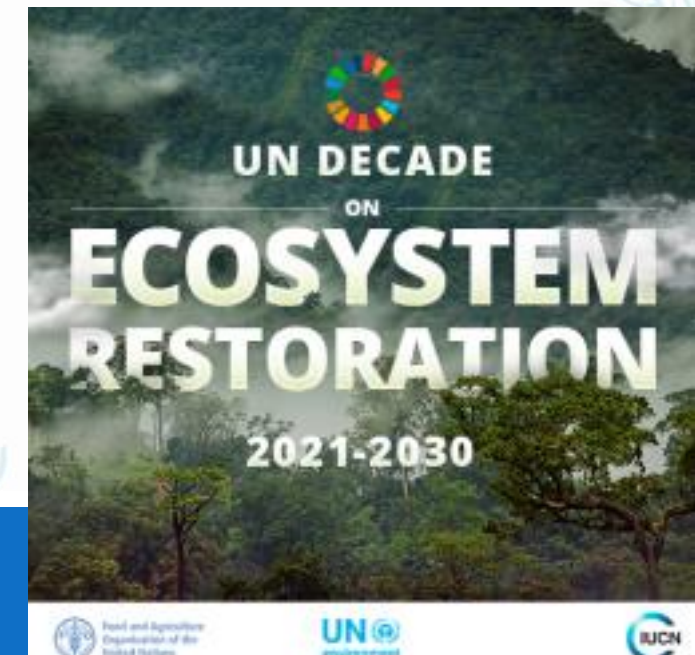
enhancing  
connectivity

sustaining  
Ecosystem  
Services

# Dalla Conservazione al Restauro

## EU and UN Environmental policies for Coastal and Marine Ecosystems

- Biodiversity Strategy to 2030
- UN Sustainable Development Goal 14, Target 14.2
- 2021-2030 UN Nation Decade of Ocean Science for Sustainable Development
- 2021-2030 The UN Decade on Ecosystem Restoration
- **2022: The Nature Restoration LAW**



# Il restauro ecologico

- is the practice of renewing and restoring degraded, damaged, or destroyed ecosystems and habitats in the environment **by active human interruption and action**

The screenshot shows the homepage of the Society for Ecological Restoration (SER). At the top left is the SER logo, which includes the text 'SER SOCIETY FOR ECOLOGICAL RESTORATION'. To its right is the logo for the 'UNITED NATIONS DECADE ON ECOSYSTEM RESTORATION 2021-2030', with 'GLOBAL PARTNER' written below it. A green button labeled 'NEWSLETTER SIGN UP' is positioned in the top right corner. A teal navigation bar contains the following menu items: ABOUT, MEMBERSHIP, GET INVOLVED, PROFESSIONAL DEVELOPMENT, RESOURCES, NEWS & EVENTS, and PARTNERS. The main content area features a large background image of a field of tall, yellowish-brown plants. Overlaid on this image is the text: 'SER is the leading international organization working on the science, practice, and policy of ecological restoration'. At the bottom, there are three distinct sections: a teal box on the left with the text 'Become a Certified Ecological Restoration Practitioner (CERP/CERPIT)' and an 'Apply Now' button; a central image showing a person working in a field; and a purple box on the right with the text 'Committed to advancing the science, practice, and policy of ecological restoration?'.

# Qualche esempio dal nostro mare

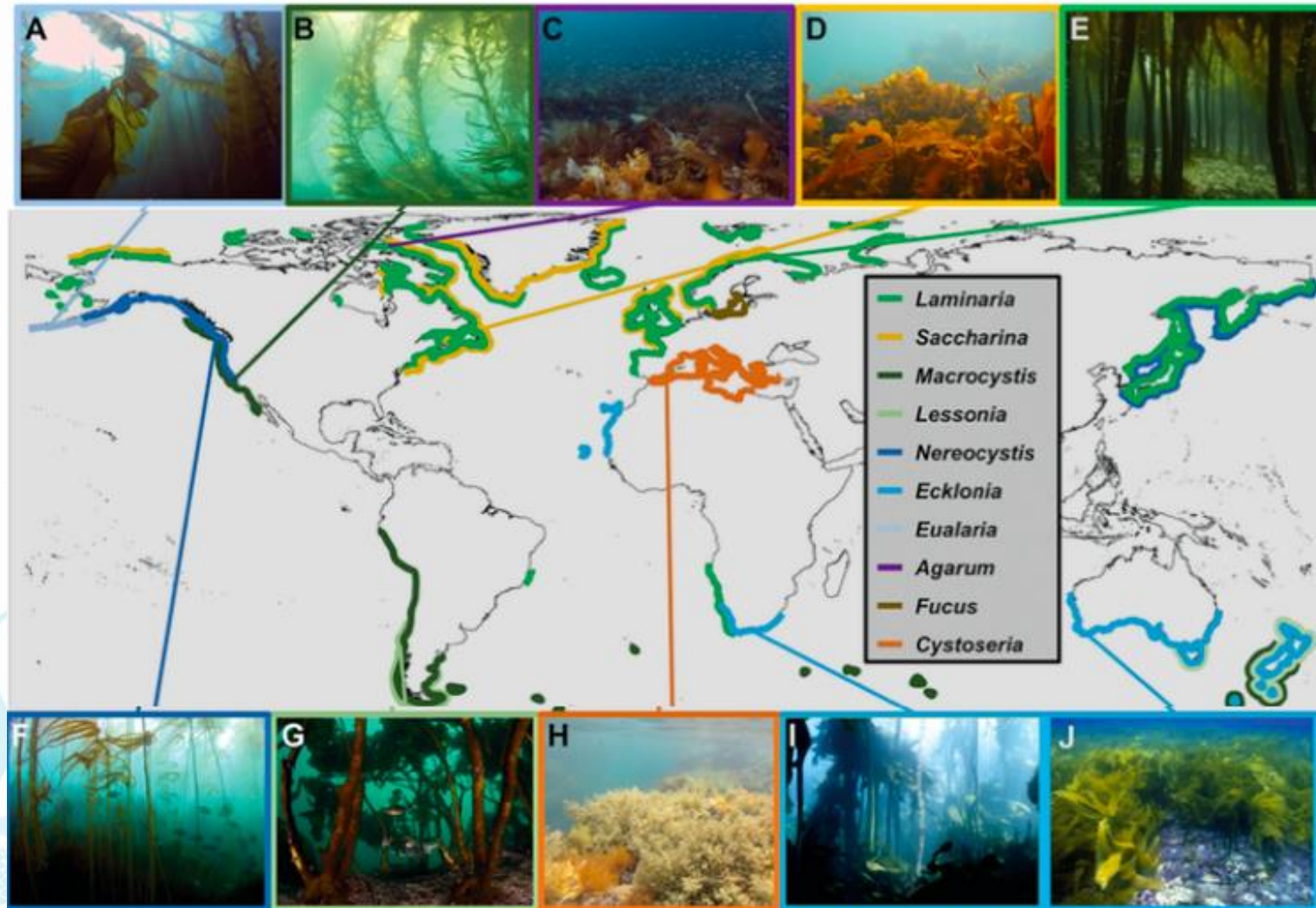




# Le foreste algali

## Perchè importanti?

- ✓ Costruttori di habitat
- ✓ Ospitano alta biodiversità
- ✓ Forniscono rilevanti funzioni e servizi ecosistemici

