



# FIRST PUBLIC EVENT

2<sup>nd</sup> December 2022



## Life Pinna

LIFE20 NAT/IT/001122

«Conservation and re-stocking of the *Pinna nobilis* in the western Mediterranean and Adriatic sea»

## The conservation status of *Pinna nobilis* in the Mediterranean

Valentina Pittaco - National Institute of Biology

LIFE20 NAT/IT/001122 project is co-funded with the contribution of the LIFE programme of the European Union

## PINNA IDENTITY CARD

- ❑ Scientific name: *Pinna nobilis*
- ❑ Common names: fan mussel, pen shell, nacchera, lesčur
- ❑ Habitat: seagrass meadows (mainly), sand, mud, pebbles, boulders
- ❑ Depth range: 0.5-60 m
- ❑ Height: > 1m
- ❑ Lifespan > 45 years



Picture: Tihomir Makovec



# KEYSTONE SPECIES

- ❑ **Filter feeder:** key ecological role retaining large amounts of organic matter, reducing turbidity, enhancing benthic-pelagic coupling
- ❑ **Habitat builder:** provides a hard substrate for many epibionts
- ❑ **Threatened species:** human consumption, “sea silk” from byssus, habitat degradation, trawling, anchoring
- ❑ **Protected** under EU Habitats Directive (92/43/EEC, Annex IV), Barcelona Convention (Annex II), national legislations



Picture: Tihomir Makovec



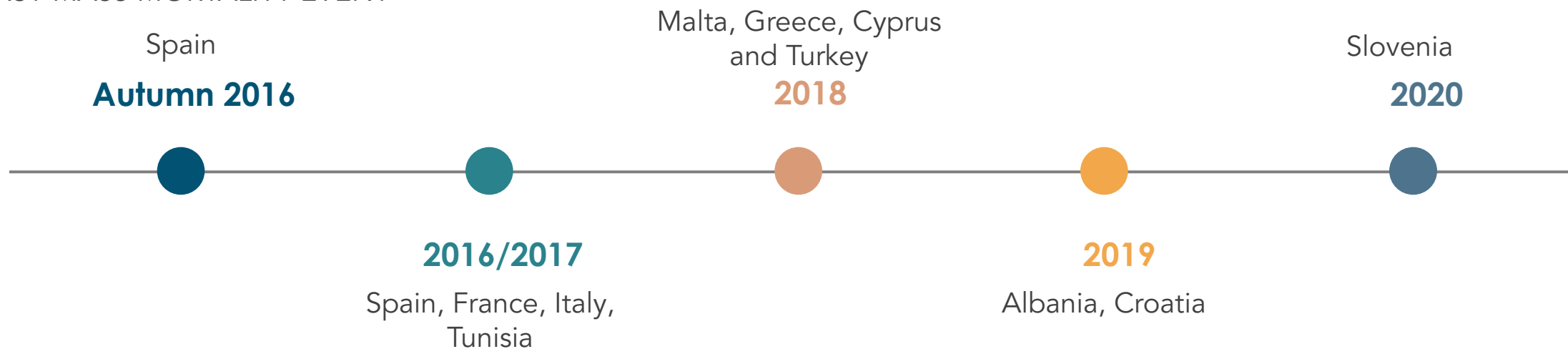
Picture: Tihomir Makovec



Picture: Tihomir Makovec

# MASS MORTALITY EVENTS

## FIRST MASS MORTALITY EVENT



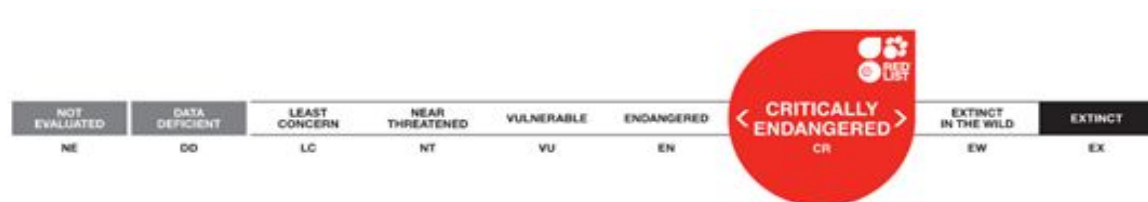


# MASS MORTALITY EVENTS

- Most likely causal agent: the protozoan *Haplosporidium pinnae*, specific to *P. nobilis* (*P. rudis* unaffected)
- Mortality rate: 80-100%
- Affecting all age classes, at different depths and habitat types, with few refugees
- Unprecedented events, on the brink of extinction?



, Pictures: Ana Fortič

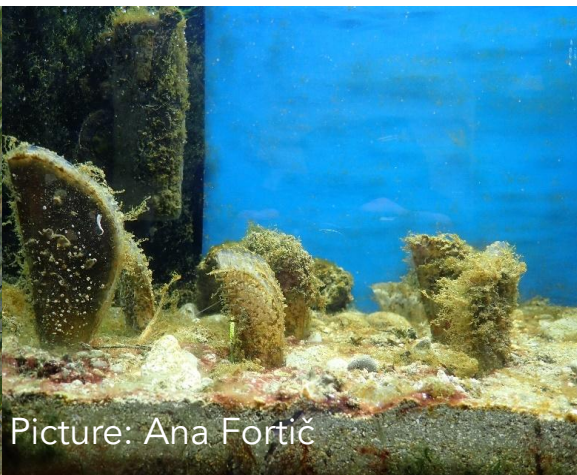


From 2019 is listed as Critically Endangered according to IUCN





Picture: Domen Trkov



Picture: Ana Fortič



Picture: Tihomir Makovec

## LET'S TAKE ACTION!

Possible measures:

- ☐ frequent monitoring in affected and less affected areas (lagoons).
- ☐ promoting the survival of natural recruitment (transplantation, cages)
- ☐ enhance larval recruitment and verify the recovery potential (larval collectors)
- ☐ maintenance in indoor facilities
- ☐ controlled reproduction



# THANKS FOR YOUR ATTENTION

Contacts

[info@lifepinna.eu](mailto:info@lifepinna.eu)

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



LIFE Pinna - First public event - 2nd December 2022





# FIRST PUBLIC EVENT

2<sup>nd</sup> December 2022



**Life Pinna**

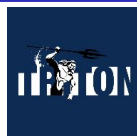
LIFE20 NAT/IT/001122

«Conservation and re-stocking of the *Pinna nobilis* in the western Mediterranean and Adriatic sea»

## The genetic variation of *Pinna nobilis*: a tool for repopulating the western Mediterranean

**Daria Sanna - University of Sassari**

*LIFE20 NAT/IT/001122 project is co-funded with the contribution of the LIFE programme of the European Union*





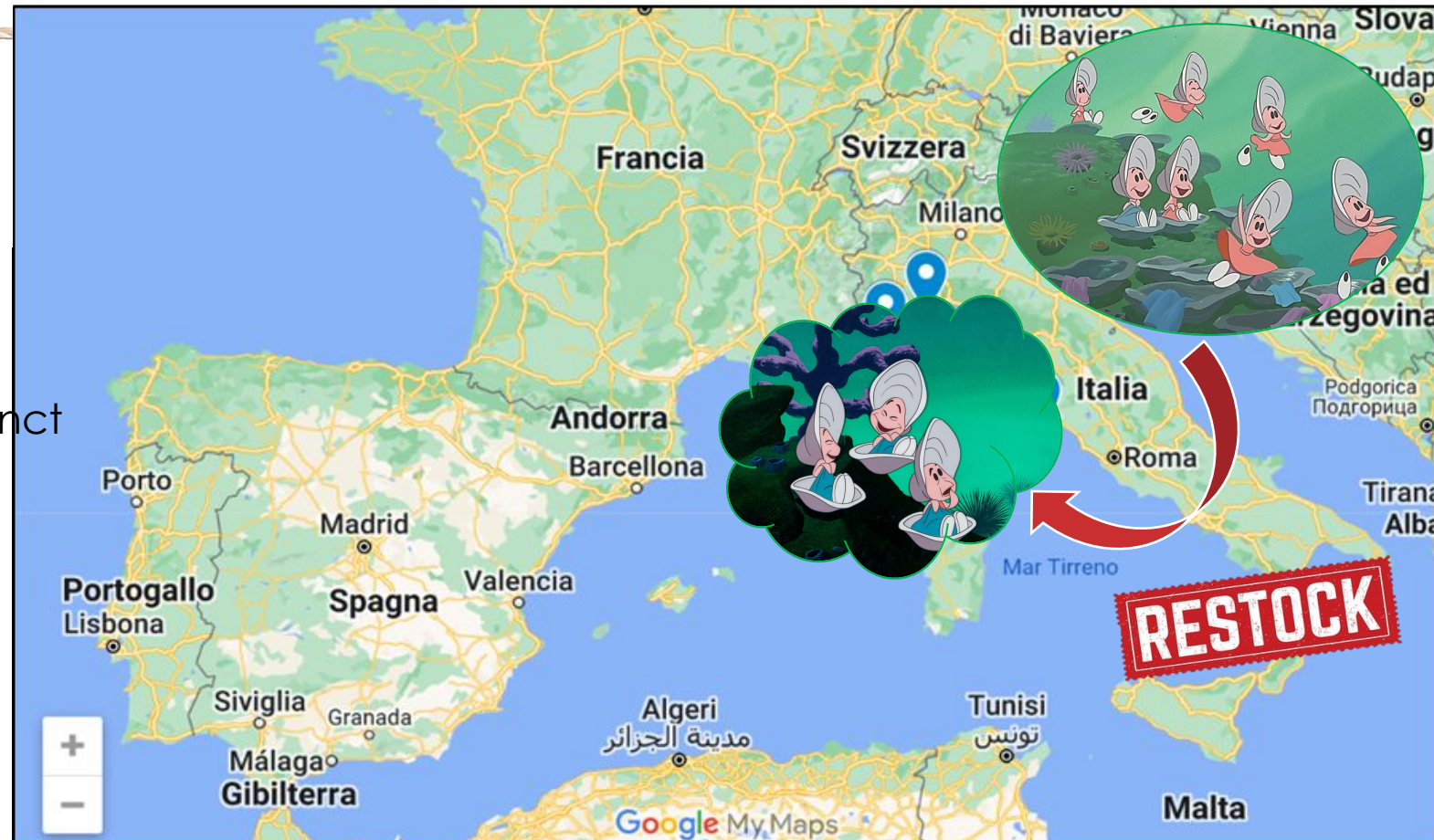
# Life Pinna: A PROJECT TO SAVE *PINNA NOBILIS*



- Locate still surviving populations
- Reproduce the species in captivity
- Repopulate sites where it became extinct

## Intervention sites:

- Isola dell'Asinara MPA (Sardinia)
- Strunjan MPA (Slovenia)
- Miramare MPA (Friuli-Venezia Giulia)
- Capo Mortola MPA (Liguria)





# ALERT

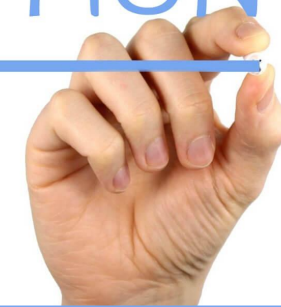
Reduced genetic variability in the donor/founder population which can provoke in new populations:

- genetic drift and reduction of allelic variants,
- weak potential for survival with reduced possibility to cope with environmental stressors and pathogens,
- «genetic pollution» with introduction of allochthonous allelic variants that are divergent from those belonging to the extinct (almost) populations.

- Evaluation of the genetic variability of the donor population.
- Genotyping of founder individuals.
- Evaluation of the level of genetic homogeneity among the areas involved in the project with particular reference to the evaluation of the level of affinity between the donor population of the Gulf of Trieste and populations that were present in the western Mediterranean areas before the mass mortality of *Pinna nobilis*.

## SOLUTION

**MAINTAINING HIGH LEVELS  
OF GENETIC VARIABILITY IN  
NEWLY RESTORED  
POPULATIONS**

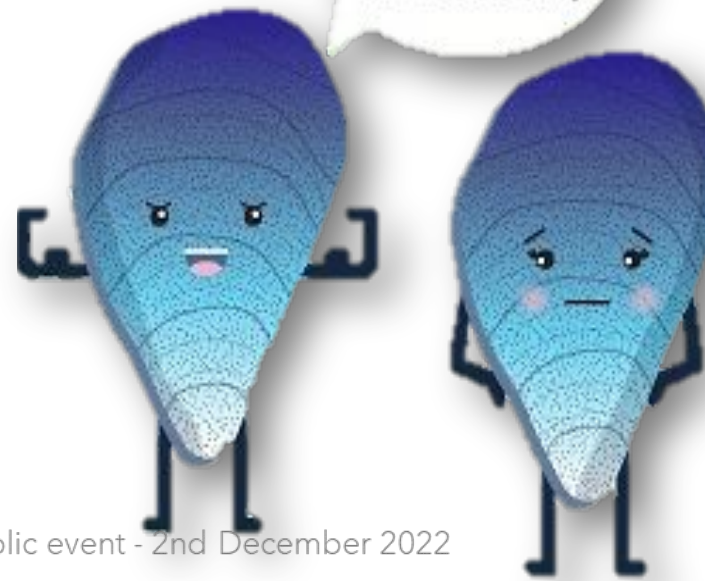




# A PICTURE OF *PINNA NOBILIS* GENETIC VARIATION BEFORE ITS MASS MORTALITY IS NEEDED



**WORK IN PROGRESS**





# A PICTURE OF *PINNA NOBILIS* GENETIC VARIATION BEFORE ITS MASS MORTALITY IS NEEDED

OPEN ACCESS Freely available online

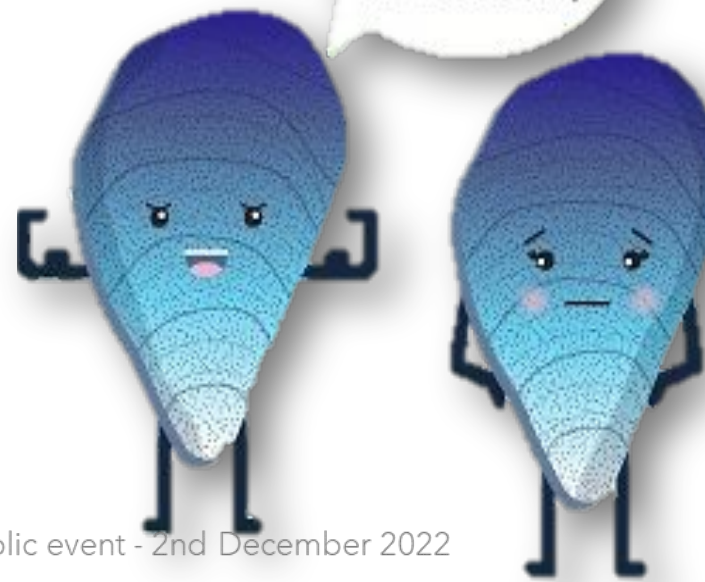
June 2013 | Volume 8 | Issue 6 | e67372

PLOS ONE

## Mitochondrial DNA Reveals Genetic Structuring of *Pinna nobilis* across the Mediterranean Sea

Daria Sanna<sup>1</sup>, Piero Cossu<sup>1</sup>, Gian Luca Dedola<sup>2</sup>, Fabio Scarpa<sup>1</sup>, Ferruccio Maltagliati<sup>3</sup>, Alberto Castelli<sup>3</sup>, Piero Franzoi<sup>4</sup>, Tiziana Lai<sup>1</sup>, Benedetto Cristo<sup>1</sup>, Marco Curini-Galletti<sup>1</sup>, Paolo Francalacci<sup>1</sup>, Marco Casu<sup>1\*</sup>

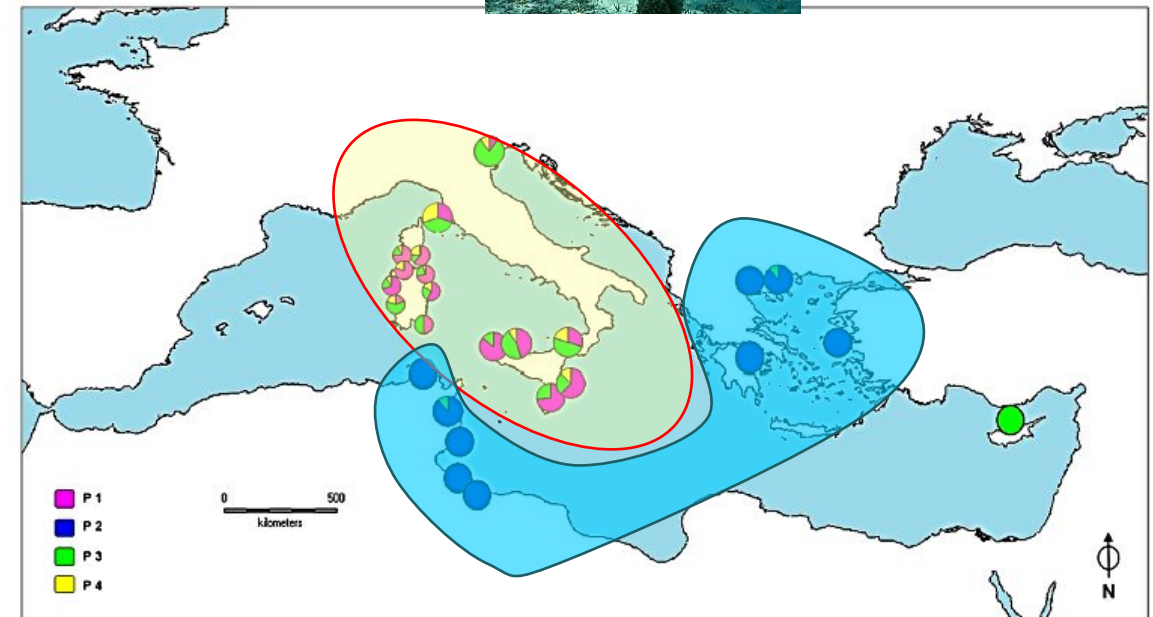
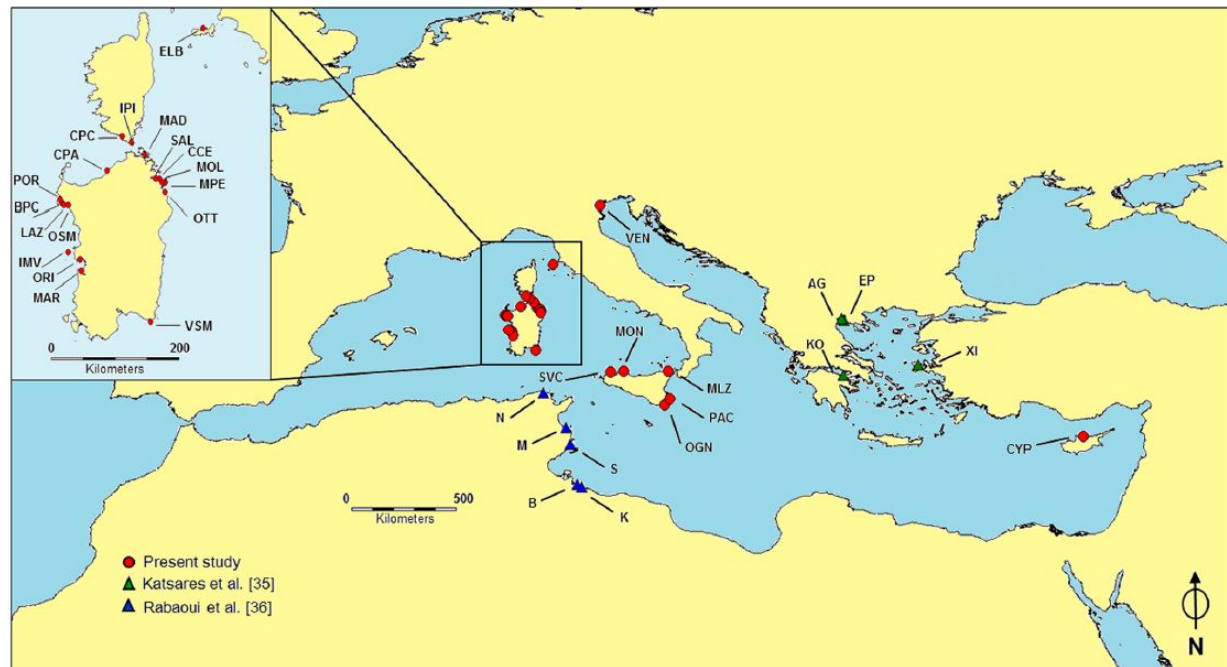
<sup>1</sup> Dipartimento di Scienze della Natura e del Territorio - Sezione di Zoologia, Archeozoologia e Genetica, Università di Sassari, Sassari, Italy, <sup>2</sup> Dipartimento di Veterinaria - Sezione di Anatomia, Università di Sassari, Sassari, Italy, <sup>3</sup> Dipartimento di Biologia, Università di Pisa, Pisa, Italy, <sup>4</sup> Dipartimento di Scienze Informatica e Statistica, Università Cà Foscari, Venezia, Italy