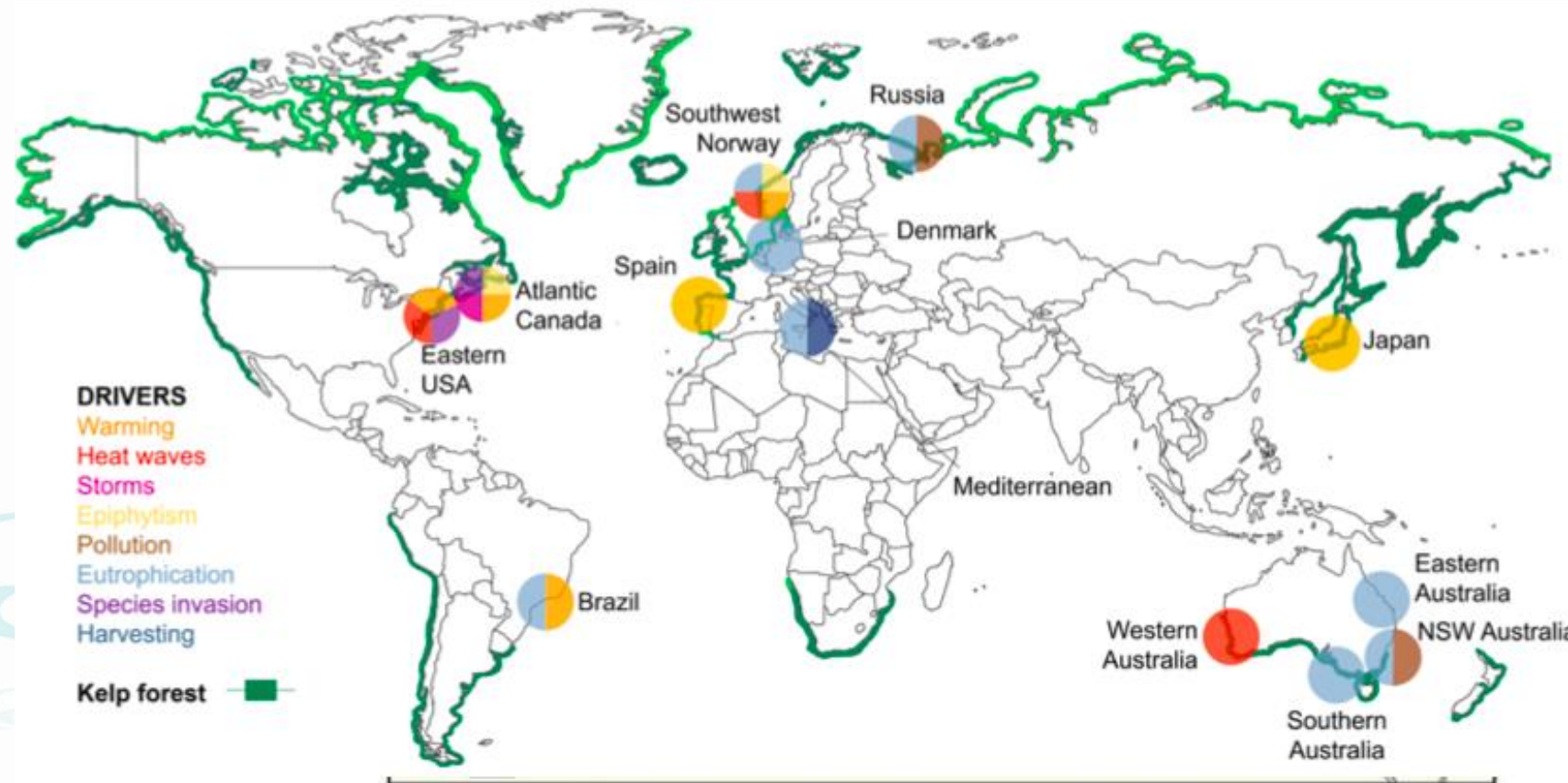


# Le foreste algali

Minacciate dai cambiamenti globali

E da impatti locali

- ✓ Inquinamento
- ✓ Sedimentazione
- ✓ Turismo (ancoraggi, calpestio)



Filbee-Dexter and Wernberg 2018

# *Cystoseira sensu lato*

- ✓ **Il Mediterraneo: un hot-spot per il genere**

Circa 40 specie

0-40 m di profondità

- ✓ **Regressione/perdita**

- ✓ **Conservazione**

Habitat Directive: 1170 (Reef)

Bern & Barcelona Conventions

WFD



# Il progetto ROCPOP-Life

## Life projects experience



**Call: LIFE-2021-SAP-NAT**  
(Nature & Biodiversity - Standard Action Projects (SAP))

**Topic: LIFE-2021-SAP-NAT-NATURE**

**Type of Action: LIFE-PJG**

**Proposal number: 101074309**

**Proposal acronym: REEForest**

**Type of Model Grant Agreement: LIFE Action Grant Budget-Based**

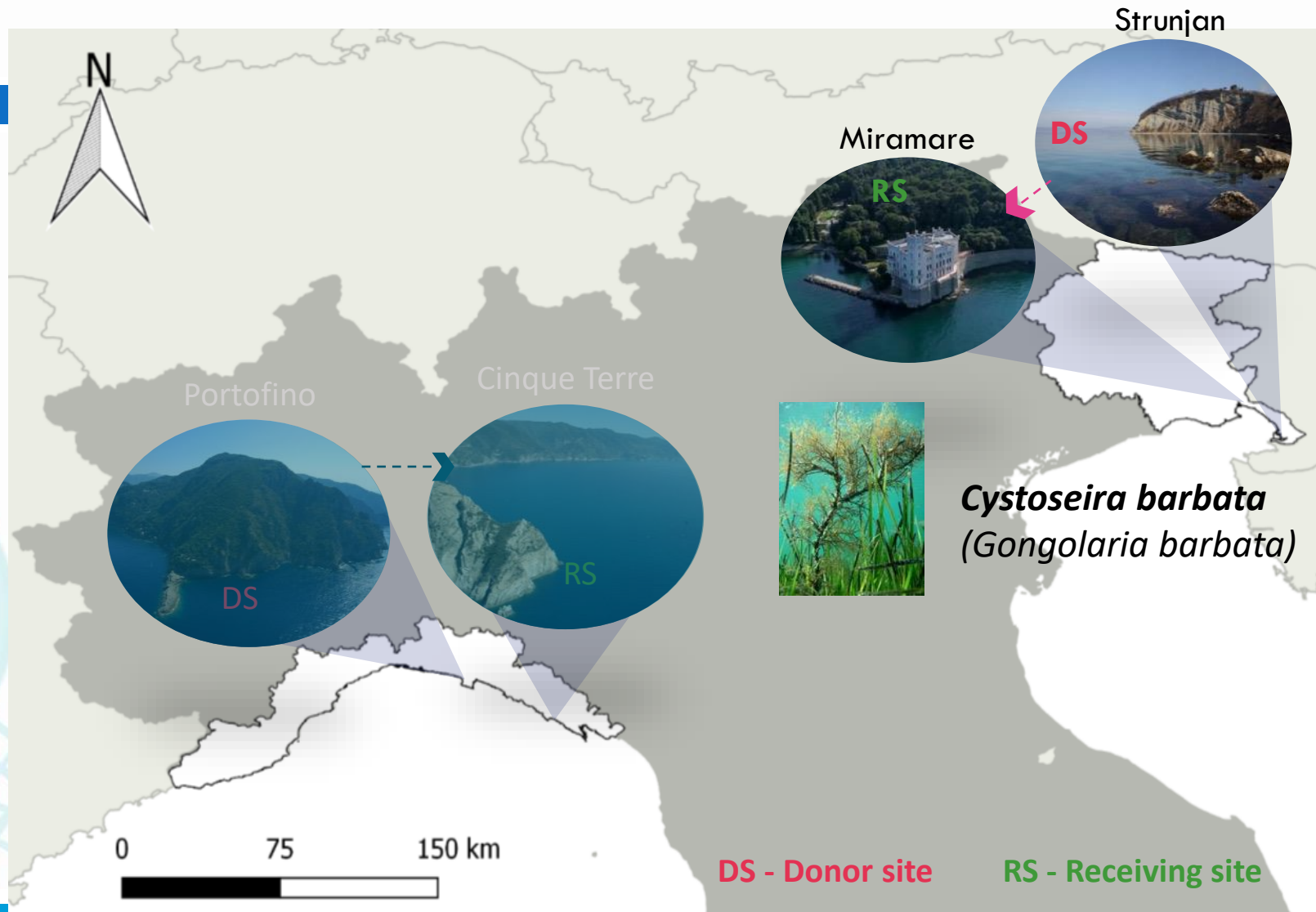


# Cystoseira sensu lato

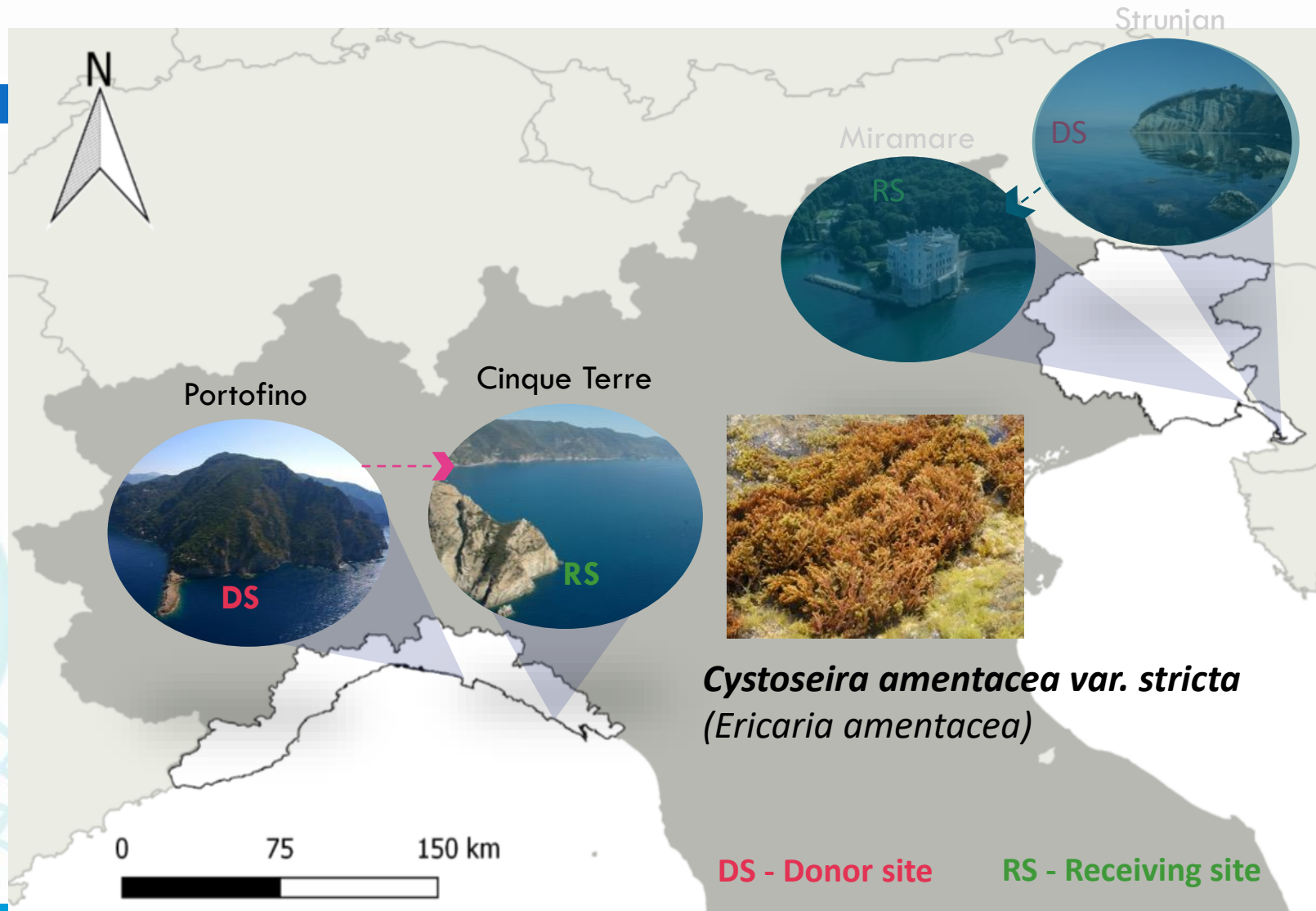


- ❑ Specie subtidali e intertidali: *Ericaria amentacea* e *Gongolaria barbata*
- ❑ Differenti sfide