# Mitochondrial DNA Reveals Genetic Structuring of *Pinna nobilis* across the Mediterranean Sea

Daria Sanna<sup>1</sup>, Piero Cossu<sup>1</sup>, Gian Luca Dedola<sup>2</sup>, Fabio Scarpa<sup>1</sup>, Ferruccio Maltagliati<sup>3</sup>, Alberto Castelli<sup>3</sup>, Piero Franzoi<sup>4</sup>, Tiziana Lai<sup>1</sup>, Benedetto Cristo<sup>1</sup>, Marco Curini-Galletti<sup>1</sup>, Paolo Francalacci<sup>1</sup>, Marco Casu<sup>1\*</sup>

**1** Dipartimento di Scienze della Natura e del Territorio - Sezione di Zoologia, Archeozoologia e Genetica, Università di Sassari, Sassari, Italy, **2** Dipartimento di Medicina Veterinaria - Sezione di Anatomia, Università di Sassari, Sassari, Italy, **3** Dipartimento di Biologia, Università di Pisa, Pisa, Italy, **4** Dipartimento di Scienze Ambientali, Informatica e Statistica, Università Cà Foscari, Venezia, Italy





## SCIENTIFIC REPORTS

OPEN

Genetic and oceanographic tools  
reveal high population connectivity  
and diversity in the endangered pen  
shell *Pinna nobilis*

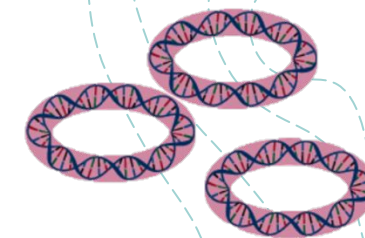
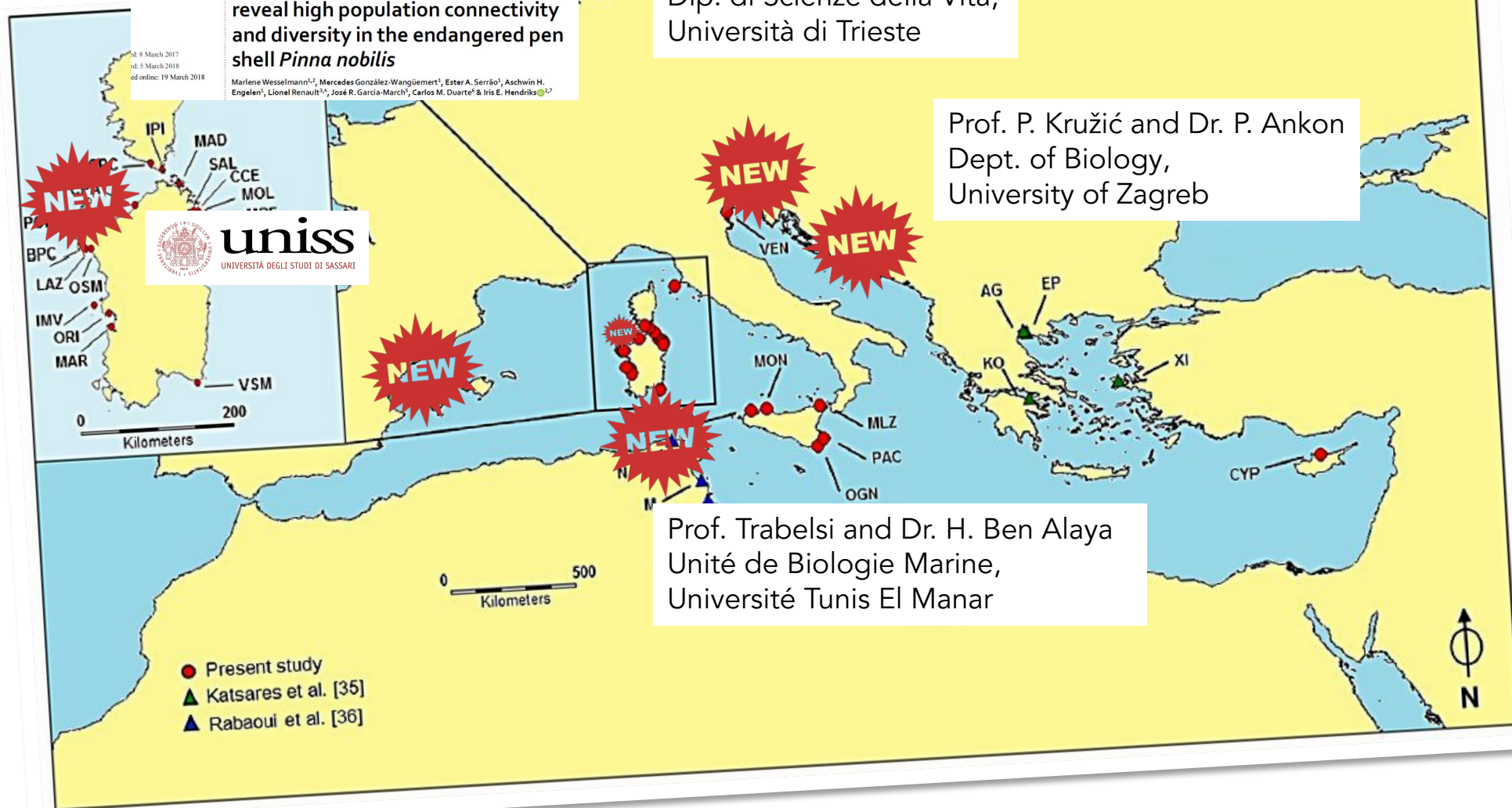
Marlene Wesselmann<sup>1,2</sup>, Mercedes González-Wangüemert<sup>1</sup>, Ester A. Serrão<sup>3</sup>, Aschwin H.  
Engelen<sup>2</sup>, Lionel Renault<sup>3,4</sup>, José R. García-March<sup>5</sup>, Carlos M. Duarte<sup>6</sup> & Iris E. Hendriks<sup>1,2,7</sup>

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UNIVERSITÀ DEGLI STUDI DI SASSARI

Prof. A. Pallavicini  
Dip. di Scienze della Vita,  
Università di Trieste

Prof. P. Kružić and Dr. P. Ankon  
Dept. of Biology,  
University of Zagreb

Prof. Trabelsi and Dr. H. Ben Alaya  
Unité de Biologie Marine,  
Université Tunis El Manar



A total of ~500 sequences  
from individuals collected  
before the MME were  
analysed using the  
mtDNA COI gene as a  
molecular marker.





# A NON-LETHAL SAMPLING METHOD FOR *PINNA NOBILIS*



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**PLEASE NOTE**

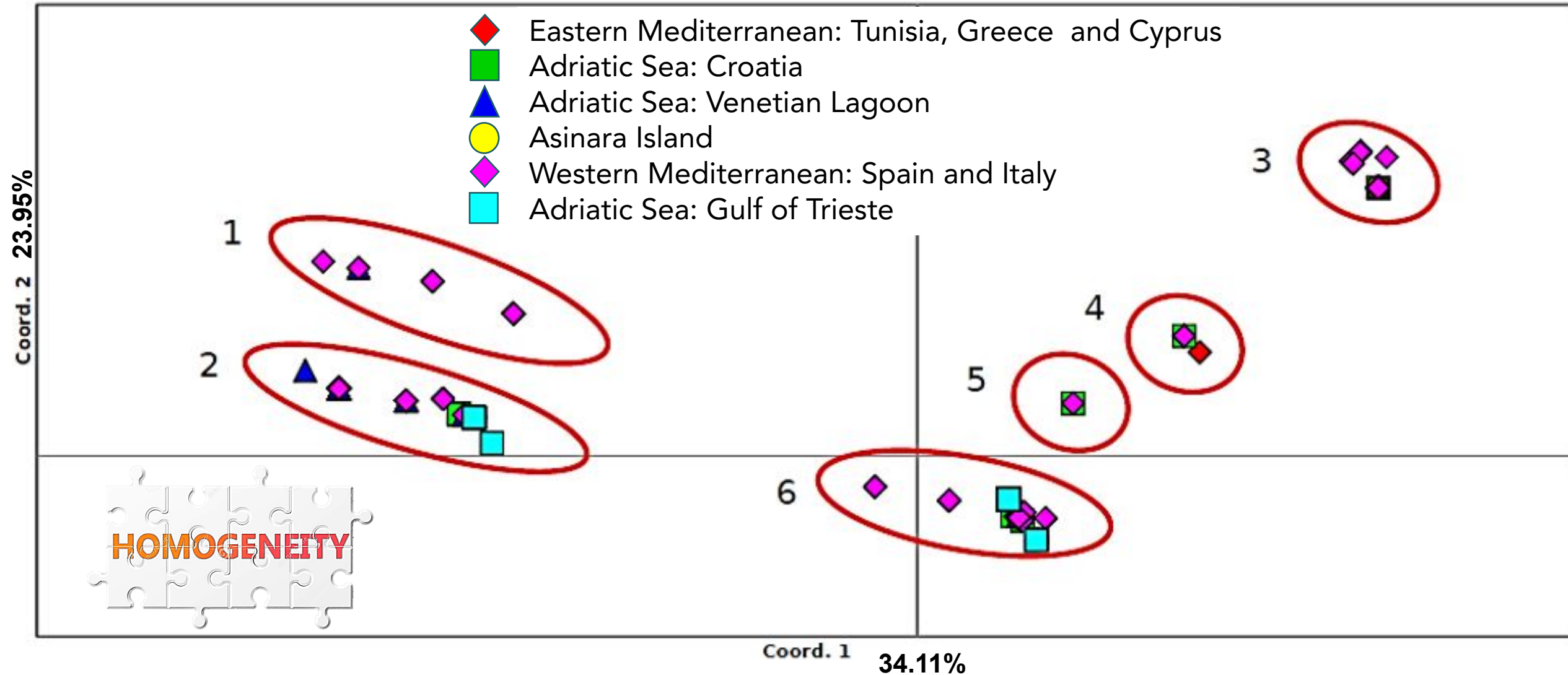
**AUTHORIZED**

The Universities of Sassari and Zagreb collected samples of *Pinna nobilis* using **a specific non-lethal sampling method** developed by the University of Sassari in 2010, which does not cause significant damages to the shell and the soft tissues of the fan mussels.

**This method has been approved by ISPRA and does not affect the chances of survival of sampled individuals !**



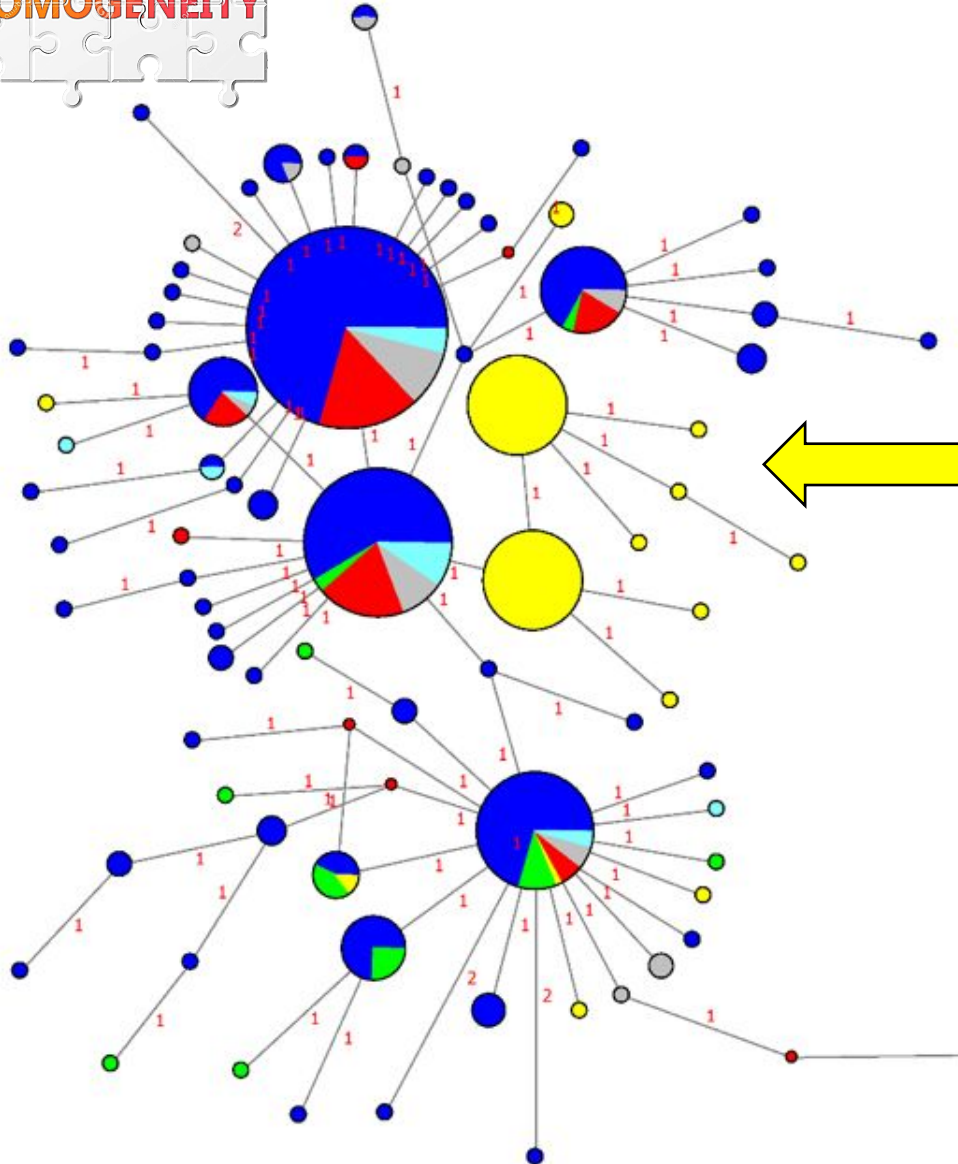
## Principal Coordinates (PCoA)





## HOMOGENEITY


## NETWORK ANALYSIS

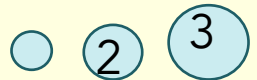


- Yellow: Eastern Mediterranean: Tunisia, Greece and Cyprus
- Blue: Western Mediterranean: Spain and Italy
- Green: Adriatic Sea: Venetian Lagoon
- Red: Asinara Island
- Grey: Adriatic Sea: Croatia
- Light Blue: Adriatic Sea: Gulf of Trieste

**PLEASE NOTE**

A network represents the relationships among lineages and the possible evolutionary paths that occur among haplotypes.

Each sequence corresponds to a spot  which is coloured according to its geographic origin.



The more a spot is large the more the lineages is frequent.

The branches of the network represent the nucleotide mutations that differentiate two sequences.

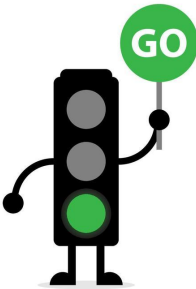
The length of the branches is proportional to the number of mutations that occur between two lineages

## CONCLUSION

The transplant of *Pinna nobilis* from Adriatic to western Mediterranean is possible without genetic damages.

### Furthermore

- The Mediterranean populations of *Pinna nobilis* that inhabited the basin before the beginning of the mass mortality event, showed high levels of mitochondrial genetic homogeneity with particular reference to the western Mediterranean and the Adriatic Sea.
- This finding is likely due to a common origin for all Mediterranean populations and to an efficient potential for dispersal of this species.
- Low levels of divergence occurred between the populations of eastern Mediterranean and their counterparts in the occidental basin and in the Adriatic.
- However, such a divergence can be considered not relevant being provoked by a few point neutral nucleotide mutations.
- Oriental populations likely derived from occidental ones and the low levels of genetic divergence may be the product of genetic drift which reduced their genetic variability and made frequent haplotypes that were quite uncommon in western areas.





thanks  
FOR ATTENTION



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UNIVERSITÀ DEGLI STUDI DI SASSARI

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**Department of Veterinary Medicine**

Prof. Marco Casu

Dr. Piero Cossu

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LIFE Pinna - First public event - 2nd December 2022





# FIRST PUBLIC EVENT

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**Life Pinna**

LIFE20 NAT/IT/001122

«Conservation and re-stocking of the *Pinna nobilis* in the western Mediterranean and Adriatic sea»

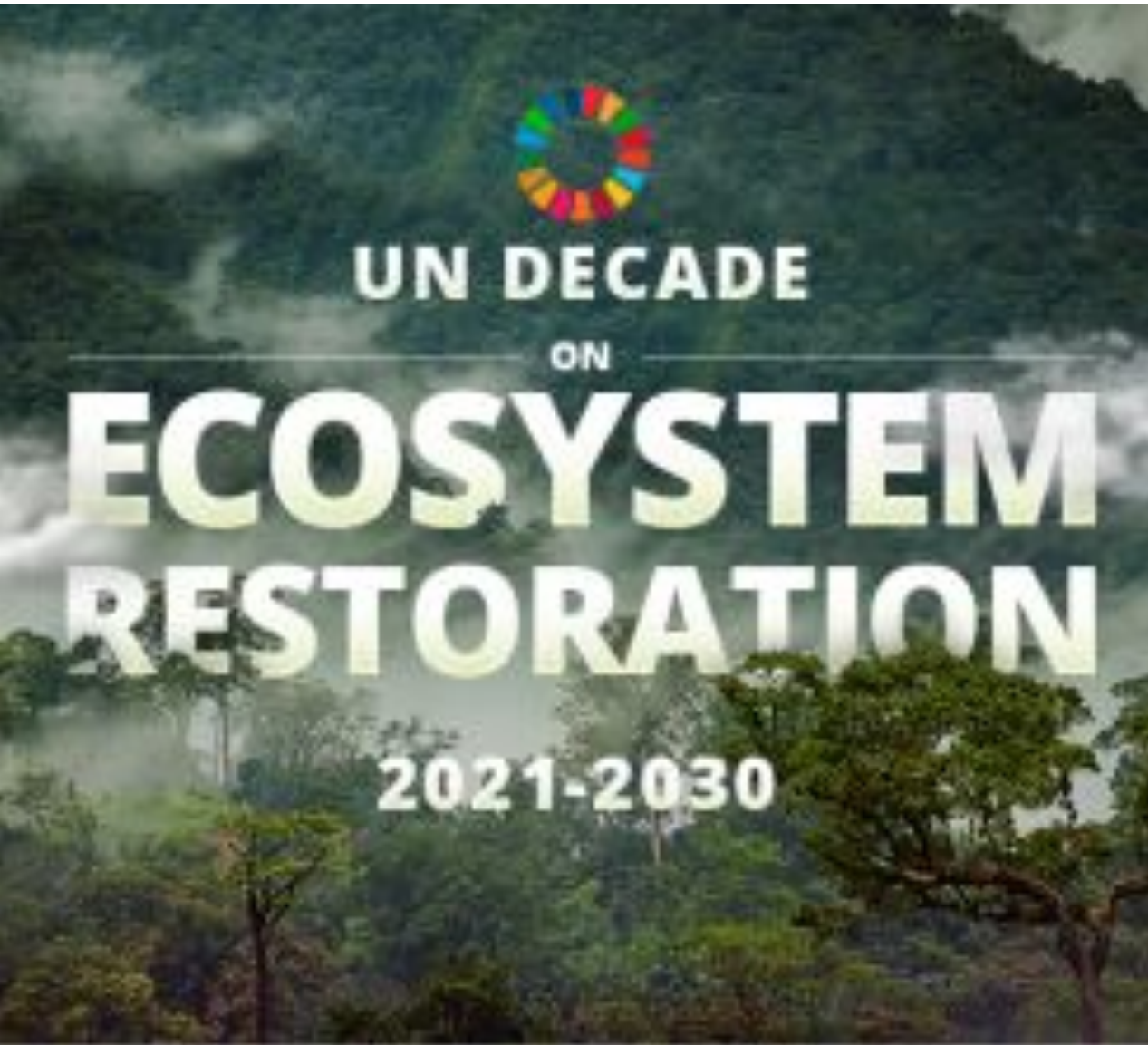
## Controlled reproduction for *Pinna nobilis* restoration