# Siti donatori e riceventi



# Siti donatori e riceventi



# Raccolta degli apici

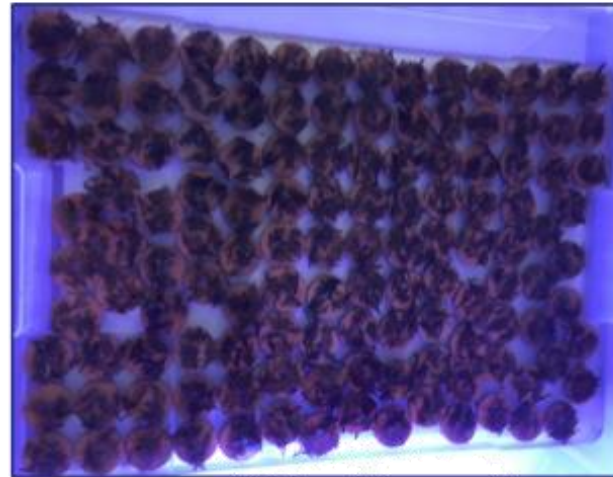




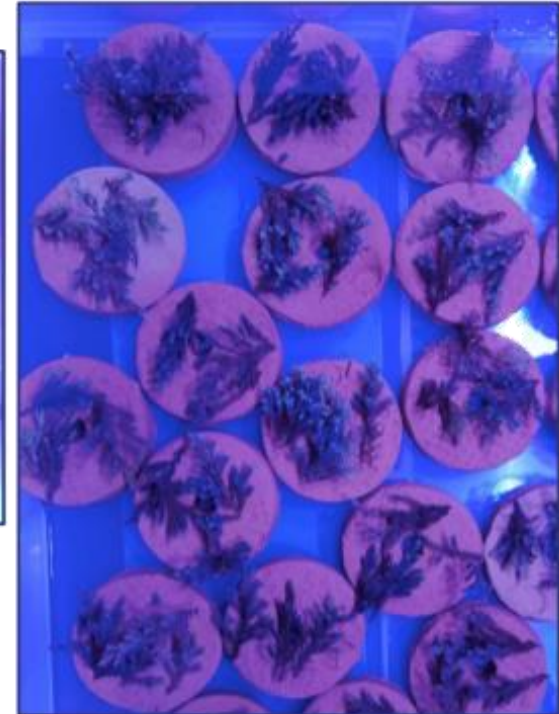
# L'avvio delle colture



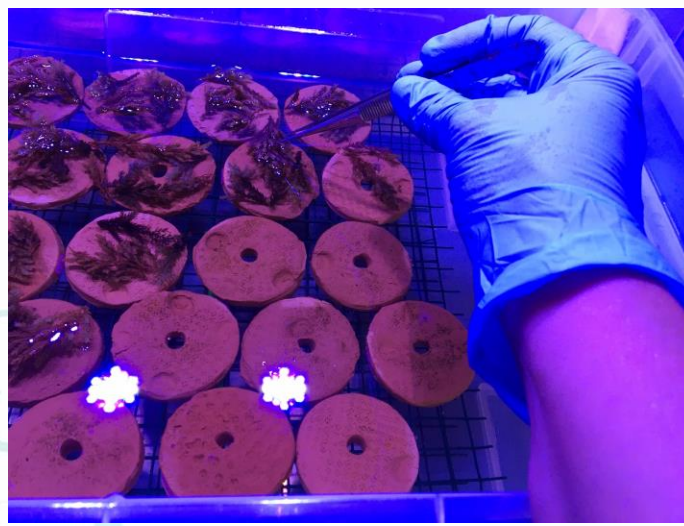
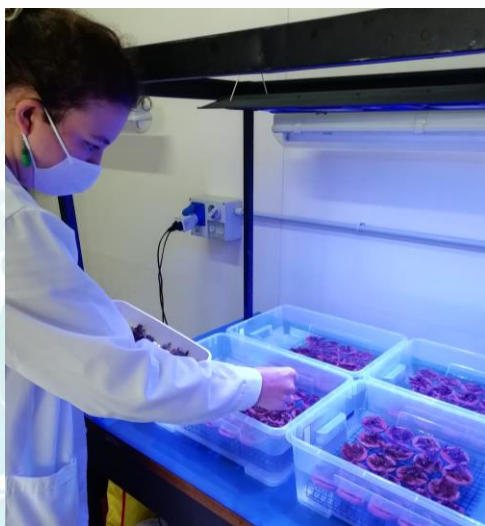
24h



**Gametes are released and fertilized, and zygotes settle**



# *Ericaria amentacea*: la fase di coltura



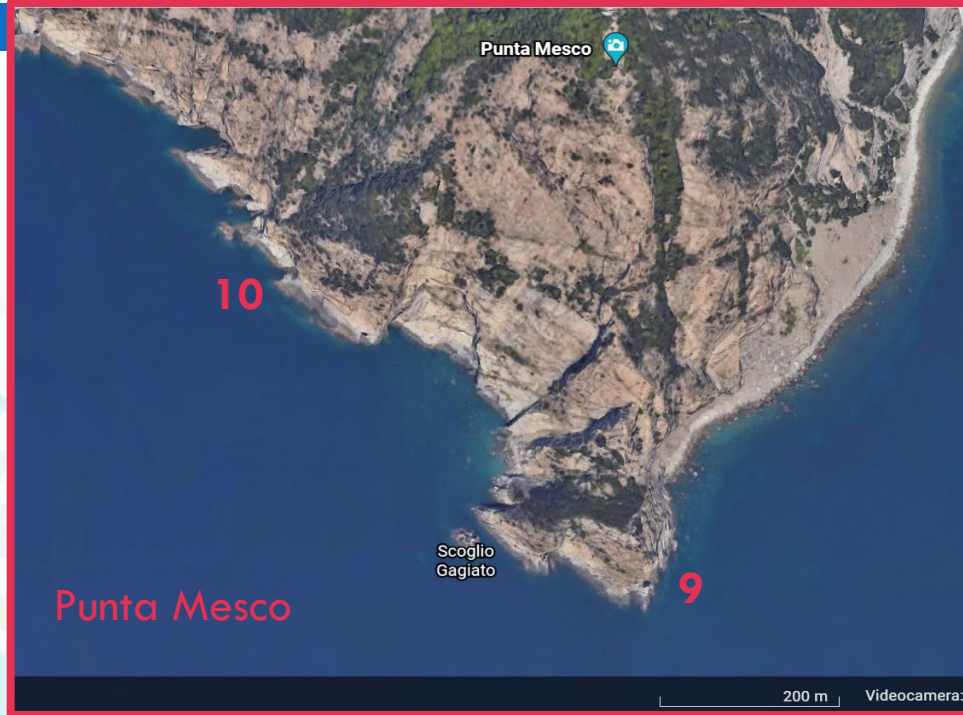
**6** eventi

**2044** piastrelline

# *Ericaria amentacea*: la fase dell'outplanting



# Ericaria amentacea: la fase dell'outplanting



10 siti riceventi nell'AMP Cinque Terre

650 m di costa restaurati



# *Ericaria amentacea*: outplanting

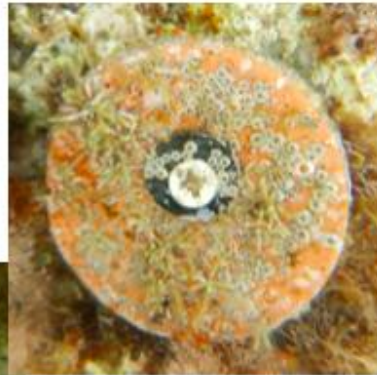
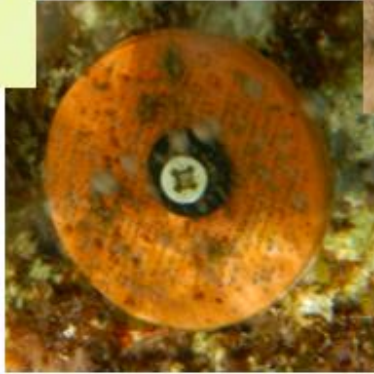


# *Ericaria amentacea*: il monitoraggio



Time 0

3 weeks



6 weeks

15 weeks



20 weeks



...da un anno all'altro





**ReLife**

**Re-establishment of the Ribbed Limpet (*Patella ferruginea*) in Ligurian MPAs by restocking and controlled reproduction  
LIFE15 NAT/IT/000771**