Mariachiara Chiantore - University of Genoa, DISTAV

LIFE20 NAT/IT/001122 project is co-funded with the contribution of the LIFE programme of the European Union







## 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**

# ECOLOGICAL RESTORATION

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





# REPRODUCE TO RESTORE

- The **ONLY** sustainable approach for species and habitat restoration is to establish **sustainable approaches, that do not harm donor populations**
- This is even more true in the case of a species that is **DISAPPEARING**: therefore, donor populations **CANNOT** sustain
- In our case, as in most of the cases, **the most efficient way is to go for attempting reproduction in controlled conditions**
- **Established for terrestrial ecosystem restoration, in its infancy for marine species**



# WE HAVE SOME EXPERIENCE ALREADY



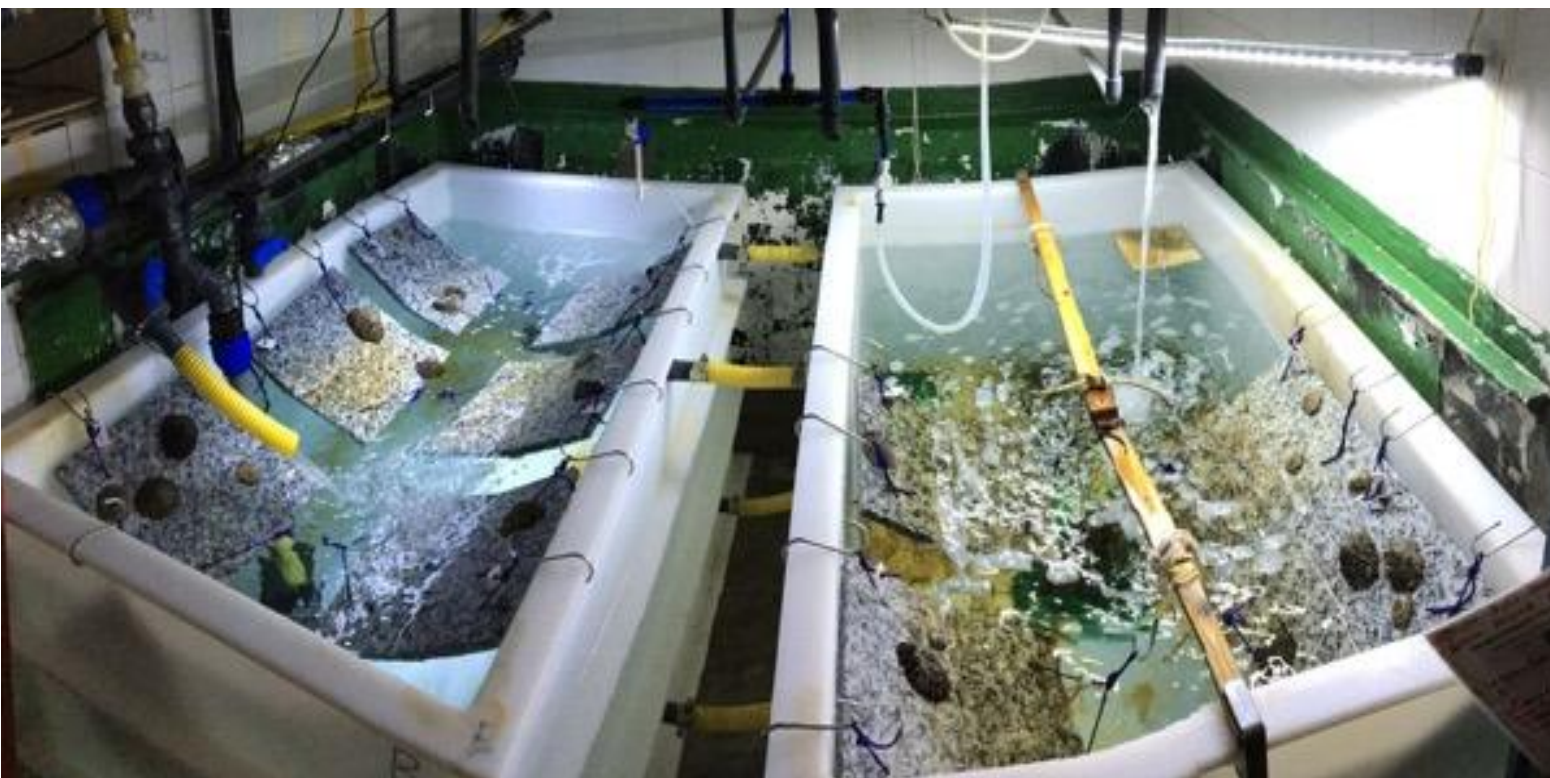
**Re-establishment of the Ribbed  
Limpet (*Patella ferruginea*)  
in Ligurian MPAs  
by  
restocking and controlled  
reproduction  
LIFE15 NAT/IT/000771**



***Patella ferruginea***

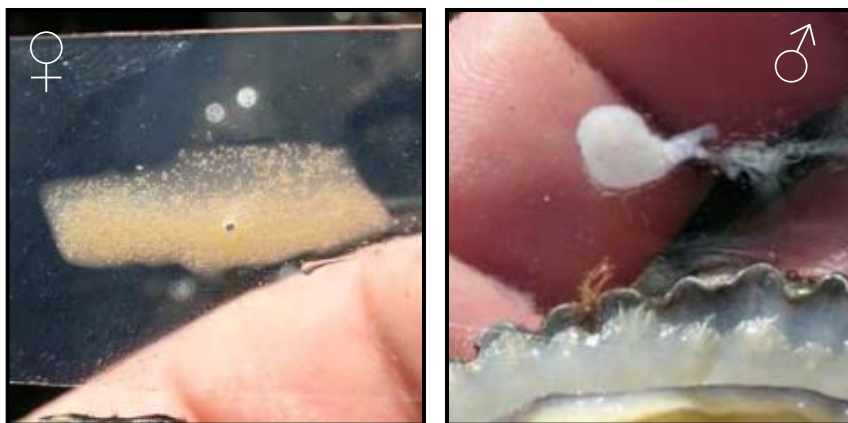


# ADAPTATION AND REPRODUCTION



CNR-IBF/Unige - Camogli lab

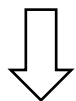
## SEX DETERMINATION



(Photo J. Guallart)

Proposed by Wright & Lindberg (1979) for Patellogastropoda

Adapted to *P. ferruginea* by Guallart et al. (2013), minimizing also the mortality associated with its use



- o Sex determination
- o Assessment of the gamete stage of maturation

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# SPAWNING INDUCTION

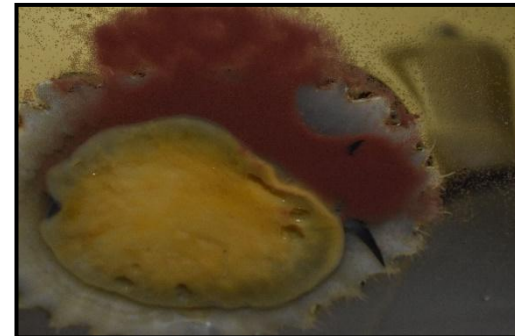
## Protocol for spawning induction:

1. CD: cold dry (maintained in a refrigerator at 5 °C, 0.5 h)
2. B: biopsy
3. VA: vigorous aeration
4. TS: thermal shock (DT = -5°C)
5. RD: room temperature-dry conditions (0.5 h)
6. S: addition of a few drops of sperm

♀



♂



## AQUATIC CONSERVATION Marine and Freshwater Ecosystems

Advancements towards restoration of the endangered limpet *Patella ferruginea*  
Gmelin, 1791 through controlled reproduction

Maria Paola Ferranti<sup>1\*</sup>, Javier Guallart<sup>2\*</sup>, Giorgio Fanciulli<sup>3</sup>, Pier Augusto Panzalis<sup>4</sup>, Mariachiara Chiantore<sup>1</sup>

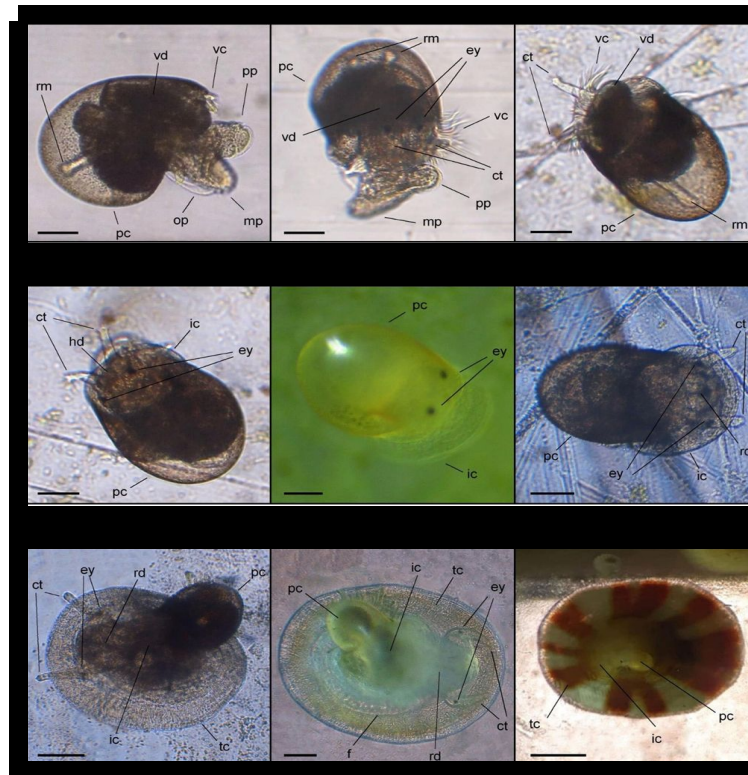
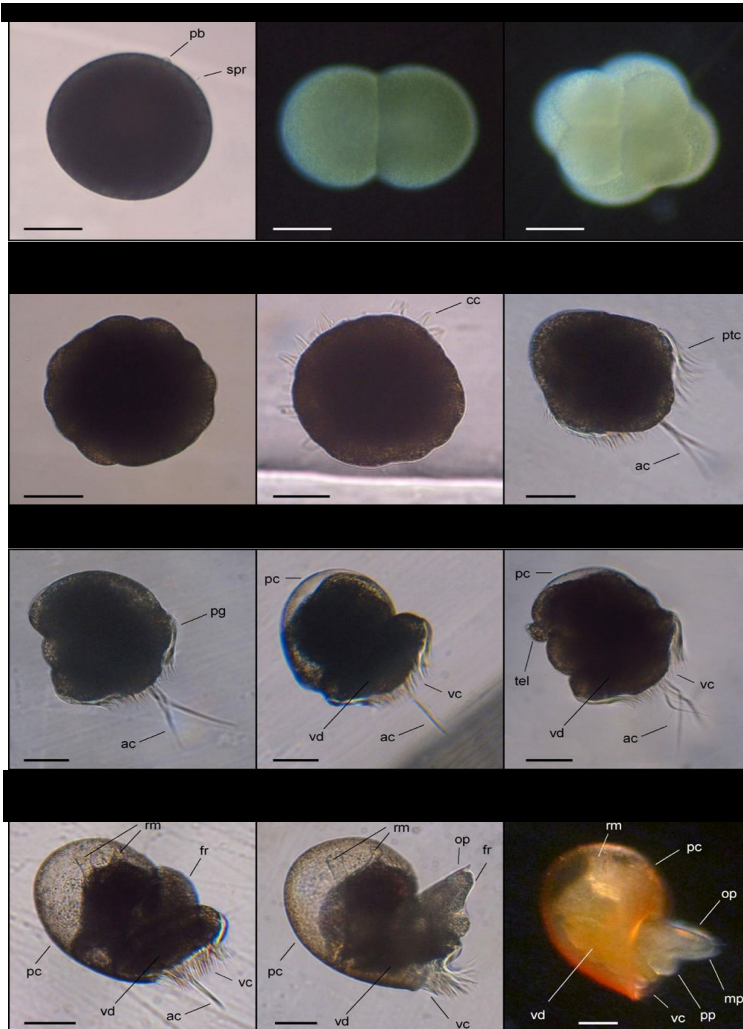
<sup>1</sup>DiSTAV, Department for Earth, Environment and Life Sciences, University of Genoa, Italy

<sup>2</sup>Marine Biology Laboratory, Department of Zoology, University of Valencia, Spain

<sup>3</sup>Portofino Marine Protected Area – Viale Rainusso 1 – 16038 S. Margherita Ligure (Ge), Italy

<sup>4</sup>Tavolara Punta Coda Cavallo Marine Protected Area - Via Dante 1, 07026 Olbia, Italy

# FERTILIZATION, LARVAL DEVELOPMENT AND SETTLING

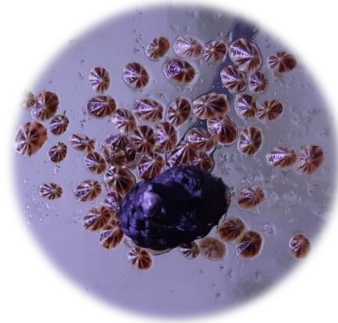
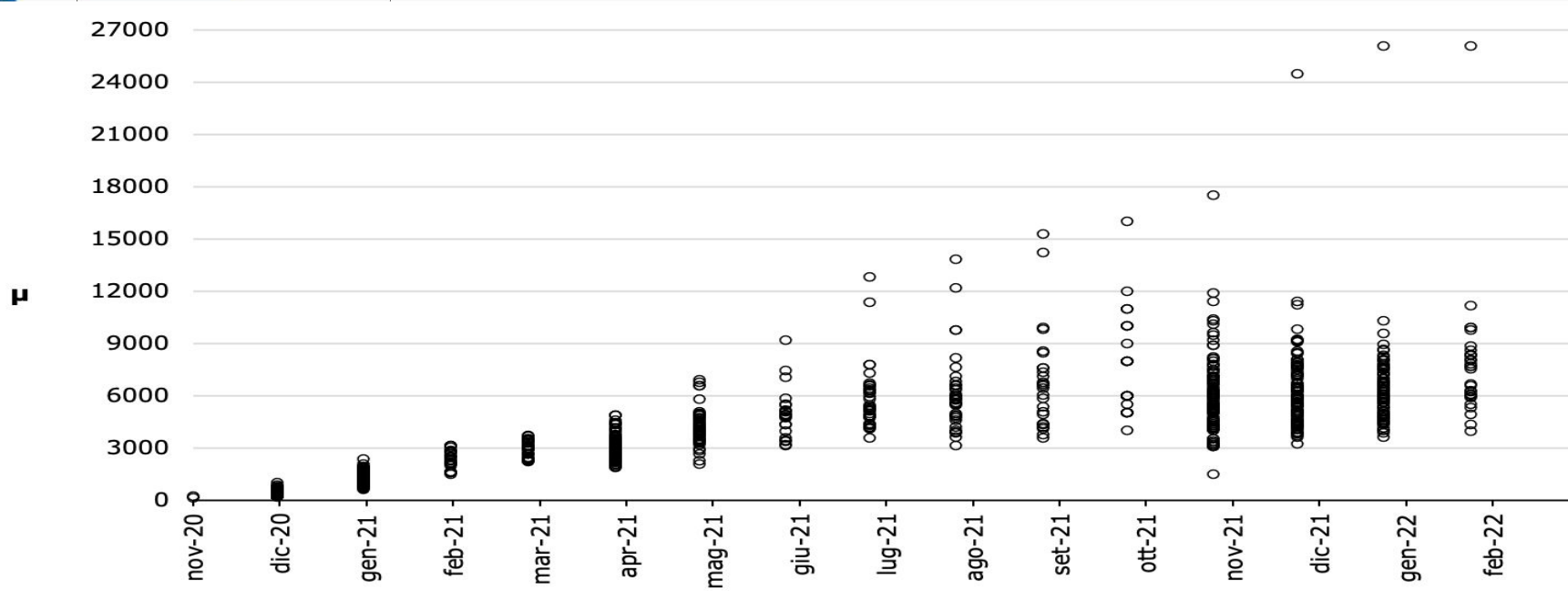


Abbreviations list: ac: apical cilia; cc: ciliated cell; ct: cephalic tentacle; ey: eye; fr: foot rudiment; ft: foot; hd: head; ic: "intermediate conch"; mp: metapodium; op: operculum; pb: polar body; pc: protoconch; pg: prototrochal girdle; pp: propodium; ptc: prototrochal cilia; rd: radula; rm: larval 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.





# JUVENILE GROWTH



March 2021  
(2.2 - 3.7 mm)

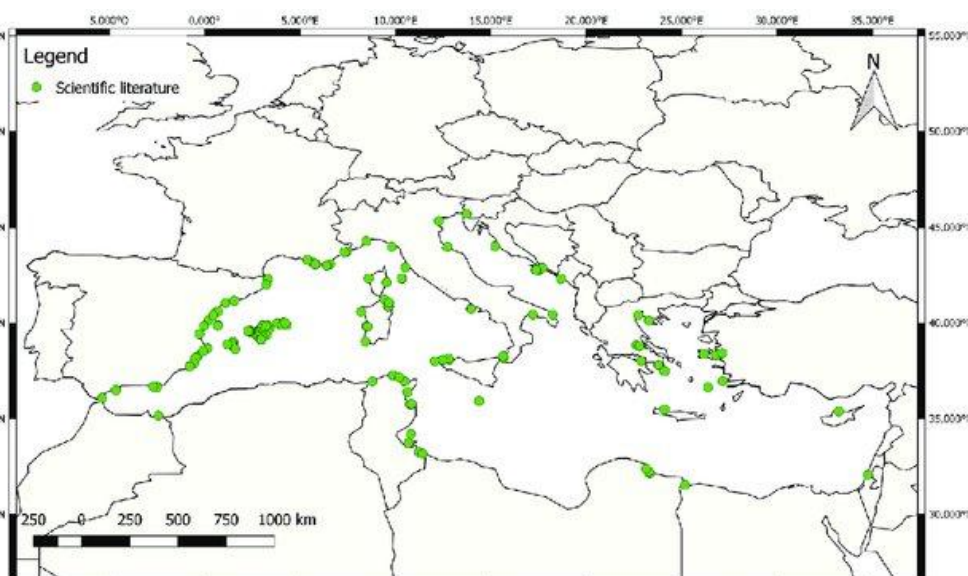


August 2021  
(3.1 - 13.8 mm)



February 2022  
(3.9 - 26.1 mm)

# A NEW CHALLENGE...*PINNA NOBILIS*

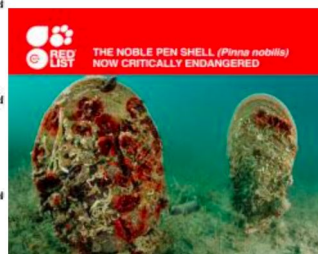


Nature Conservation 33: 21–31 (2019)  
doi: 10.3897/natureconservation.33.30397  
<http://natureconservation.pensoft.net>

RESEARCH ARTICLE

A peer-reviewed open-access journal  
Nature  
Conservation  
Launched to accelerate biodiversity conservation

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](mailto:maurizio.pinna@unisalento.it))

December 2022



# PINNA NOBILIS MAINTENANCE

- ✓ In Nature, filter feeding on suspended and re-suspended detritus and zooplankton
- ✓ Significant differences among diets in the physiological functions measured
- ✓ Lower acceptability and digestibility of commercial products
- ✓ Mixed diet seems acceptable

Mar Biol (2013) 160:921–930  
DOI 10.1007/s00227-012-2144-x

ORIGINAL PAPER

## Diets of fan shells (*Pinna nobilis*) of different sizes: fatty acid profiling of digestive gland and adductor muscle

Mirjana Najdek · Maria Blažina · Daria Ezgeta-Balić · Melita Peharda

Marine Environmental Research 168 (2021) 105304



Contents lists available at ScienceDirect

Marine Environmental Research

journal homepage: <http://www.elsevier.com/locate/marenvrev>



Stable isotope analyses reveal major nutritional deficiencies in captive vs. field juvenile individuals of *Pinna nobilis*

Patricia Prado<sup>a,\*</sup>, Pep Cabanes<sup>a</sup>, Sebastián Hernandis<sup>b</sup>, Rafael García-March<sup>b</sup>, José Tena<sup>b</sup>

<sup>a</sup> IRTA-Sant Carles de la Ràpita, Ctra. Poble Nou Km 5.5, 43540, Sant Carles de la Ràpita, Tarragona, Spain

<sup>b</sup> Institute of Environment and Marine Science Research (IMEDMAR). Universidad Católica de Valencia SVM, Avda. del Puerto s/n, 03710, Calpe, Alicante, Spain

s et al. BMC Zoology (2022) 7:43  
doi.org/10.1186/s40850-022-00141-w

BMC Zoology

RESEARCH ARTICLE

Open Access

## ope for growth and dietary needs Mediterranean Pinnids maintained in captivity

andis<sup>1\*</sup>, I. Ibarrola<sup>2</sup>, J. Tena-Medialdea<sup>1</sup>, M. Vázquez-Luis<sup>3</sup>, J. R. García-March<sup>1</sup>, P. Prado<sup>1,4</sup> and M. Albentosa<sup>5</sup>



# PINNA NOBILIS MAINTENANCE

Chlorophyta:

✓ ***Tetraselmis suecica***

Haptophyta:

✓ ***Isochrysis galbana***

Bacillariophyta:

✓ ***Chaetoceros calcitrans***

Aquaculture 522 (2020) 735167



Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

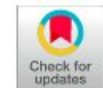
**Aquaculture**

journal homepage: [www.elsevier.com/locate/aquaculture](http://www.elsevier.com/locate/aquaculture)



Growth of juvenile *Pinna nobilis* in captivity conditions: Dietary and pathological constraints

Patricia Prado<sup>a,\*</sup>, Pep Cabanes<sup>a</sup>, Gaetano Catanese<sup>b,c</sup>, Francesca Carella<sup>d</sup>, Noelia Carrasco<sup>a</sup>, Amalia Grau<sup>b,c</sup>, Sebastián Hernandis<sup>e</sup>, Jose Rafael García-March<sup>e</sup>, José Tena<sup>e</sup>, Nuno Caiola<sup>a</sup>, Karl B. Andree<sup>a</sup>





# PINNA NOBILIS MAINTENANCE

## UNIGE cultures:

### Chlorophyta:

- ✓ ***Tetraselmis suecica***
- ✓ *Dunaliella tertiolecta*
- ✓ *Dunaliella salina*

### Ochromophyta:

- ✓ *Nannochloropsis*
- ✓ *oculata*

### Haptophyta:

- ✓ ***Isochrysis galbana***
- ✓ ***Pavlova lutherii***

### Bacillariophyta :

- ✓ *Amphora* sp.
- ✓ *Chaetoceros gracilis*
- ✓ ***Chaetoceros calcitrans***



Bioreactors  
40 liters each

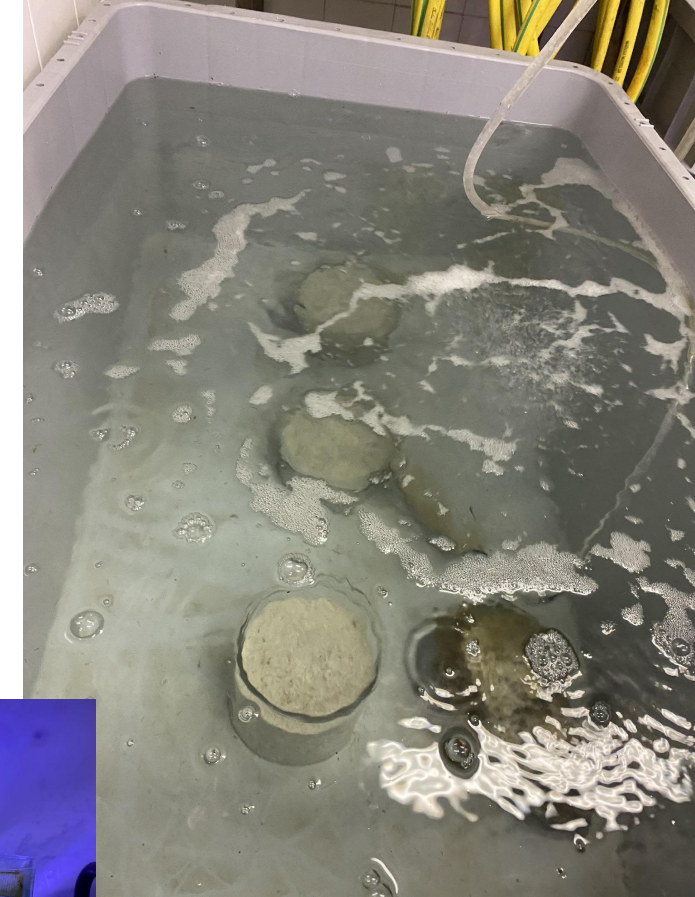
Small cultures in  
thermostatic chamber



# PINNA NOBILIS MAINTENANCE

**Tanks for adults:**

4 X 240 L



**Tanks for juveniles:**

2 X 40 L



## PINNA NOBILIS REPRODUCTION

- ✓ The pen shell is a **successive hermaphrodite**, with an **asynchronous gamete maturation** (De Gaulejac et al., 1995b,c), which avoids self-fertilization
- ✓ **Sexual maturity** is reached **by 2 years of age** (Richardson et al., 1999)
- ✓ Gametogenic development occurring from March to June followed by a succession of alternate **spawning and fast gametogenesis from June to August** (De Gaulejac, 1995)
- ✓ Dispersal phase with pelagic larvae
- ✓ **Larval duration** for the genus *Pinna* has been estimated to be a **maximum of 10 days** (Butler et al., 1993)

late trocophore



late veliger



pediveliger



# EXISTING EXPERIENCE IN *PINNA NOBILIS* REPRODUCTION

Aquaculture 483 (2018) 102–110

Contents lists available at ScienceDirect

Aquaculture

journal homepage: [www.elsevier.com/locate/aquaculture](http://www.elsevier.com/locate/aquaculture)



Adult spawning and early larval development of the endangered bivalve *Pinna nobilis*

Sergio Trigos<sup>a,\*</sup>, Nardo Vicente<sup>b,c</sup>, Patricia Prado<sup>d</sup>, Francisco J. Espinós<sup>e</sup>

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<sup>b</sup> Institut Océanographique Paul Ricard, Ile des Embiez, 83140 Six Fours les Plages, France

<sup>c</sup> Institut Méditerranéen de la Biodiversité et de l'Ecologie marine et continentale (IMBE), Aix, Marseille Université, France

<sup>d</sup> IRTA-Aquatic Ecosystems, Ctra. Poble Nou Km 5.5, 43540 Sant Carles de la Ràpita (Tarragona), Spain

<sup>e</sup> ACUMA Research Center (Aquaculture and Environmental R.C.), Polytechnic University of Valencia, Camino de Vera s/n, 46022, Valencia, Spain

- ✓ Spawning induction: **thermal shock** (15°C – 25°C)
- ✓ Every 50 min per 6 times
- ✓ Larvae maintained at 21°C
- ✓ Artificial PVC substrates used to induce settlement
- ✓ **Veliger** stage achieved in **2-3 dpf**
- ✓ **Pediveliger** in **7 dpf**
- ✓ **No settlement and metamorphosis achieved**

Fed with mixtures of microalgae:

Haptophyta:

- ✓ *Isochrysis galbana*
- ✓ *Pavlova lutherii*

Bacillariophyta:

- ✓ *Chaetoceros calcitrans*



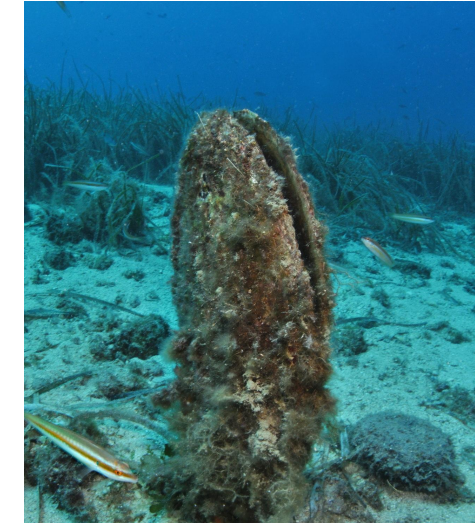
# FIRST STEP, MAINTENANCE OF MODEL SPECIES: *ATRINA FRAGILIS*



- ✓ Freshly arrived from Trieste last night in the laboratory located in Camogli, run by UNIGE
- ✓ 7 adults + 2 juveniles

# OLD AND NEW CHALLENGES

## *P. FERRUGINEA* VS *P. NOBILIS*



- ❑ Spawning induction in controlled conditions: was unknown
- ❑ Larval culture: established
- ❑ No need to feed the larvae
- ❑ Settlement and metamorphosis achieved

- ❑ Spawning induction in controlled conditions: already established
- ❑ Larval culture: relatively established (early phases)
- ❑ Larval feeding still challenging
- ❑ Settlement and metamorphosis: not achieved yet



# OLD AND NEW CHALLENGES

## *P. FERRUGINEA* VS *P. NOBILIS*



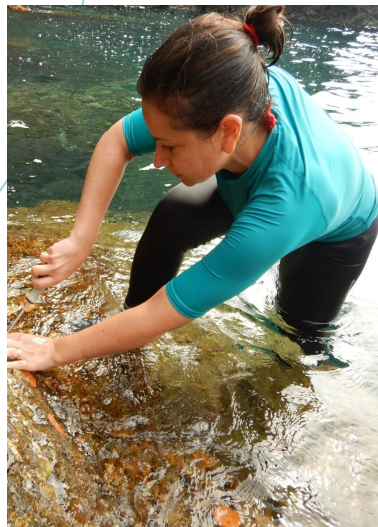
- ❑ Spawning induction in controlled conditions: was unknown
- ❑ Larval culture: established
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- ❑ Settlement and metamorphosis achieved

- ❑ Spawning induction in controlled conditions: already established
- ❑ Larval culture: relatively established
- ❑ Larval feeding still challenging
- ❑ Settlement and metamorphosis: not achieved yet

Laboratorio di  
Ecologia del  
Benthos



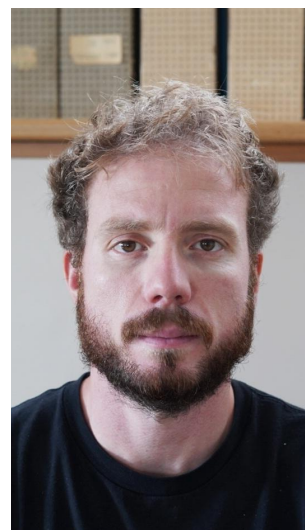
Mariachiara  
Chiantore



Valentina  
Asnagli



Maria Paola Ferranti &  
Javier Guallart



Jacopo Cimini



Lorenzo Meroni

SEASCAPE ECOLOGY LAB



UNIVERSITY OF GENOA



Monica  
Montefalcone



Alice Oprandi



UNIVERSITÀ DEGLI STUDI  
DI GENOVA

Centro del Mare



# THANKS FOR YOUR ATTENTION

## Contacts

- [info@lifepinna.eu](mailto:info@lifepinna.eu)
- [www.lifepinna.eu](http://www.lifepinna.eu)



LIFE Pinna - First public event - 2nd December 2022





# FIRST PUBLIC EVENT

2<sup>nd</sup> December 2022



**Life Pinna**

LIFE20 NAT/IT/001122

«Conservation and re-stocking of the *Pinna nobilis* in the western Mediterranean and Adriatic sea»

## Monitoring experiences of *Pinna nobilis*

Marco Segarich - Shoreline

LIFE20 NAT/IT/001122 project is co-funded with the contribution of the LIFE programme of the European Union





# ESPERIENZE DI MONITORAGGIO



## PROGRAMMI DI MONITORAGGIO PER LA STRATEGIA MARINA (Art. 11, D.lgs. 190/2010)

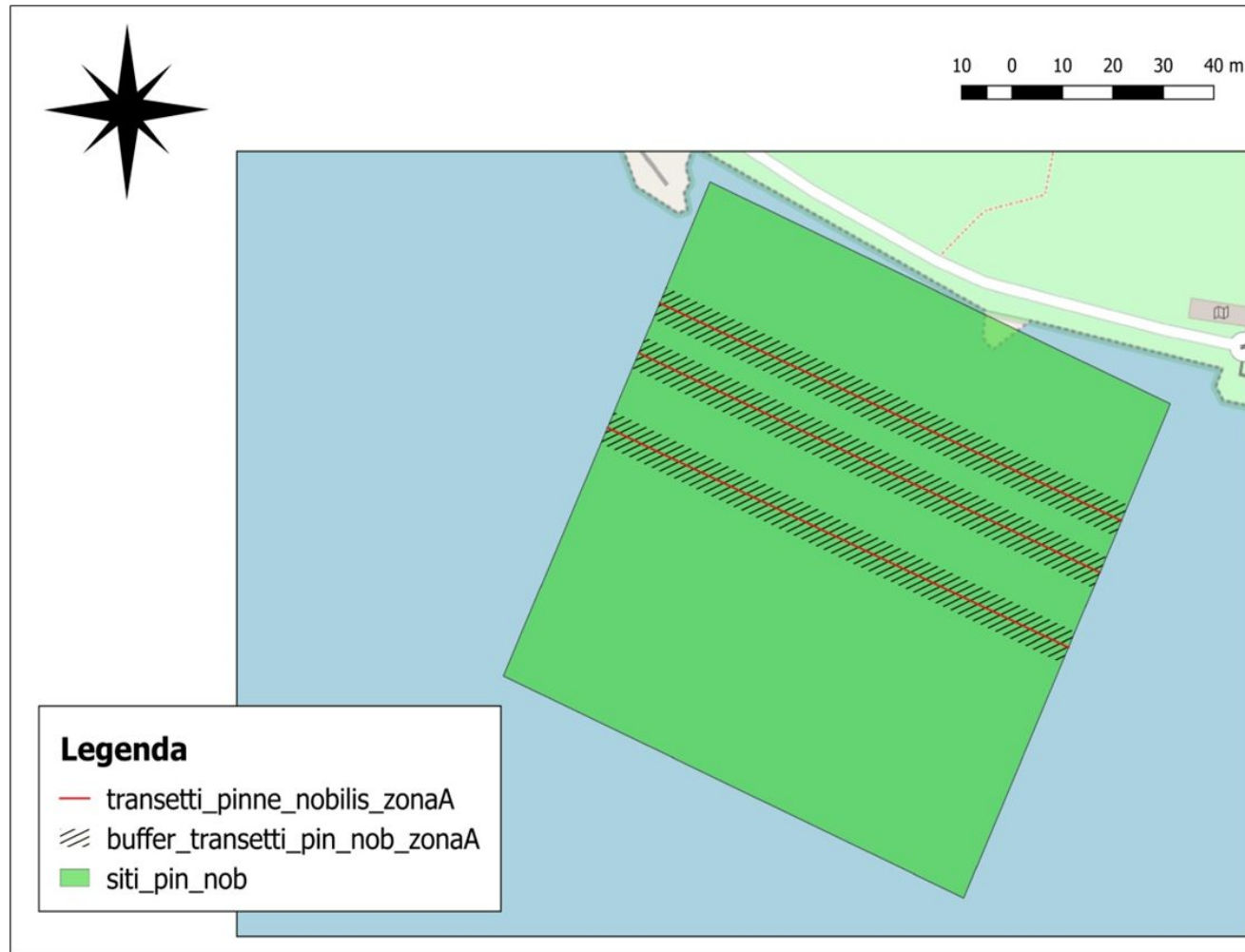
Campagna di monitoraggio della popolazione di *Pinna nobilis* nell'Area Marina  
Protetta (AMP) – Riserva naturale marina "Miramare" per la Strategia Marina

Proposta da ISPRA come bioindicatore per gli  
ecosistemi bentonici costieri per il Descrittore 1  
«Biodiversità»:

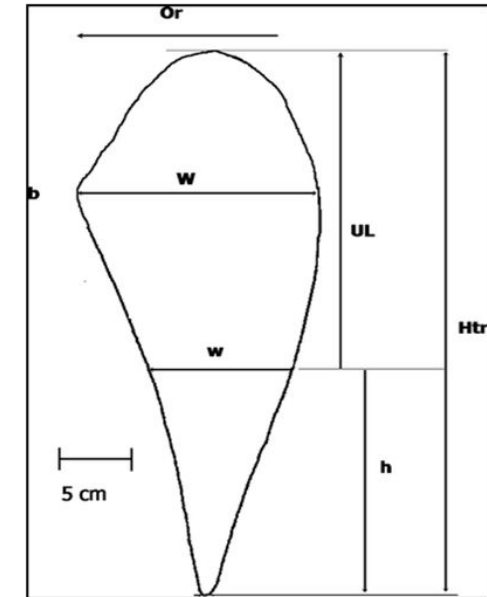
*La biodiversità è mantenuta. La qualità e la presenza  
di habitat nonché  
la distribuzione e l'abbondanza delle specie sono in  
linea con le prevalenti condizioni  
fisiografiche, geografiche e climatiche*

Criterio 1.2. - Dimensioni della popolazione

Indicatore 1.2.1 - Abbondanza e/o biomassa della popolazione



$L_{\text{transetto}} = 100\text{m}$   
 $H_{\text{transetto}} = 6\text{m}$   
 $\text{Area}_{\text{transetto}} = 600\text{m}^2$   
 $\text{Area}_{\text{stazione}} = 1800\text{m}^2$   
 $\text{Area}_{\text{tot}} = 5400\text{m}^2$



2018	Individui (N)	Densità (N/100m <sup>2</sup> )
Tot	1413	26,2
Min	3	0,5
Max	499	83,2

Densità popolazione mediterranea =  $9,78 \pm 2,25$  ind/100 m<sup>2</sup> (mean  $\pm$  SE) (Basso et al. 2015)