# RELIFE



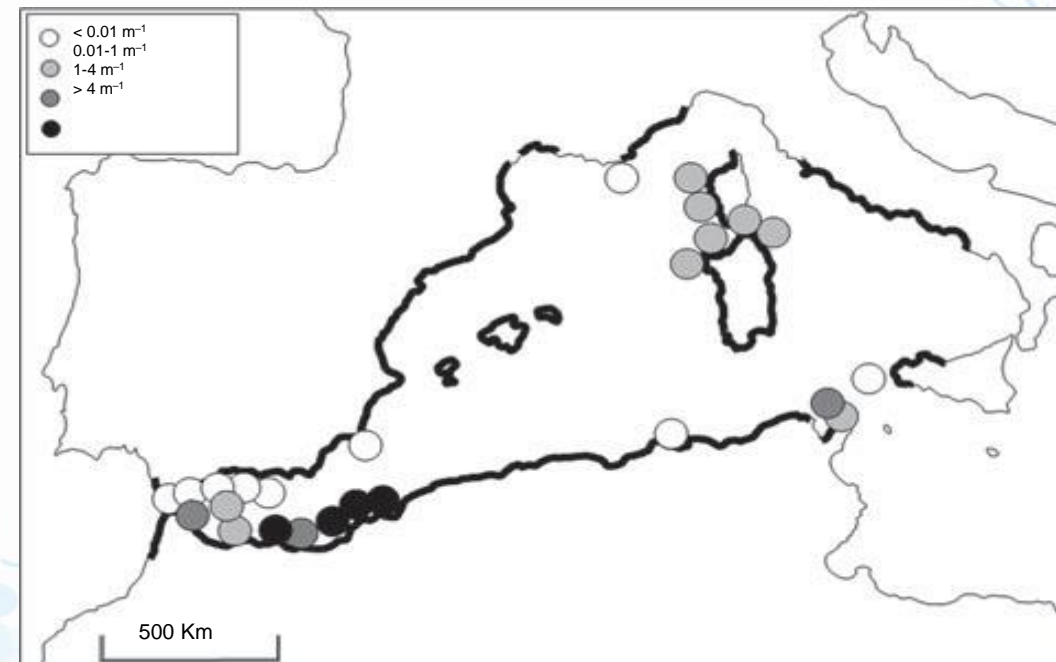
*Patella ferruginea*



# Patella ferruginea



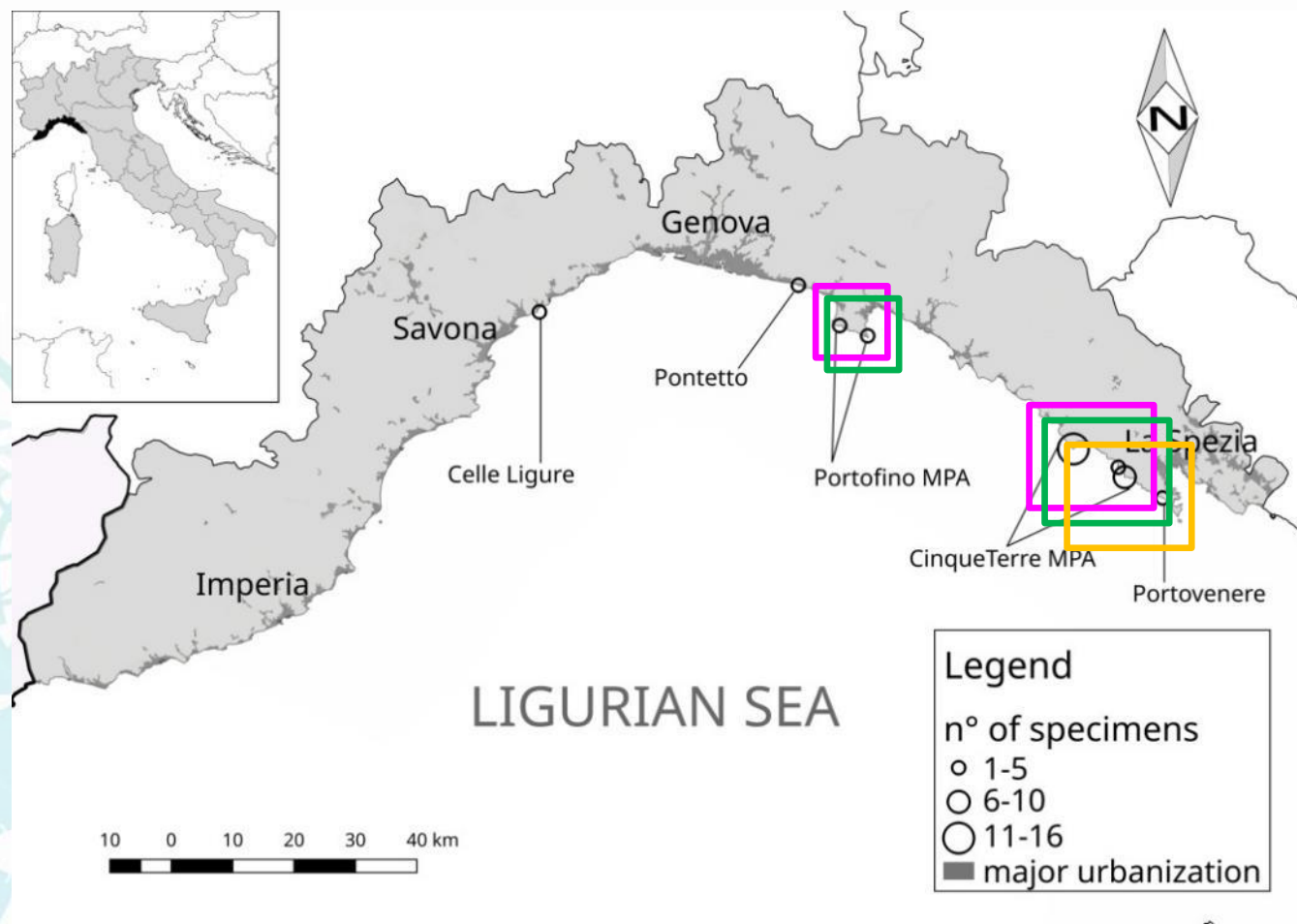
- Mollusco gasteropode, endemico del Mediterraneo Occidentale
- *Endangered species*, secondo SPAMI, Bern Convention e Habitats Directive (ECD 92/43/EEC, 1992)
- Protetta ma ancora illegalmente prelevata