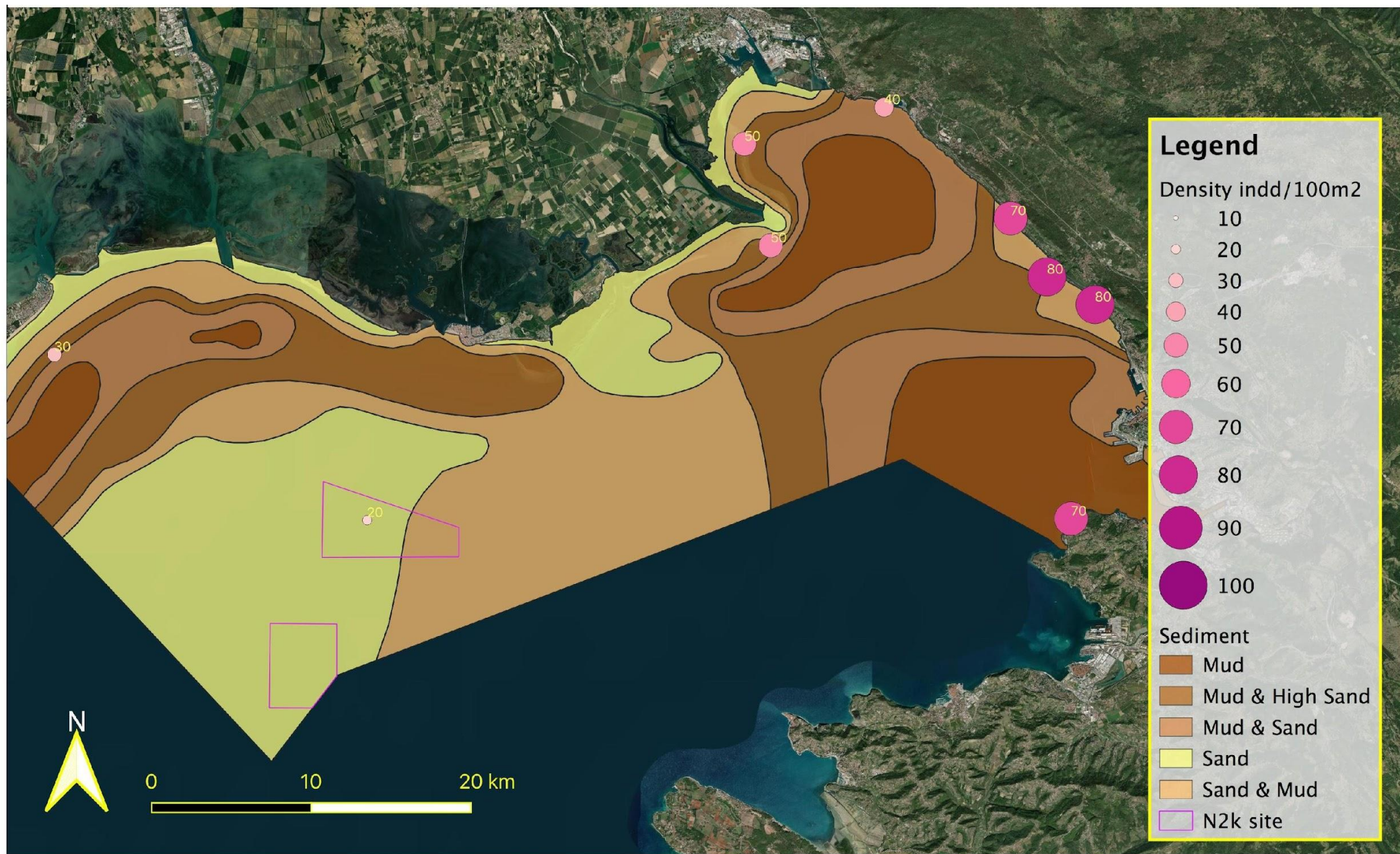


## CITIZEN SCIENCE – RESTORFAN PROJECT (2018-2019)

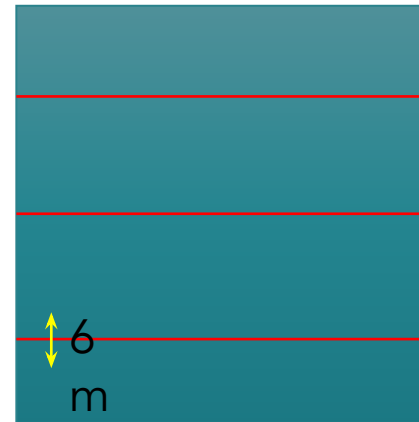
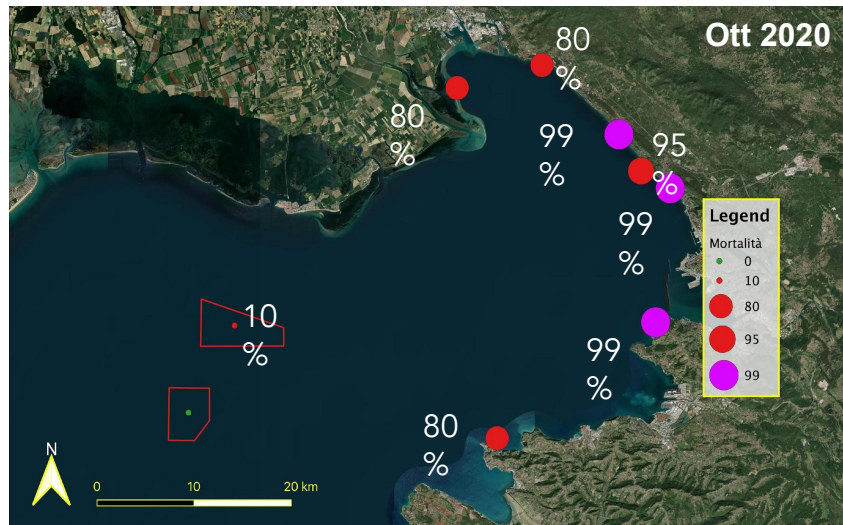
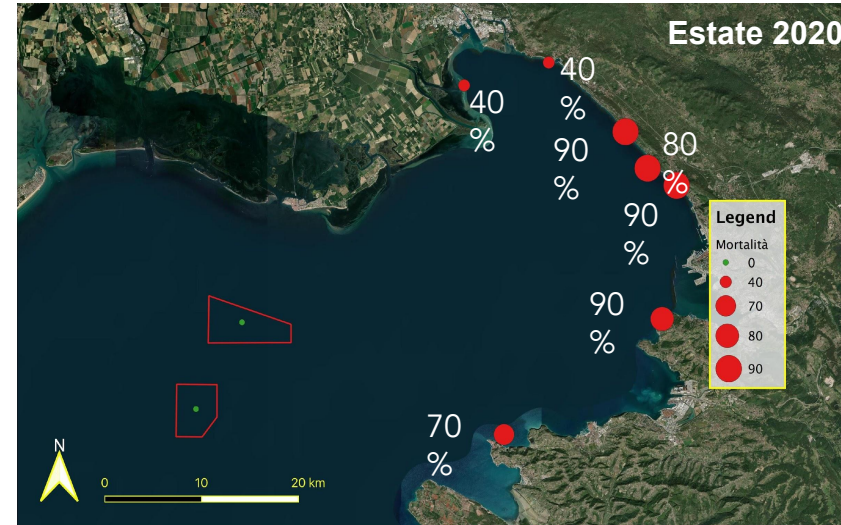
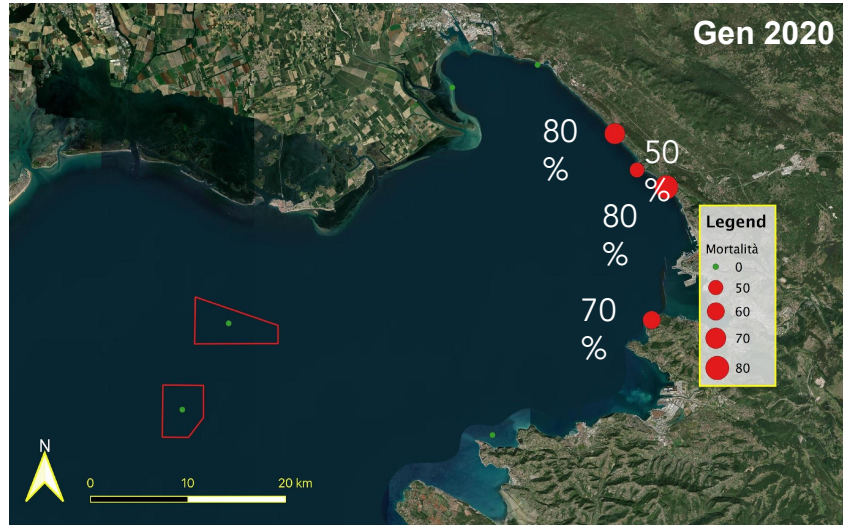


LIFE Pinna - First public event - 2nd December 2022





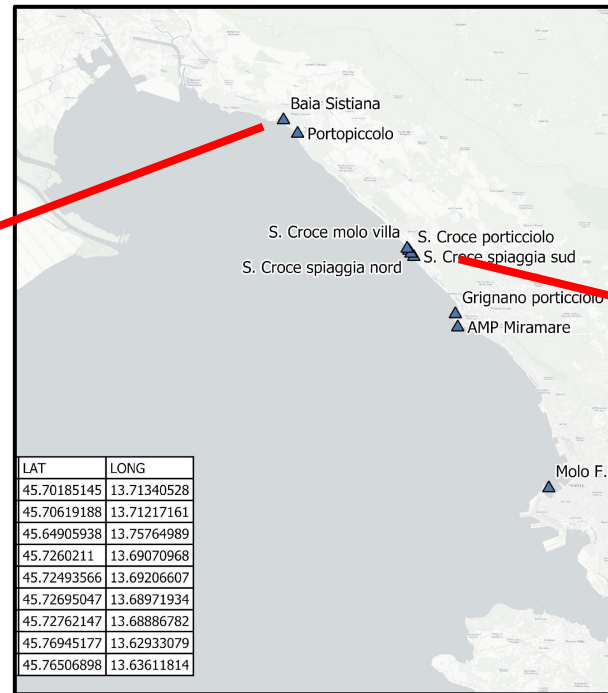




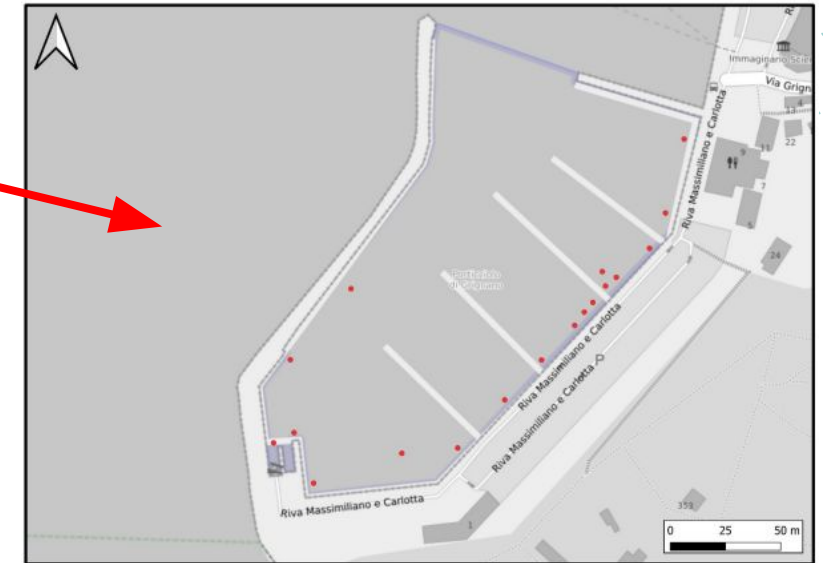
$N_{tot} = 6.942$   
 $Stazioni_{tot} = 9$   
 $Area_{tot} = (600m^2 \times 3 \text{ repliche} \times 9 \text{ stazioni}) = 16.200m^2$

# INDAGINI ALL'INTERNO DEI PORTICCIOLI (2022)

6 individui adulti



19 individui adulti



Supporto Diving e Società concessionarie dei porticcioli



# PRELIEVO DA AMBIENTI PERICOLOSI



## PROSSIMI PASSI

Lancio Progetto

LIFE PINNA  
OTT 2022

RACCOLTA CAPTATORI

DIC 2022

POSA DEI CAPTATORI

MAG - GIU 2023

NOV 2022

PRIME PROVE DI  
TRASPORTO

MAR - MAG  
2023

PRIMO TRASPORTO DI  
INDIVIDUI ADULTI E  
AZIONI DI TRASPIANTO



# THANKS FOR YOUR ATTENTION

SHORELINE SOC. COOP.

MARCO SEGARICH

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SAUL CIRIACO

Saul.ciriaco@shoreline.it

## Contacts

- [info@lifepinna.eu](mailto:info@lifepinna.eu)
- [www.lifepinna.eu](http://www.lifepinna.eu)



LIFE Pinna - First public event - 2nd December 2022





# FIRST PUBLIC EVENT

## 2<sup>nd</sup> December 2022



### Life Pinna

LIFE20 NAT/IT/001122

*«Conservation and re-stocking of the Pinna nobilis in the western Mediterranean and Adriatic sea»*

## LIFE PINNA: la comunicazione di un progetto pionieristico

Francesco Tomasinelli - Triton Research

*LIFE20 NAT/IT/001122 project is co-funded with the contribution of the LIFE programme of the European Union*





# E1 Communication products

Roll-up, 3 languages



Poster EAZA conservation forum, may 2022



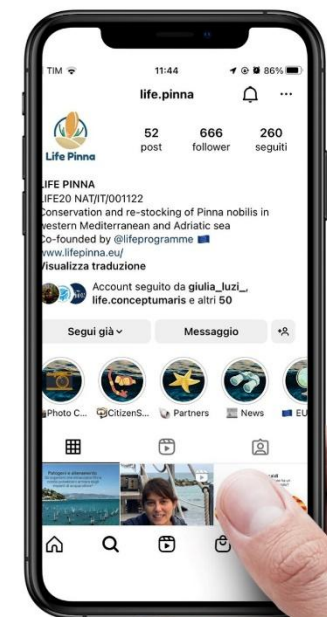
Website



Facebook



Instagram





# E1 Project gadgets

Pins, 38 mm



Shoppers



Keychains, 50 mm



T-shirts, 4 sizes

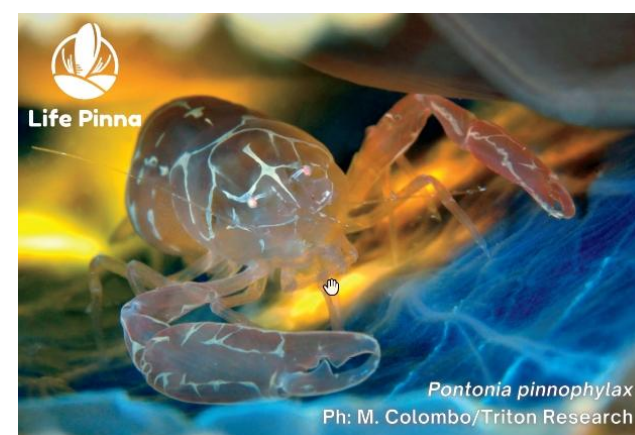


Colore Blu Anatra  
Taglia S  
Taglia L



Colore Smeraldo  
Taglia XL  
Taglia M

Magnets, 78 x 53 mm





# E1 Communication: completed actions

## More relevant 2022 activities:

1. Life Pinna website at **www.lifepinna.eu** (ita and eng)
2. Development of **social media** on Facebook, Instagram and Twitter (about 700 followers)
3. Live **events**:
  - Lifeis30 event in Trieste, citizen science activity by Shoreline/AMP Miramare, may 2022
  - Festival della Scienza di Genova, lecture Un mollusco da salvare, october 2022
  - EmozioMare with RomaNatura, Lido di Ostia, november 2022
4. Official **project logo** selected
5. Acquisition of useful **images** to promote project contents (M. Colombo/Triton Research)
6. Selection of **videomakers**, out of three proposal, for LIFE project documentary
7. Selection of **press agency**, out of three proposal, for media involvement campaign
8. Photographic **contest launch and selection of winners**
9. Integration of **citizen science page** on website (Segnala Pinna!)

## MAIN DELIVERABLES

Website and social networks	Achieved: 05/2022
Photographic contest	Achieved: 10/2022
Communication plan	Achieved: 10/2022

# E1 Social Network statistics

From the beginning of the project to **november 2022**

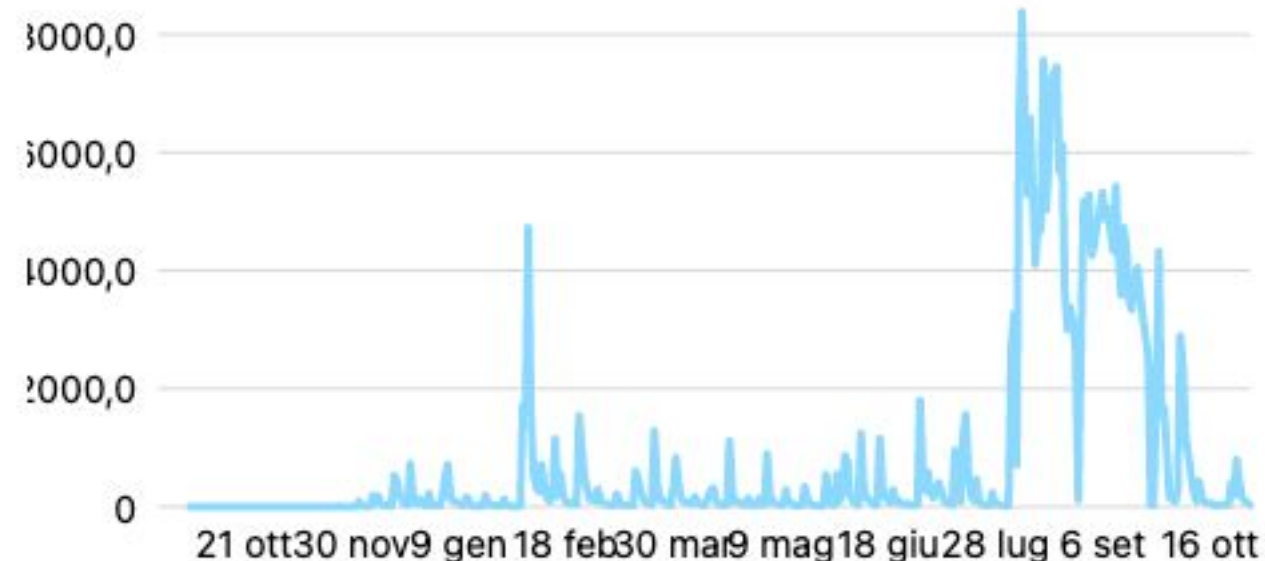
Ads campaign in late summer to promote photo contest

## Social network *reach*

### Copertura

Copertura della Pagina Facebook ⓘ

177.124 ↑ 100%



Copertura di Instagram ⓘ

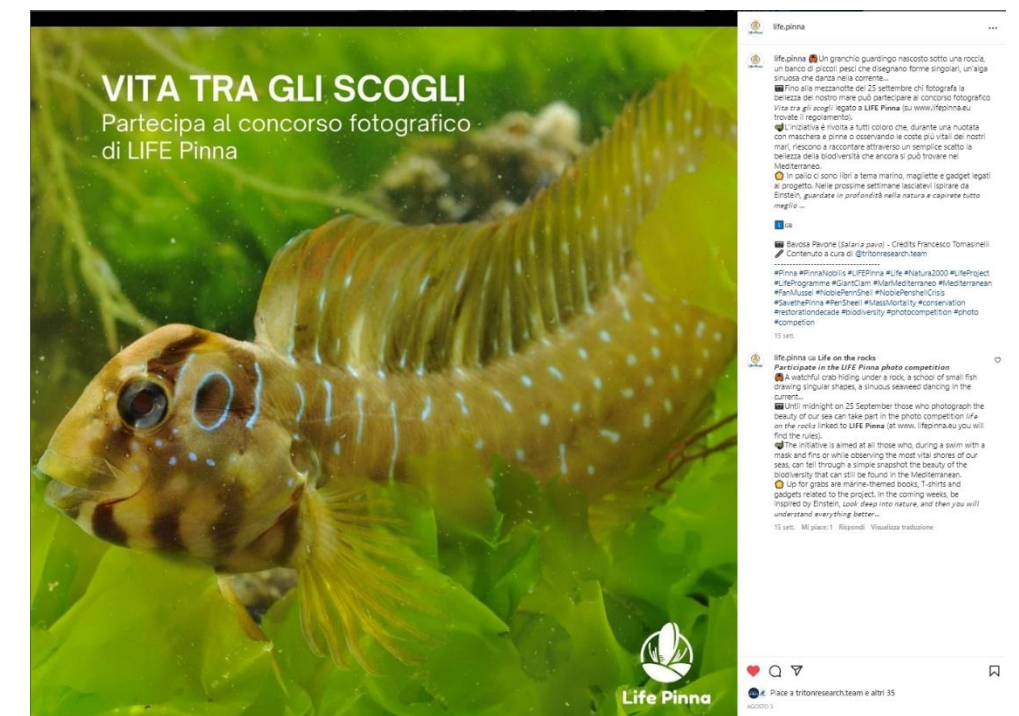
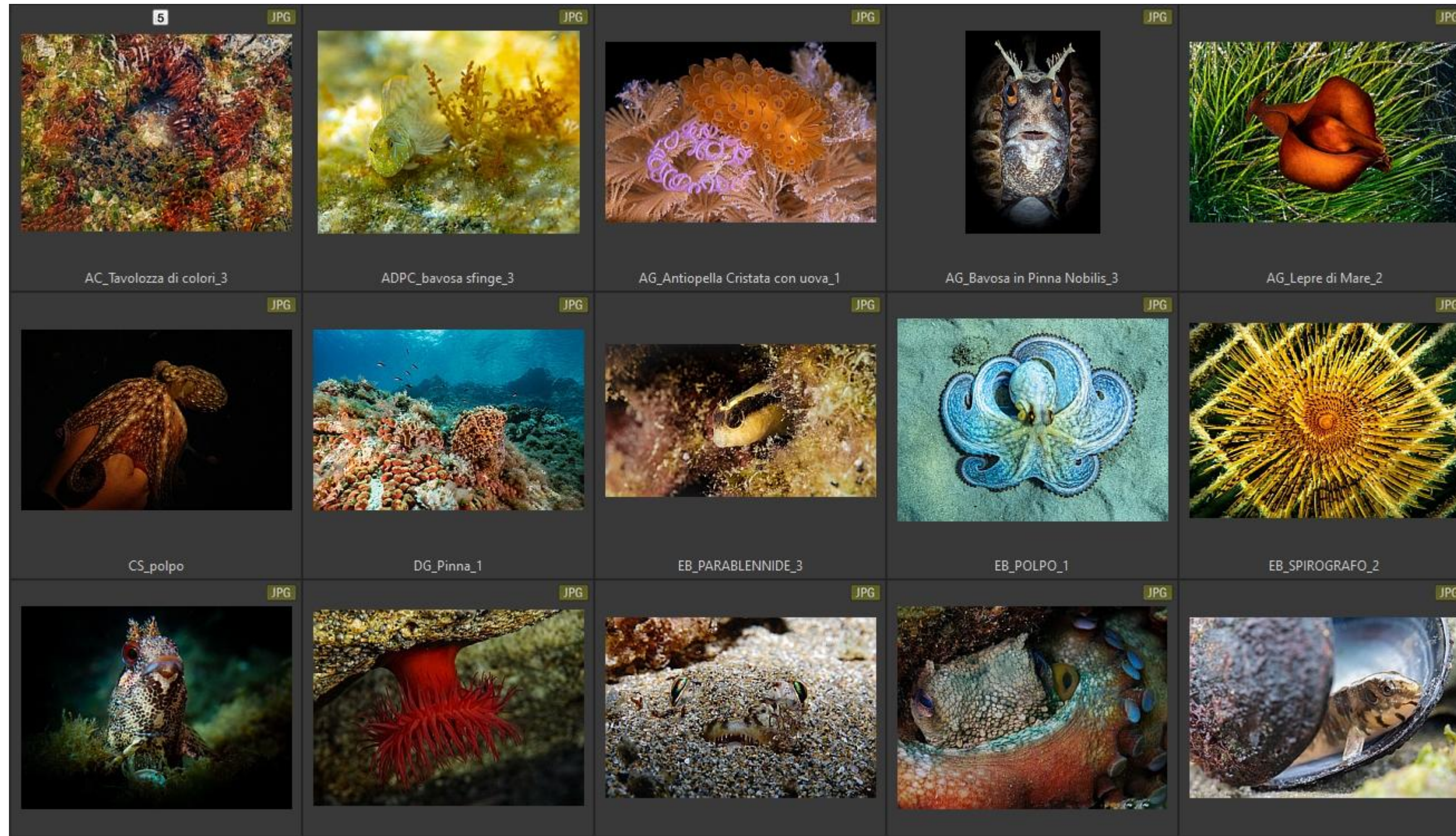
18.749 ↑ 100%





# E1 Photo contest

*Vita tra gli scogli* - Summer 2022. More than 150 pictures received



Vita tra gli scogli contest  
online promotion with Triton adv. campa



## E1 Photo contest

Summer 2022, winners announced on 5th October. More than 150 pictures received



**First prize: Alessandro Grasso**  
Blenny in noble pen shell



# E1 Photo contest

---

Summer 2022, winners announced on 5th October. More than 150 pictures received



**Second prize: Aldo Broglia**

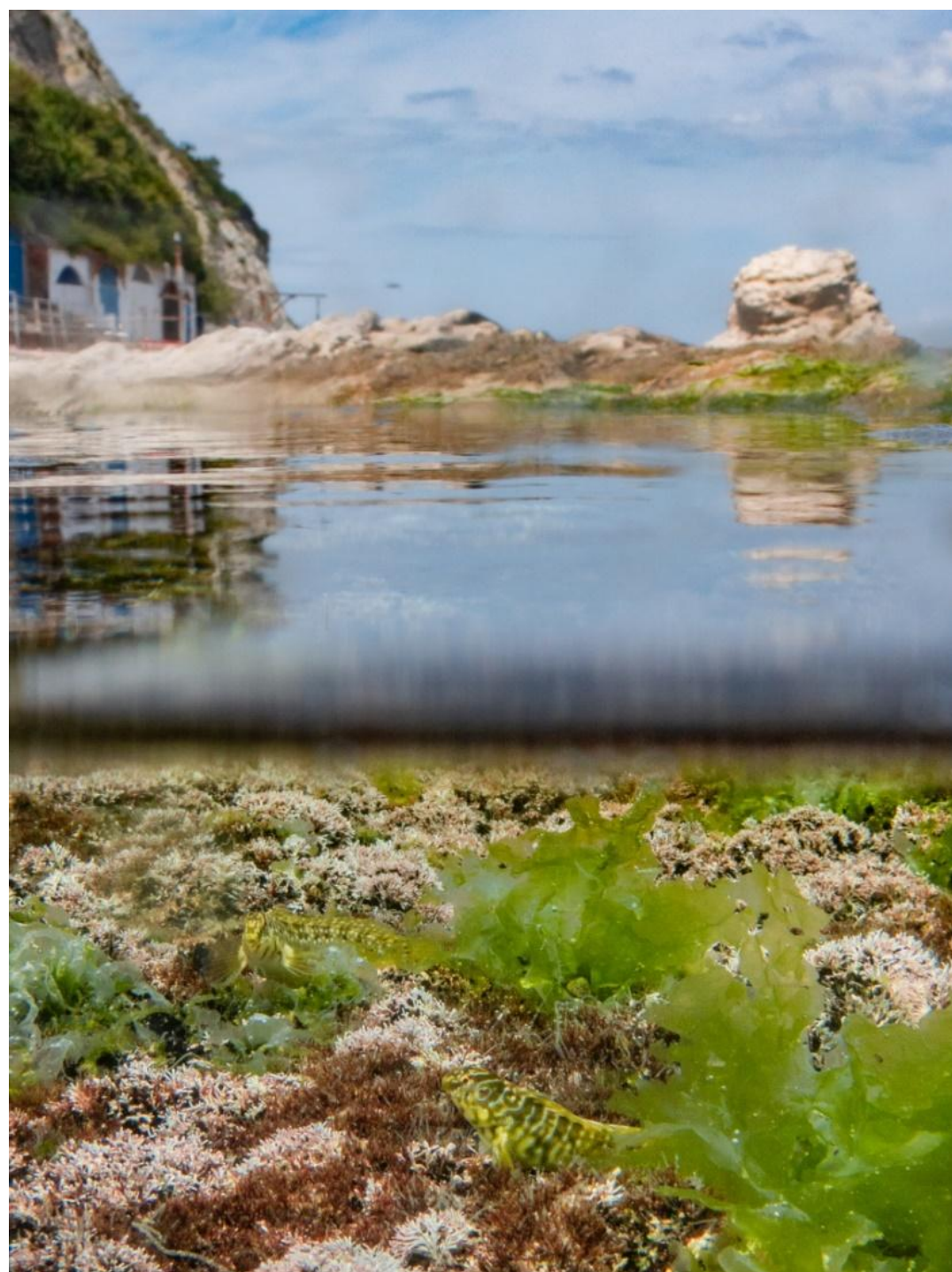
Mediterranean cardinalfish, mouthbrooding



# E1 Photo contest

---

Summer 2022, winners announced on 5th October. More than 150 pictures received



**Third prize: Alberto Colletti**  
Peacock blenny in rock pool



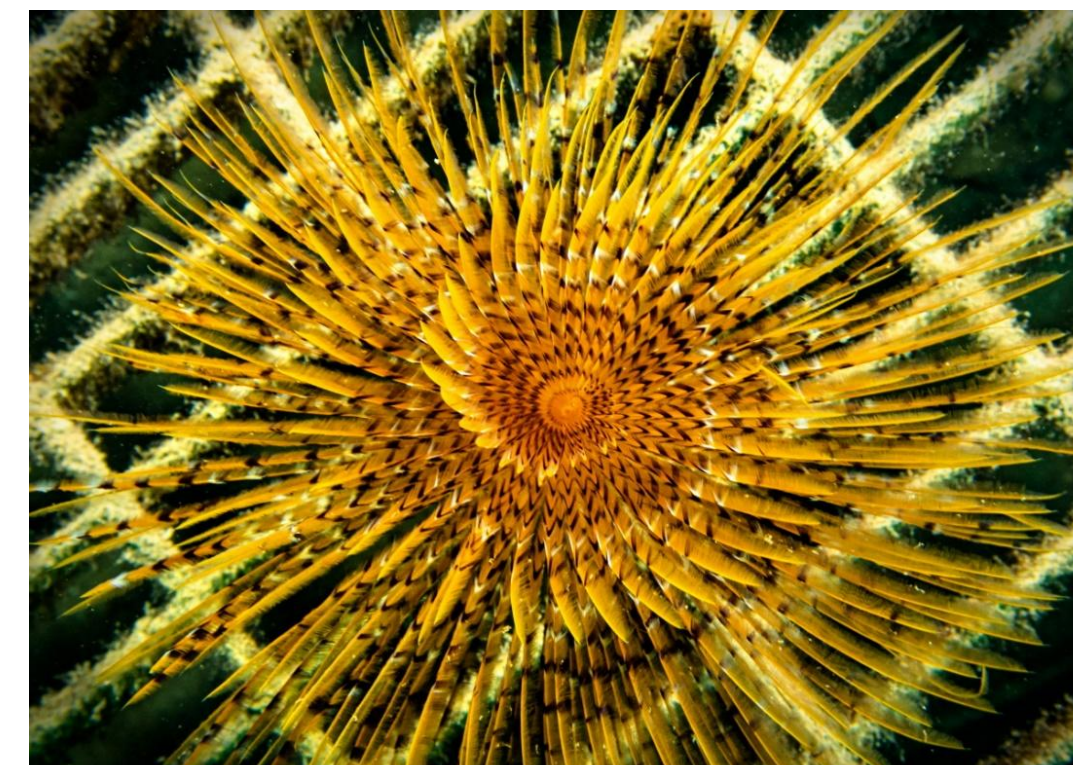
## Some of the finalists 2022



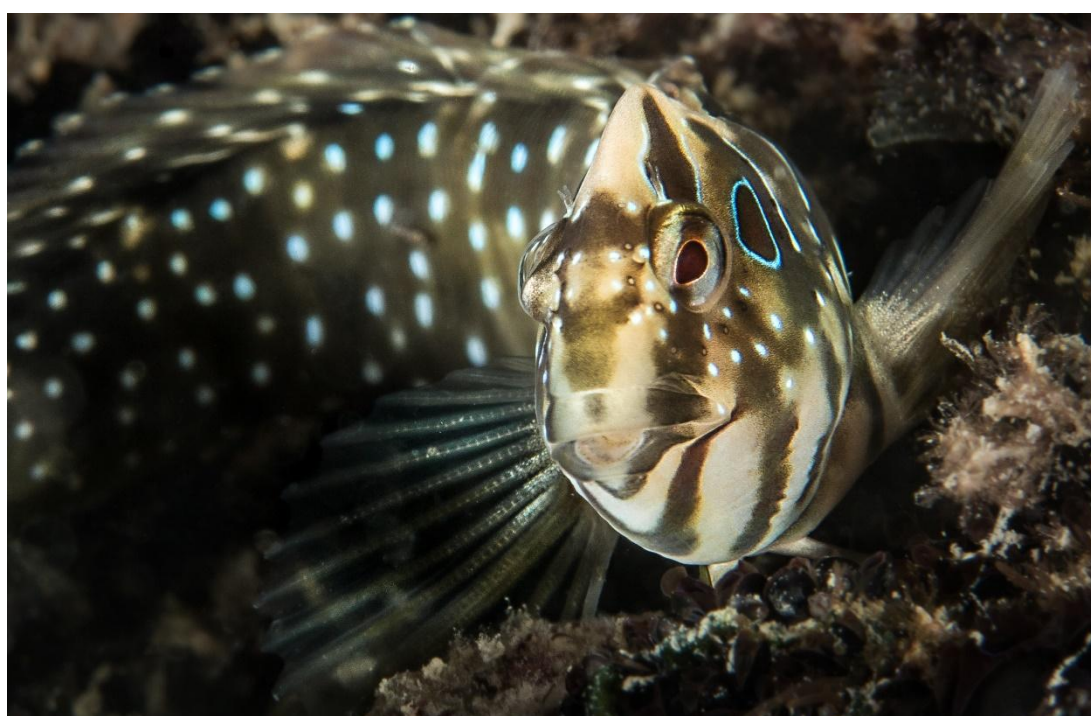
Andrea Sabino



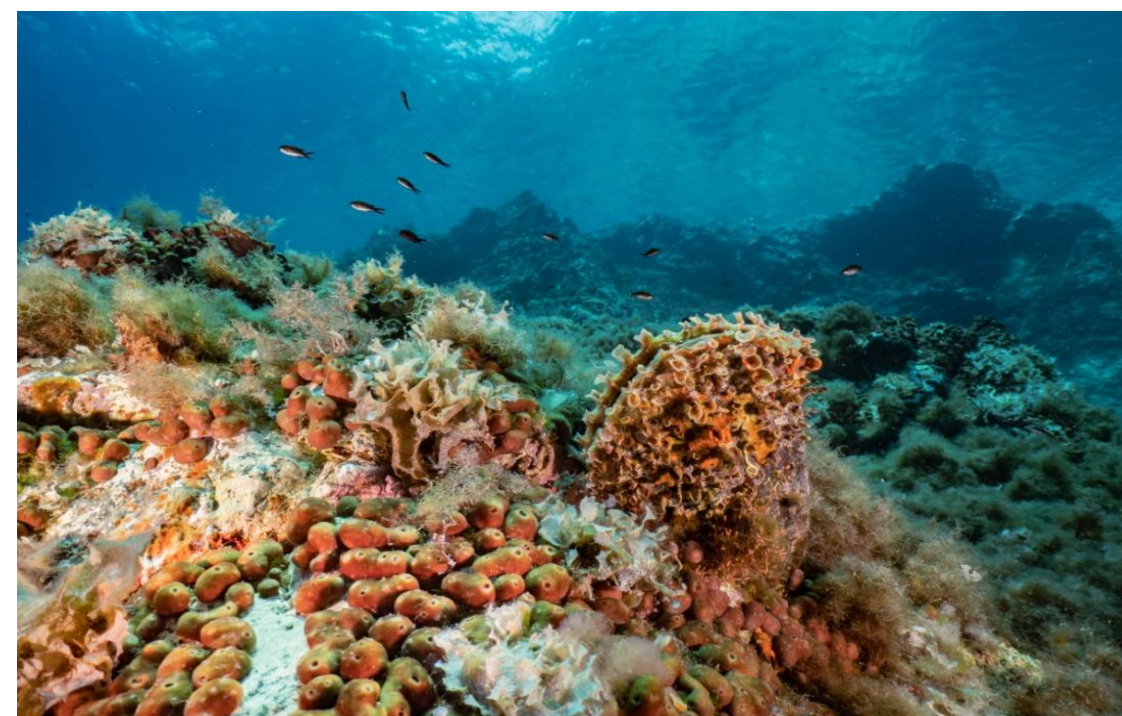
Edoardo Casoli



Elia Biasissi



Michele Solca



Denis Giambarrassi



Alessandro Grasso



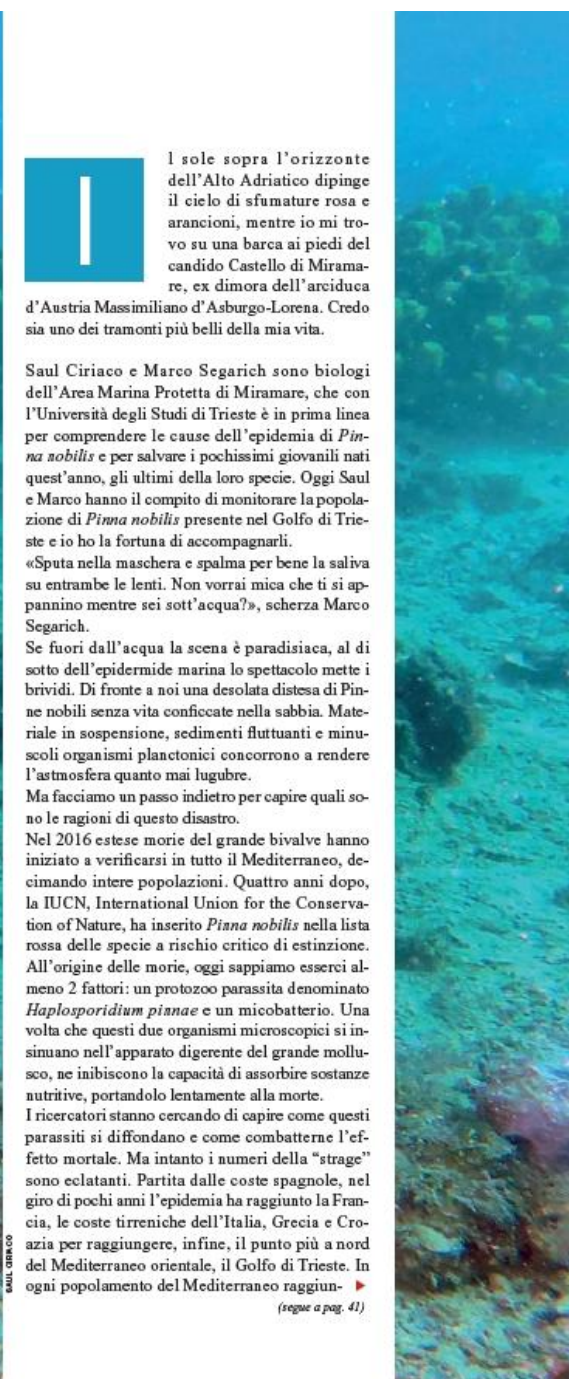
# E1 Press releases

More than 30 Pinna articles and citations in the press

Selected press release: [www.lifepinna.eu/rassegna-stampa-life-pinna](http://www.lifepinna.eu/rassegna-stampa-life-pinna)



La Rivista della Natura, 12 pages on paper, september 2022



Focus, online, november 2022



# E1 Citizen science page

Segnala Pinna page on [www.lifepinna.eu](http://www.lifepinna.eu), ready for spring 2023 activities  
[www.lifepinna.eu/citizen-science](http://www.lifepinna.eu/citizen-science)



## Come segnalare *Pinna nobilis*

Compilando il modulo sottostante è possibile segnalare un nuovo avvistamento, ma prima è importante verificare un paio di aspetti. È sempre consigliabile effettuare una foto o un video, se possibile dall'alto, in modo da vedere l'animale all'interno, così che gli esperti di LIFE Pinna possano validare l'avvistamento.