# Restauro tramite produzione di giovanili



# Aggiornamento della distribuzione



**2019** (15 esemplari)

- 12 Punta Mesco
- 1 Levante
- 1 Portofino
- 1 Camogli

**2020** (18 esemplari)

- 14 Punta Mesco
- 4 Punta Chiappa

**2021**

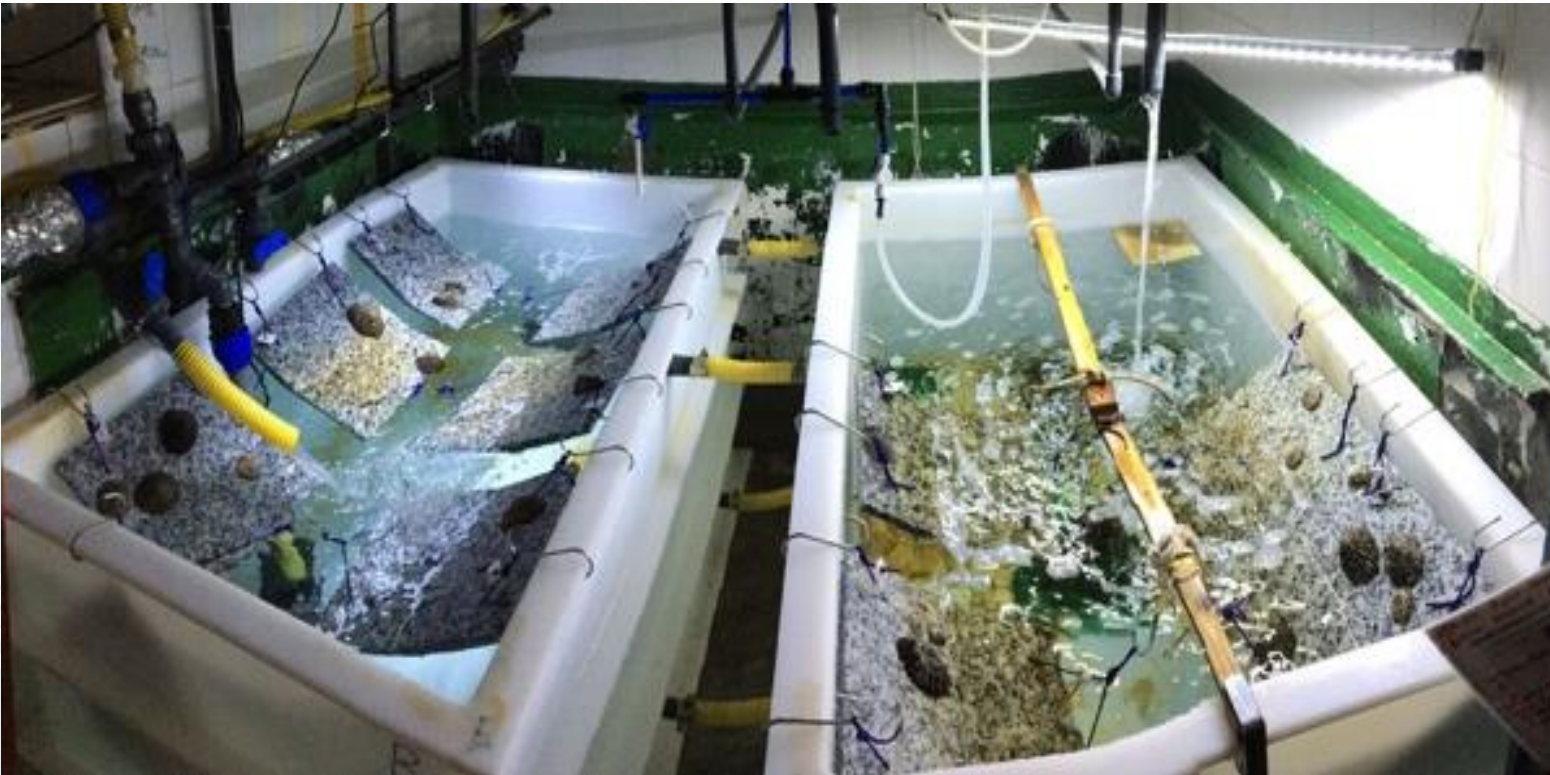
- 7 AMP Cinque Terre



**+ 40  
esemplari**

**TOT. 72 *P. ferruginea* individuati lungo la costa ligure**

# Il laboratorio di Camogli



CNR-IBF/Unige - Camogli lab

# L'emissione dei gameti

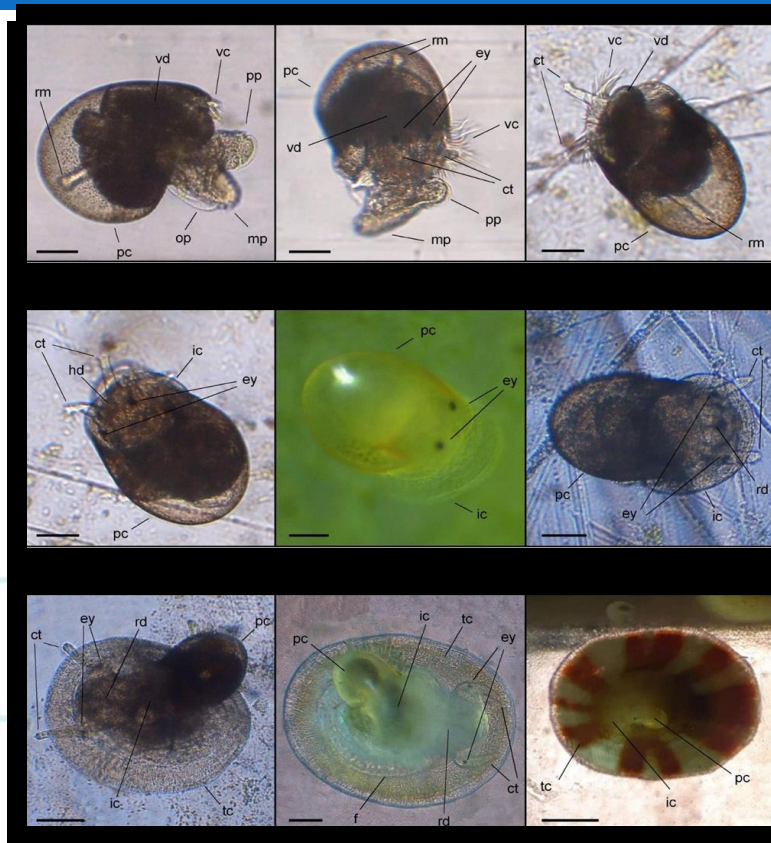
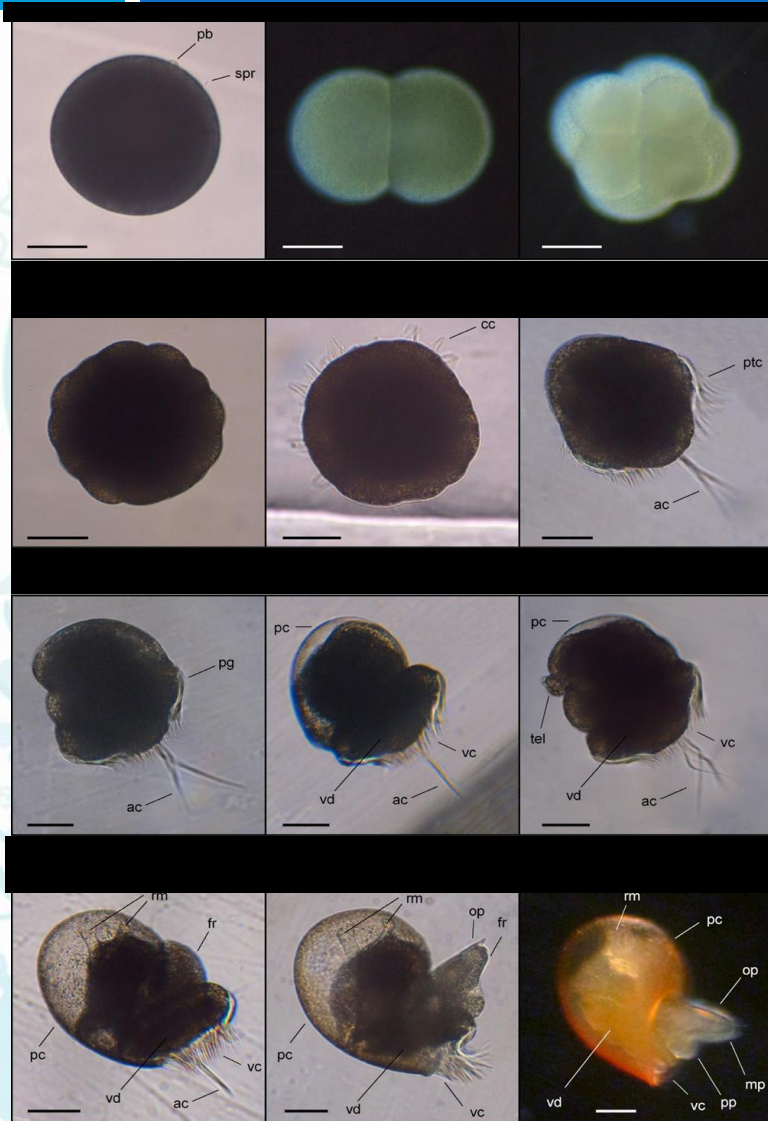
♀