**1. Recati nei luoghi giusti.** *Pinna nobilis* si trova più comunemente su fondali sabbiosi e quasi lagunari, ama gli ambienti protetti dal mare forte e le praterie di posidonia. È infissa nel sedimento per circa 1/3 della lunghezza della conchiglia (quindi sporge maggiormente dal fondo).

**2. Osserva bene.** Che tu sia in immersione o solo con maschera e pinne, su di un kayak, barca o SUP: aguzza lo sguardo! *Pinna nobilis* ha una conchiglia abbastanza liscia, senza costole e presentano escrescenze sparse casualmente su tutta la superficie del guscio. Il bordo del mantello è solitamente rosa.

**3. Non confondere *Pinna nobilis* con le specie sorelle *Pinna rudis* e *Atrina fragilis***

Le caratteristiche distintive sono le seguenti.

- **Dimensioni:** *Pinna nobilis* è più grande di *Pinna rudis*, che di solito rimane sotto i 40 cm.
- **Fondale preferito:**
  - *Pinna nobilis* si trova più comunemente su fondali sabbiosi ed è infissa nel sedimento per circa 1/3 della lunghezza della conchiglia (quindi sporge maggiormente dal substrato);
  - *Pinna rudis* si trova più comunemente tra i massi o nelle spaccature delle rocce;
  - *Atrina fragilis* si trova prevalentemente su fondali sabbiosi-fangosi ed è infissa nel sedimento per 2/3 della lunghezza della conchiglia.
- **Caratteristiche conchiglia:**
  - i giovanili di *Pinna nobilis* non hanno costole e presentano escrescenze sparse casualmente su tutta la superficie del guscio;
  - le valve di *Pinna rudis* sono più spesse e hanno da 5 a 10 costole radiali (disposte lungo l'asse maggiore della conchiglia) con grandi escrescenze su di esse;
  - *Atrina fragilis* ha un guscio molto sottile, di colore giallo-marrone e può presentare in età giovanile delle escrescenze sul bordo superiore della conchiglia.
- **Mantello:** Il bordo del mantello è solitamente rosa in *Pinna nobilis*, bianco e iridescente in *Pinna rudis* e verde acceso in *Atrina fragilis*.



Pinna nobilis, foto Daniele Grech



Pinna rudis, foto Saul Ciriaco



Atrina fragilis, foto Saul Ciriaco



# E1 Live events

Festival della Scienza di Genova, late october 2022

[www.festivalcienza.it](http://www.festivalcienza.it)





# E1 Communication: what next

---

## Ongoing activities

1. Support and **press kit** (photos, text, ideas) to help press office to provide contents to media, including TV programs
2. Ongoing **social network** campaign with **new contents**
3. Support to video makers to develop **documentary storyboard** and first shots
4. Development of relationships with others projects to develop a **network** (E3, see network on website)
5. Promotion of **citizen science** campaign and better interface, with maps
6. Participation to new **science festivals** and events (Posidonia Festival 2023)

## USEFUL ACTIONS BY PARTNERS:

- Remember to share any interesting **achievement**, **tag partners on social** and send us **photo/video** material – **f.tomasinelli@tritonresearch.it**



# E1 Communication: links



M. Colombo/Triton Research

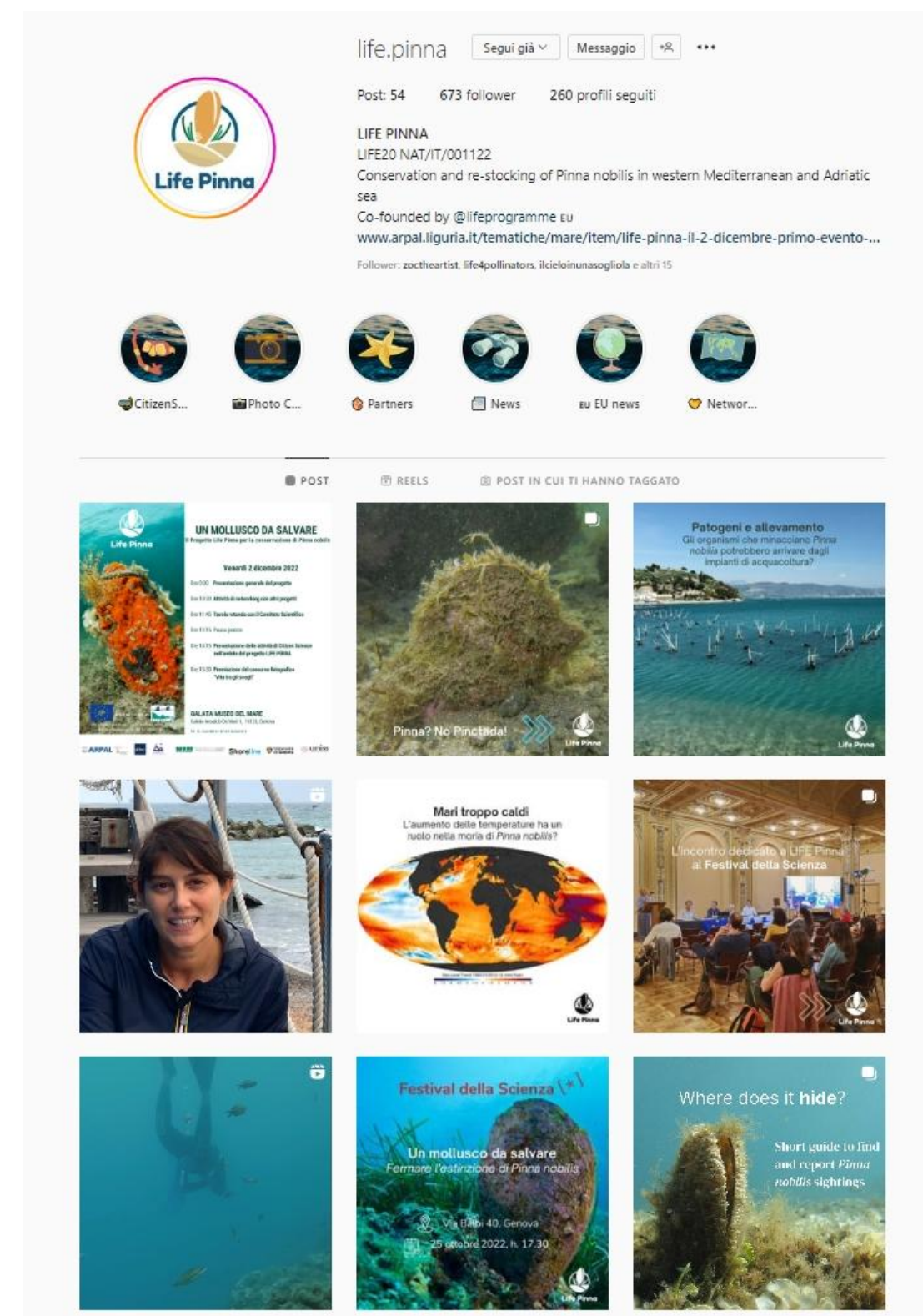
[www.lifepinna.eu](http://www.lifepinna.eu)

Social network

[www.facebook.com/lifepinna](https://www.facebook.com/lifepinna)

[www.instagram.com/life.pinna](https://www.instagram.com/life.pinna)

[www.twitter.com/life\\_pinna](https://www.twitter.com/life_pinna)







# FIRST PUBLIC EVENT

2<sup>nd</sup> December 2022



## Life Pinna

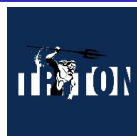
LIFE20 NAT/IT/001122

«Conservation and re-stocking of the *Pinna nobilis* in the western Mediterranean and Adriatic sea»

## Il ruolo delle Agenzie di Protezione Ambientale per la tutela di *Pinna nobilis*

Sonia Albanese - ARPAL

LIFE20 NAT/IT/001122 project is co-funded with the contribution of the LIFE programme of the European Union





# THE ROLE OF ENVIRONMENTAL PROTECTION AGENCIES IN THE PROTECTION OF *Pinna nobilis*

## IL RUOLO DELLE AGENZIE DI PROTEZIONE AMBIENTALE PER LA TUTELA DI *Pinna nobilis*



Sonia Albanese – Centro Mare ARPA Liguria

LIFE Pinna - First public event - 2nd  
December 2022



# Action D3 – Monitoring of the project's impact on the *Pinna nobilis* status

Miramare  
Strunjan

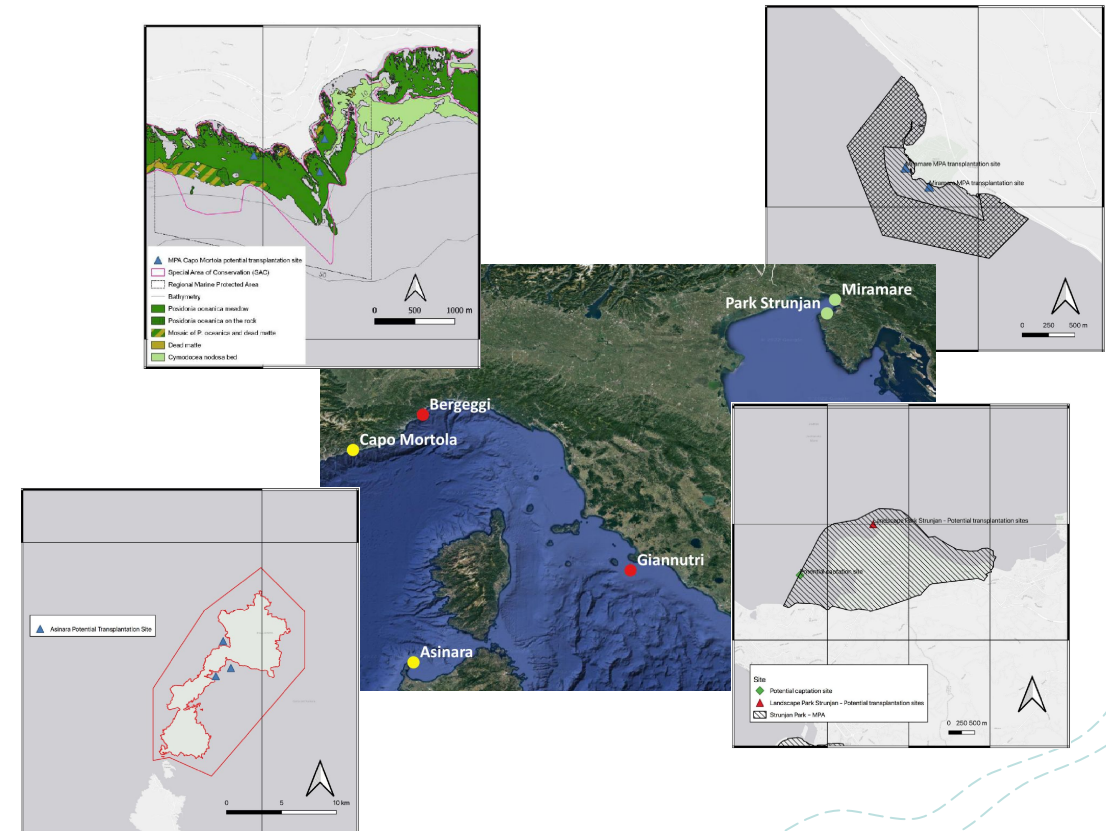
Putative donor  
sites

Miramare  
Strunjan  
Capo Mortola  
Asinara

Receiving sites

Bergeggi  
Giannutri

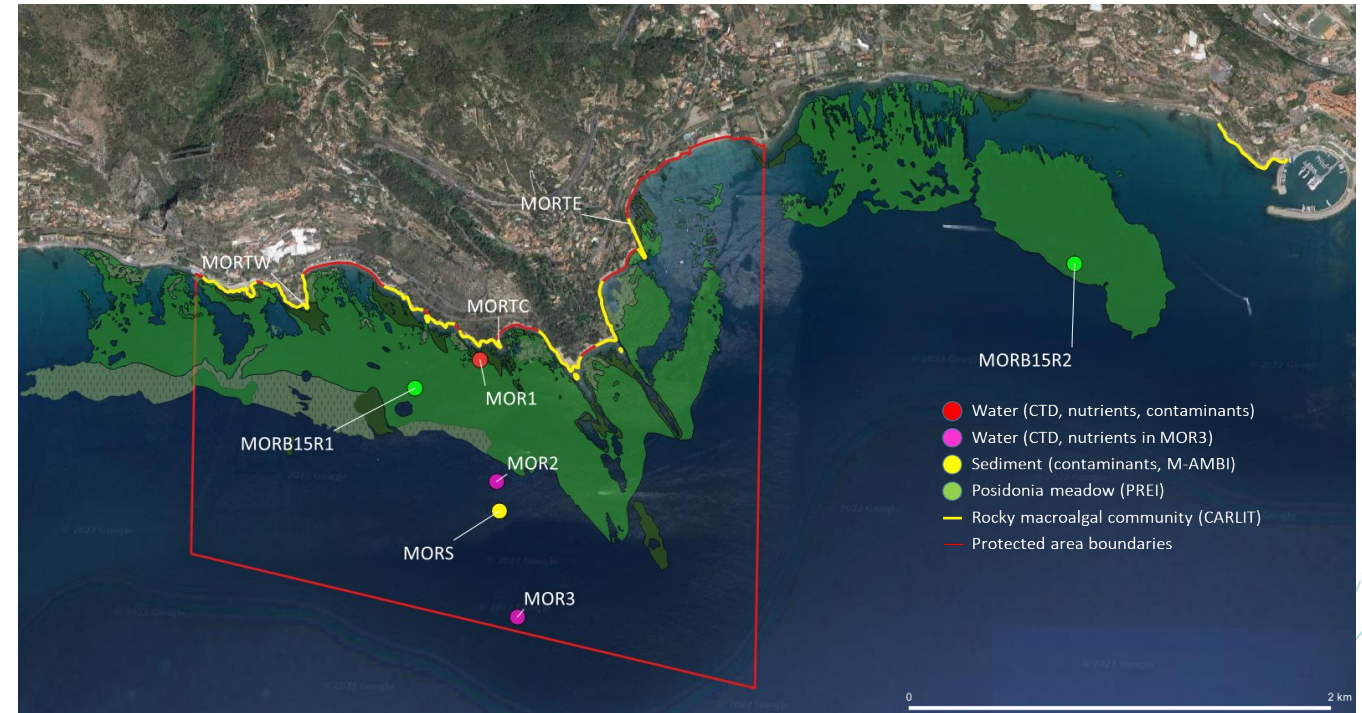
Sites in which to  
replicate  
restocking actions



# Capo Mortola: Area characterization

Monitoring data since 2007:

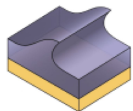
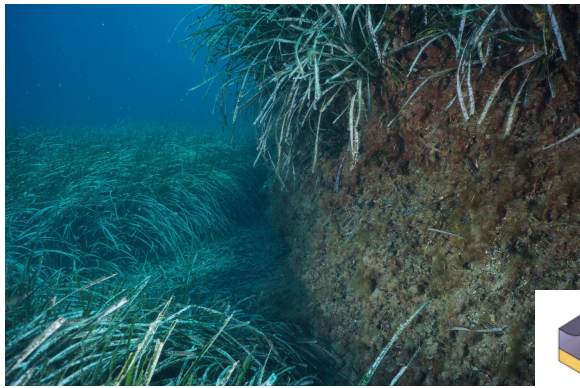
- Water (CTD, nutrients, phytoplankton, contaminants)
- Sediment (granulometry, TOC, contaminants)
- Macrobenthic community (M-AMBI)
- Rocky macroalgal community (CARLIT)
- Posidonia meadow (PREI)



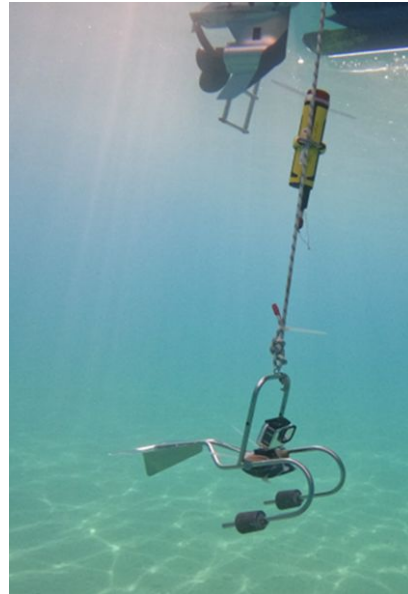
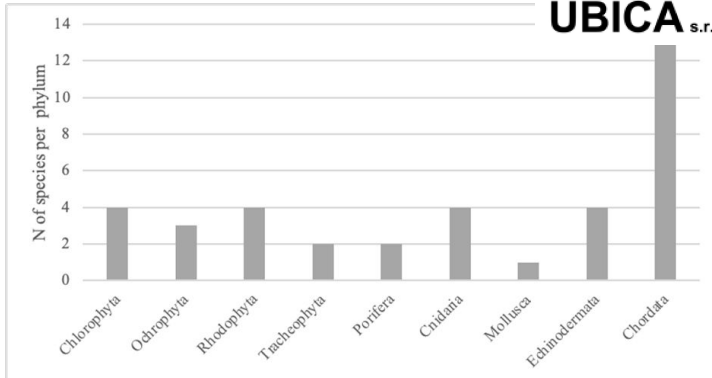


# Capo Mortola: Area characterization

Videos (about 500 m length) for characterizing  
Capo Mortola sea bottom and related communities



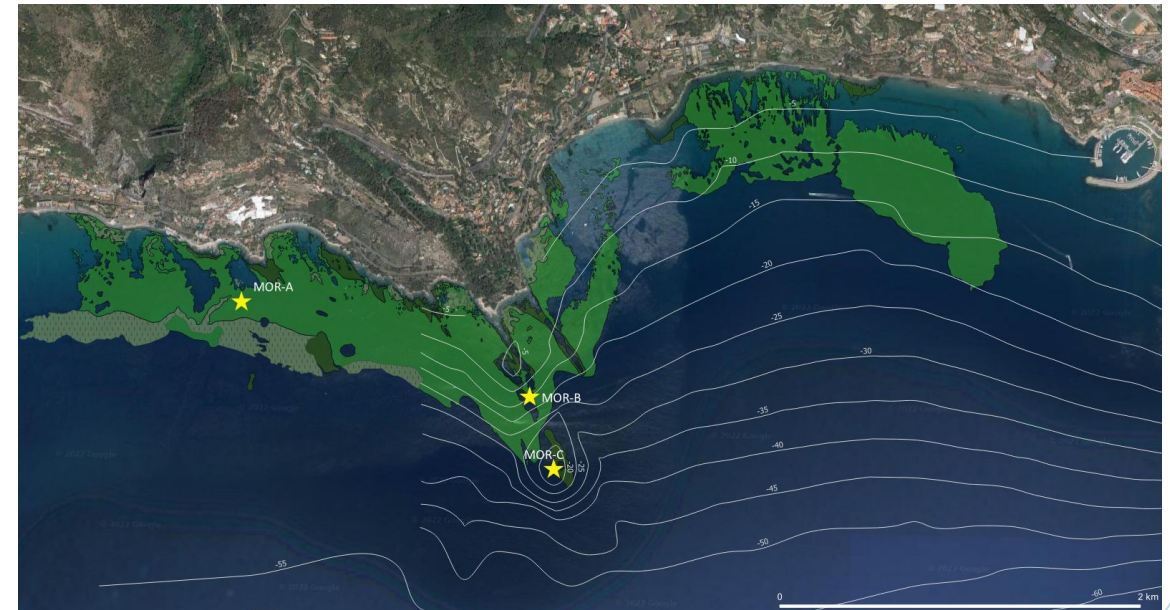
UBICA s.r.l.



# Capo Mortola: ex-ante monitoring campaign

## Capo Mortola area

- Three monitoring sites at different depth
- ☐ no living organism was found
  - ☐ one dead organism (only the valves) in MOR-C

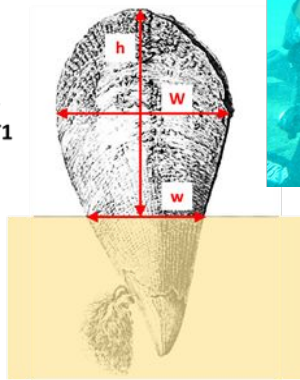
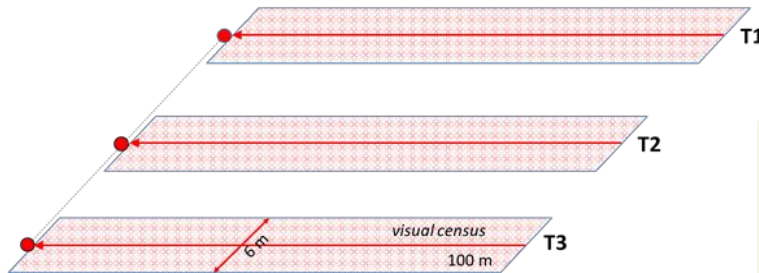




# Official method for *Pinna nobilis* monitoring

In each monitoring site, **visual census** on 3 transects (length: 100 m, width: 6 m)

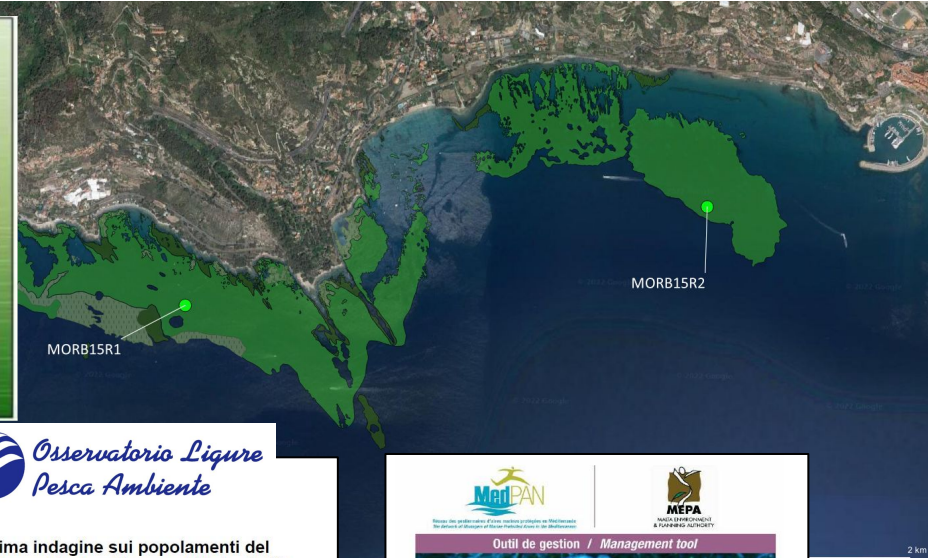
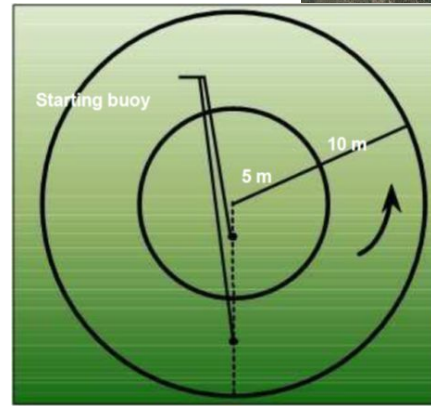
- **number of animals**  
(living or dead)
- **biometry**



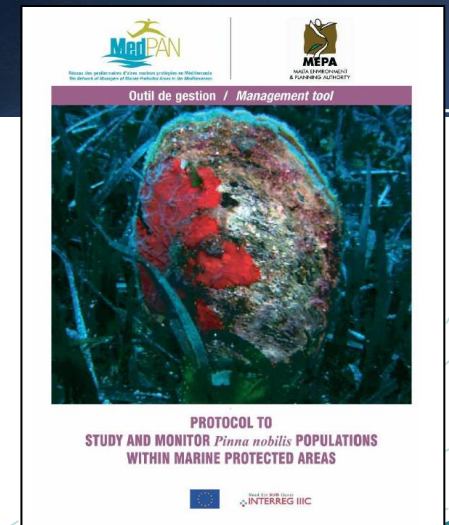
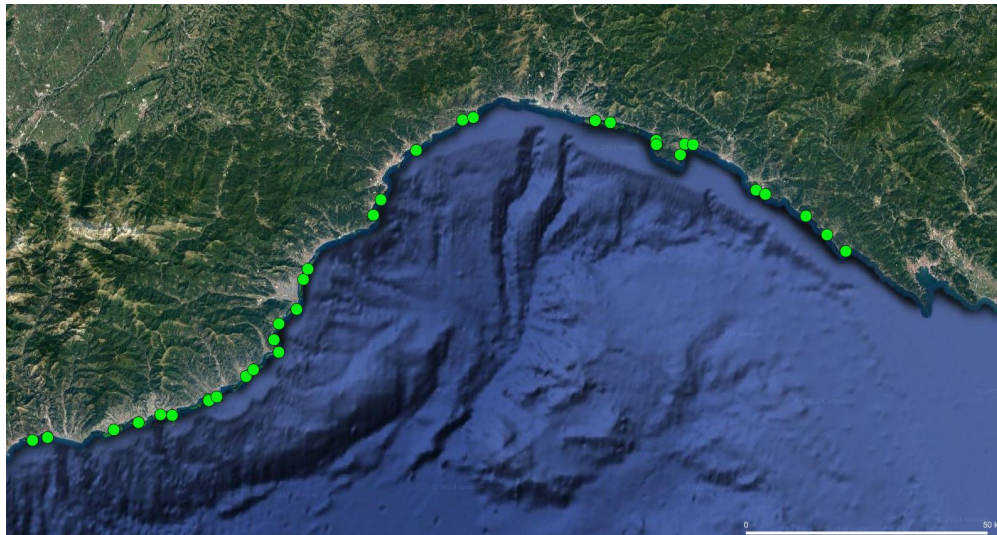
# Capo Mortola: speditive monitoring protocol

Application of the **circle sampling approach**  
during posidonia meadow monitoring diving  
**Pilot application in Capo Mortola**

- Two monitoring sites at 15m depth
- Visual census on a circle surface of 10m radius



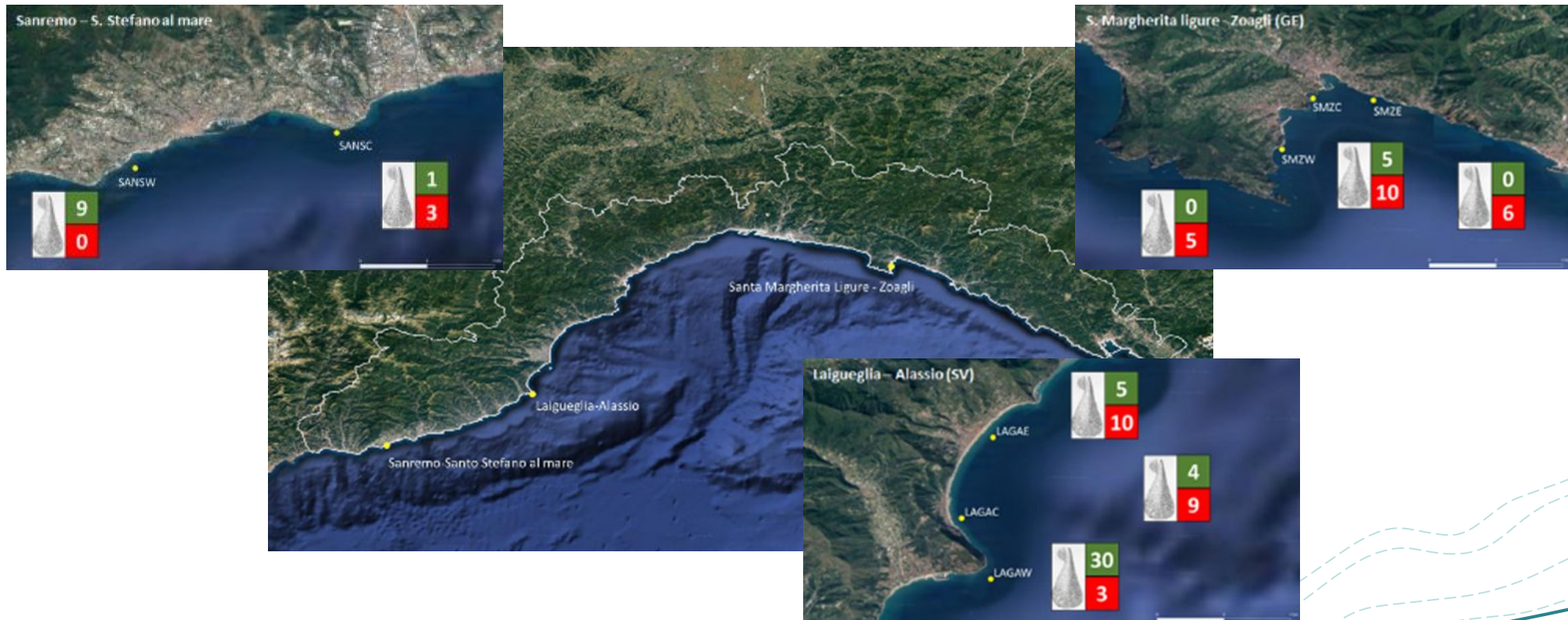
Possible  
application  
in other sites  
of the  
ARPAL  
monitoring  
network





# Liguria: ARPAL campaign on *Pinna nobilis* distribution

## Marine Strategy Framework Directive – 2018

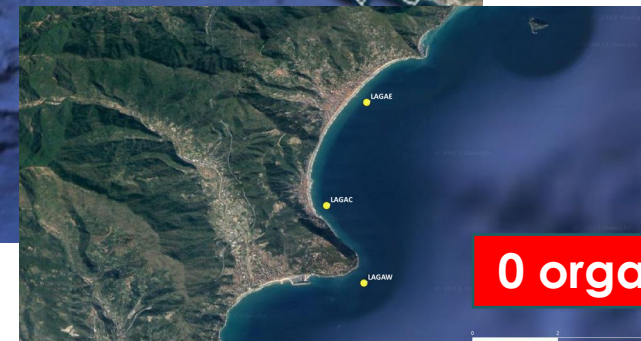
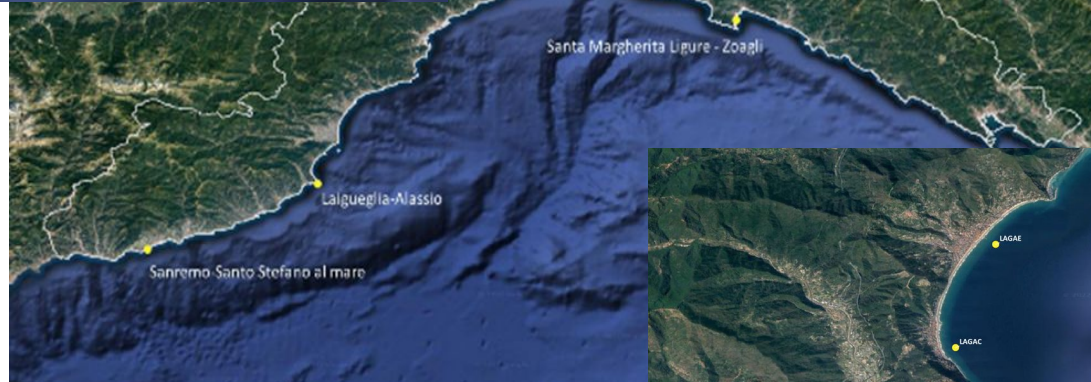
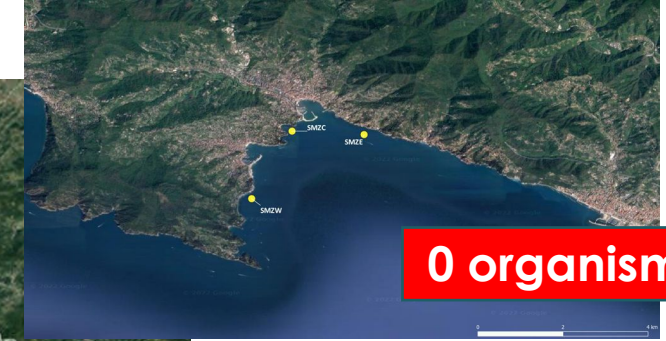
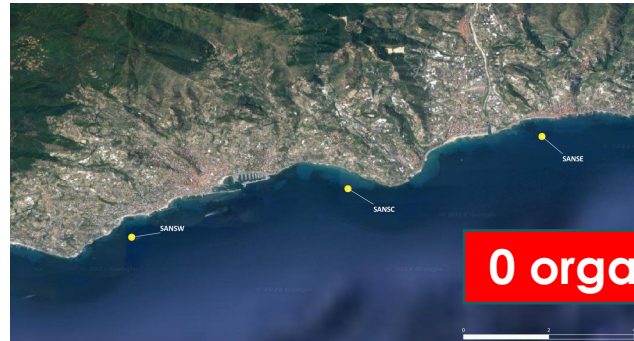


# Liguria: ARPAL campaign on *Pinna nobilis* distribution

ISPRA-ARPA Agreement on monitoring marine endangered species – 2022 -2023

Marine Strategy  
Framework  
Directive

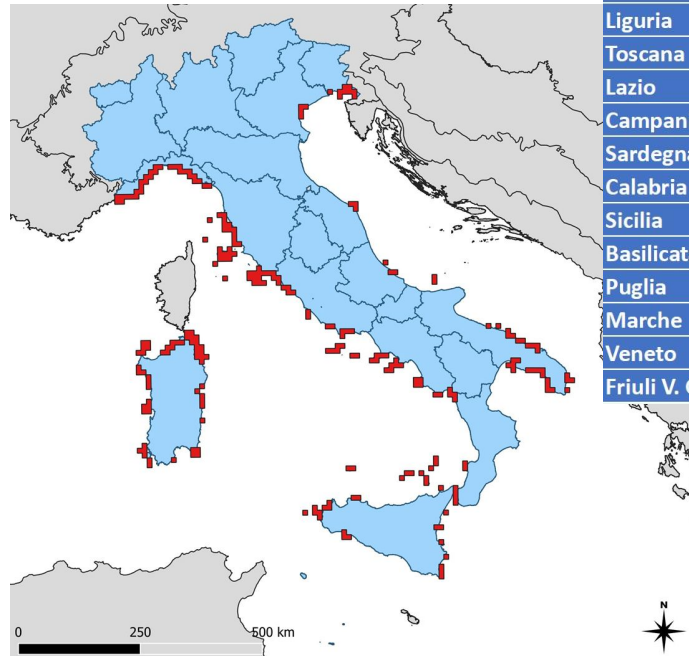
Habitat  
Directive



No living or dead organism  
observed.  
Some valve fragment observed  
at Capo Mele (LAGAW).



# ISPRA-ARPA agreement on monitoring marine threatened/endangered species – 2022/2023



ARPA	Specie da monitorare			
	<i>Patella ferruginea</i>	<i>Pinna nobilis</i>	<i>Lithophaga lithophaga</i>	<i>Monachus monachus</i>
Liguria	X	X	X	
Toscana	X	X	X	
Lazio		X	X	
Campania		X	X	
Sardegna	X	X		X
Calabria	X	X		
Sicilia	X	X	X	
Basilicata	X	X		
Puglia		X	X	X
Marche			X	
Veneto		X		
Friuli V. G.		X	X	

- Selection of monitoring areas based on **available data**
- Application of **standardized methods**
- Involvement of the **SNPA network**



Manuali per il monitoraggio di specie e habitat di interesse comunitario (Direttiva 92/43/CEE e Direttiva 09/147/CE) in Italia: ambiente marino

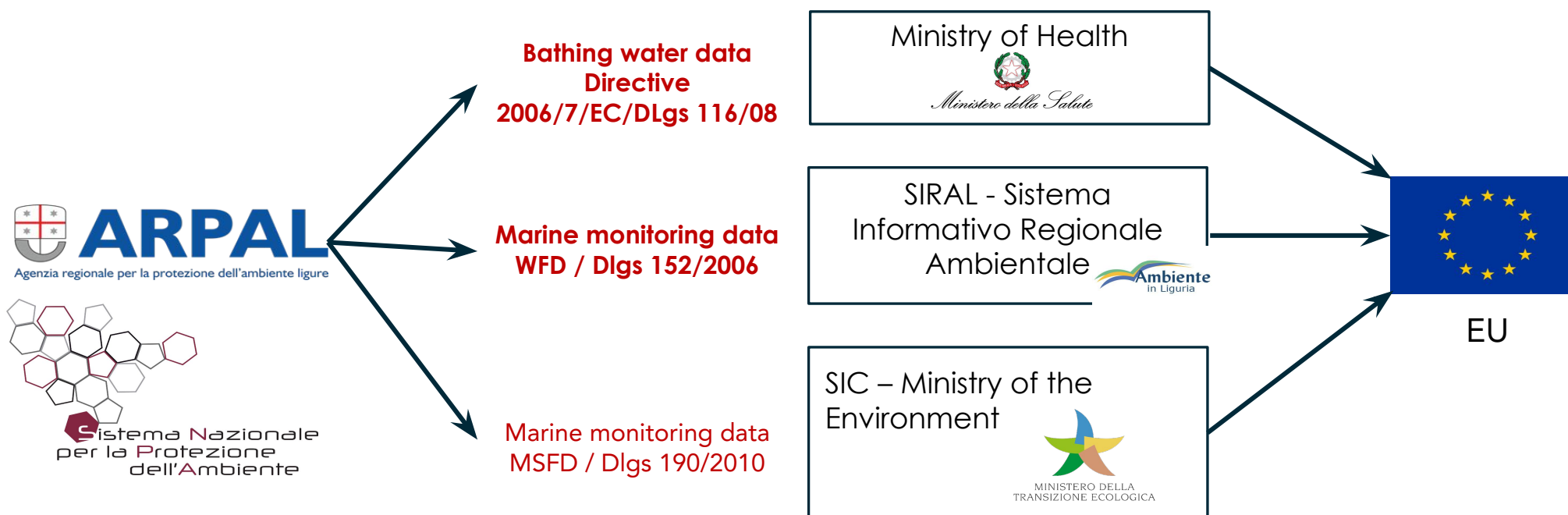


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MANUALI E LINEE GUIDA

[https://www.isprambiente.gov.it/files2019/pubblicazioni/manuali-linee-guida/MLG\\_190\\_19.pdf](https://www.isprambiente.gov.it/files2019/pubblicazioni/manuali-linee-guida/MLG_190_19.pdf)

# From monitoring to decision-making



Data availability and comparability

Assessment of status, trends and effectiveness of measures



# THANKS FOR YOUR ATTENTION

## Contacts

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- [www.lifepinna.eu](http://www.lifepinna.eu)



LIFE Pinna - First public event - 2nd December 2022