♂

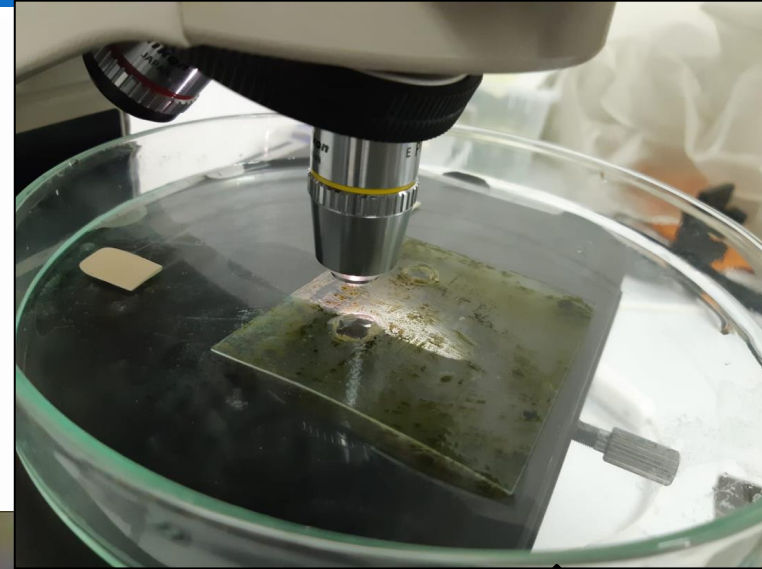


# Fertilizzazione, sviluppo larviale e insediamento



Abbreviations list: ac: apical cilia; cc: ciliated cell; ct: cephalic tentacle; ey: eye; fr: foot rudiment; ft: foot; hd: head; ic: "intermediate conch"; mp: metapodium; op: operculum; pb: polar body; pc: protoconch; pg: prototrochal girdle; pp: propodium; ptc: prototrochal cilia; rd: radula; rm: larval retractor muscle; spr: spermatozoid; tc: teleoconch; tel: telotroch; vc: velar cilia; vd: velar disk. Scale bar: A to R = 50  $\mu$ m, S and T = 100  $\mu$ m, U = 500  $\mu$ m.

# Fertilizzazione, sviluppo larviale e insediamento



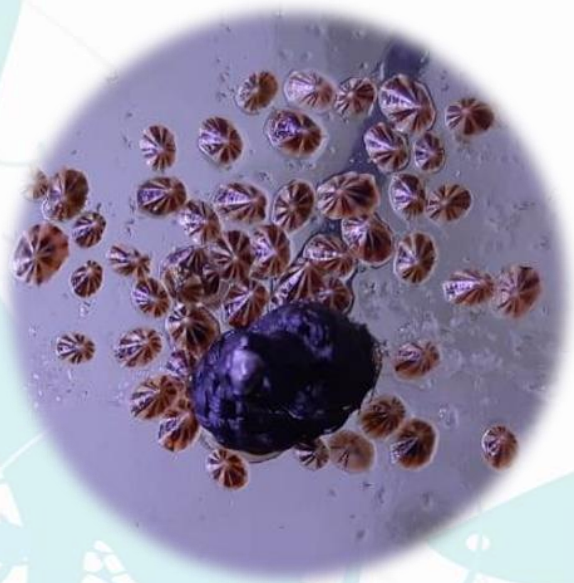
Post-larva



Insediamento e metamorfosi



# Crescita dei giovanili



Marzo 2021  
(2.2 -3.7 mm)



Agosto 2021  
(3.1 – 13.8 mm)



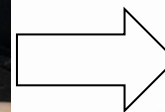
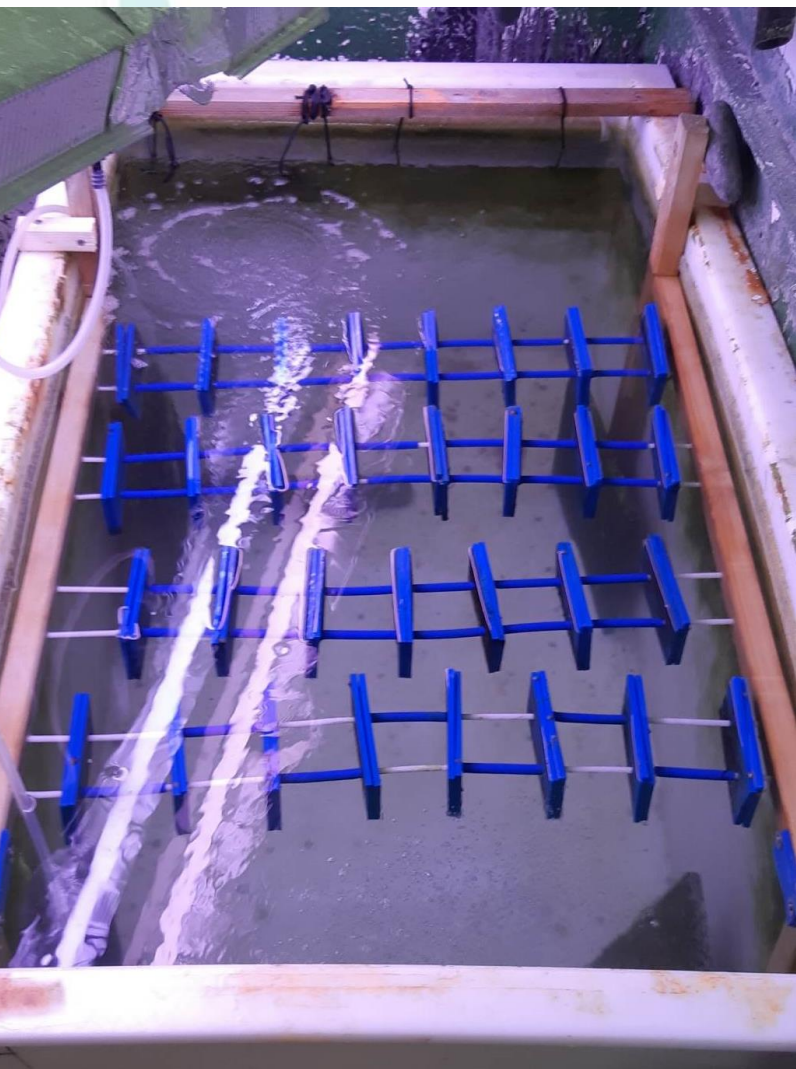
Febbraio 2022  
(3.9 – 26.1 mm)

Ø: 15 mm

+ 9 mesi

Ø medio: 7 mm

# Posizionamento in mare



# Life-Pinna



# Un progetto europeo per *Pinna nobilis*



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NATIONAL INSTITUTE OF BIOLOGY

**Shoreline**



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 **uniss**  
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# Life-Pinna

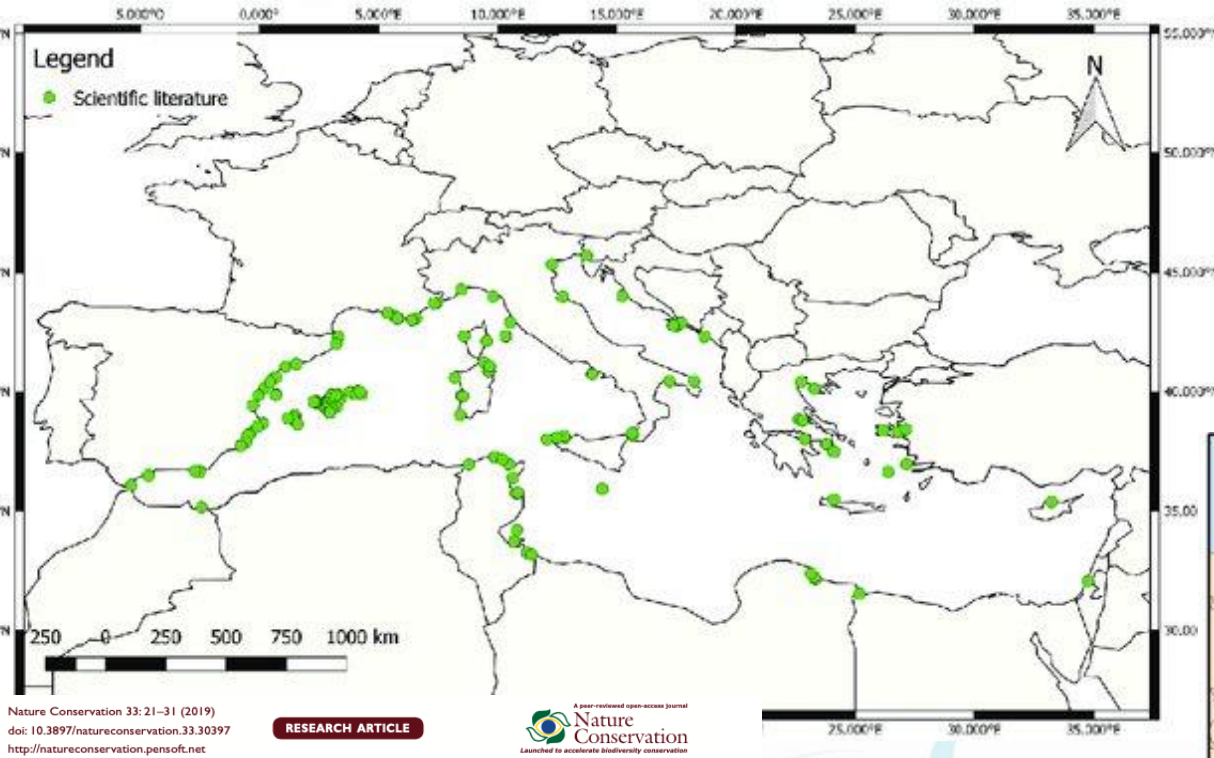
- ✓ monitorare e proteggere gli individui sopravvissuti di *Pinna nobilis* nel Mediterraneo occidentale e nel Mare Adriatico
- ✓ mettere a punto tecniche di allevamento in cattività per ripopolare alcune aree specifiche con individui resistenti alle malattie



Life Pinna



# Life-Pinna



The Mediterranean Fan Mussel - *Pinna Nobilis* - enters IUCN's Red List as Critically Endangered (CR)



**A scaling down mapping of *Pinna nobilis* (Linnaeus, 1758) through the combination of scientific literature, NATURA 2000, grey literature and citizen science data**

Vanessa Marrocco<sup>1</sup>, Francesco Zangaro<sup>1</sup>, Alessandro Sicuro<sup>1</sup>, Maurizio Pinna<sup>1</sup>

<sup>1</sup> Department of Biological and Environmental Sciences and Technologies, University of Salento, S.P. Lecce-Monteroni – 73100 Lecce, Italy

Corresponding author: Maurizio Pinna (maurizio.pinna@unisalento.it)

# A brevissimo... lancio di attività di Citizen Science

- ✓ Aiutateci, segnalando possibili esemplari superstiti della specie



Live Binn



[www.rocpoplife.eu](http://www.rocpoplife.eu)



## LATEST NEWS



**I giovani e la ricerca sul mare**

Promoting biodiversity enhancement by



**BioMA Meeting**

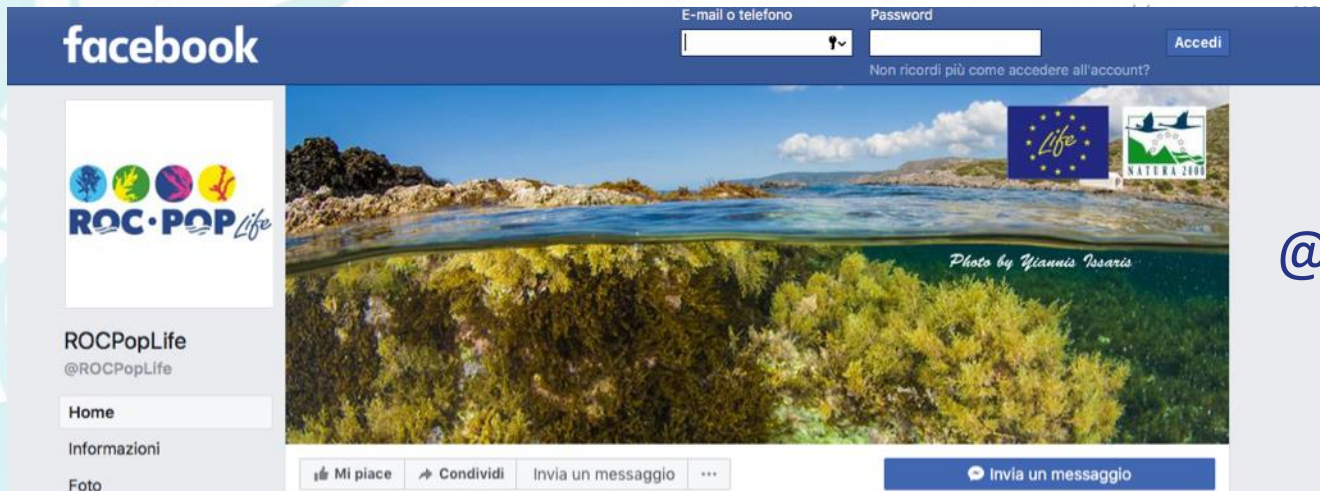
ROC-POP-LIFE meets students from



**Kick-off meeting**

ROC-POP-LIFE Kick-off Meeting AGENDA 04-05/11/2017 Santa Margherita Ligure  
Administrative and management Session

Welcome and project summary  
Presentation 14.15 Partnership Agreement  
14.30 Review of management  
... and decision making mechanism



[@ROCPopLife](https://www.facebook.com/ROCPopLife)



[www.re-lifeproject.eu](http://www.re-lifeproject.eu)



@ReLife







Life Pinna

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<https://www.lifepinna.eu>



**LIFE PINNA**

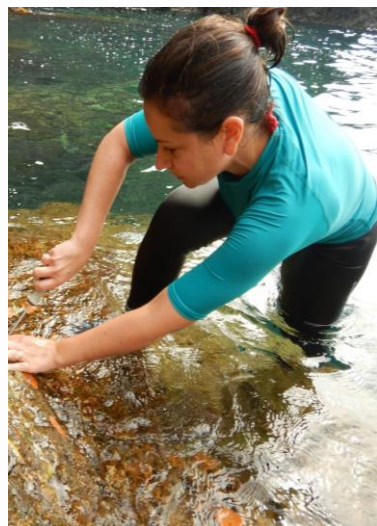
@lifepinna · Organizzazione di tutela ambientale

[Invia messaggio](#)

Laboratorio di  
Ecologia del  
Benthos



Mariachiara Chiantore



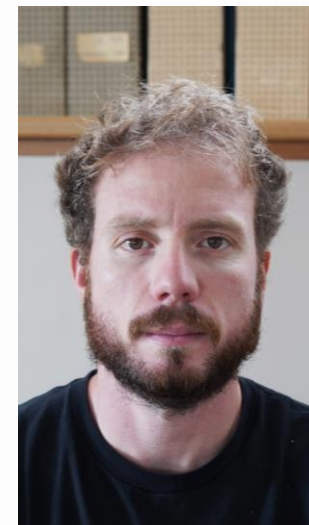
Valentina Asnagli



Maria Paola Ferranti &  
Javier Guallart



Rachel Clausing



Jacopo Cimini



Lorenzo Meroni



Monica Montefalcone



Alice Oprandi





BLOG, FILOSOFIA & LIFESTYLE, NATURA & EDUCAZIONE AMBIENTALE, SPORT

25 Febbraio 2022

## OUTBE: NASCE LA STARTUP CHE FA CITIZEN SCIENCE





Parco Nazionale  
**Cinque Terre**  
Area Marina Protetta



**Area Marina Protetta**  
**Isola di Bergeggi**



AREA MARINA PROTETTA  
**TAVOLARA**  
PUNTA CODA CAVALLO



Javni zavod Krajinski park Strunjan  
Istituto pubblico Parco naturale Strunjan



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