

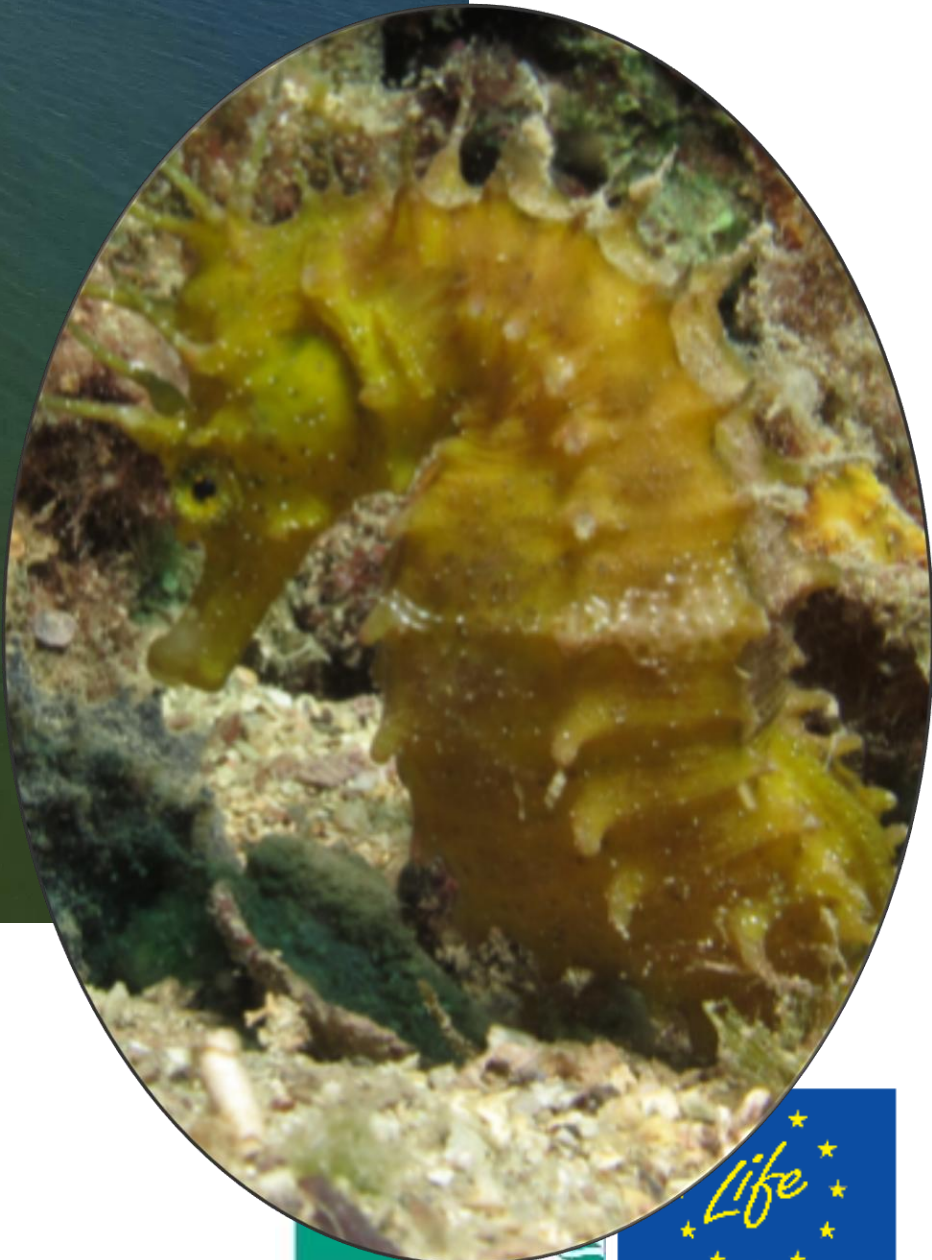
Nature-based reef solution for coastal protection and marine biodiversity enhancement

Restoration of oyster and sabellaria reefs to protect the beach and increase biodiversity at the Bevano River mouth (Ravenna)

High biodiversity still present in some marine and coastal habitats of Emilia-Romagna region



PARCO DELTA DEL PO
EMILIA-ROMAGNA



Threats

- natural and anthropogenic subsidence
- sea level rise
- increase in frequency and intensity of extreme events
- coastal urbanization
- overexploitation of resources



The consequences:

- biodiversity loss
- habitat loss
- floods
- ecosystem goods and services loss



The "engineering" solutions...

- groynes
- coastal walls
- breakwaters emerge
- breakwaters submerged
- beach nourishment



...short-term protection of tourism investments

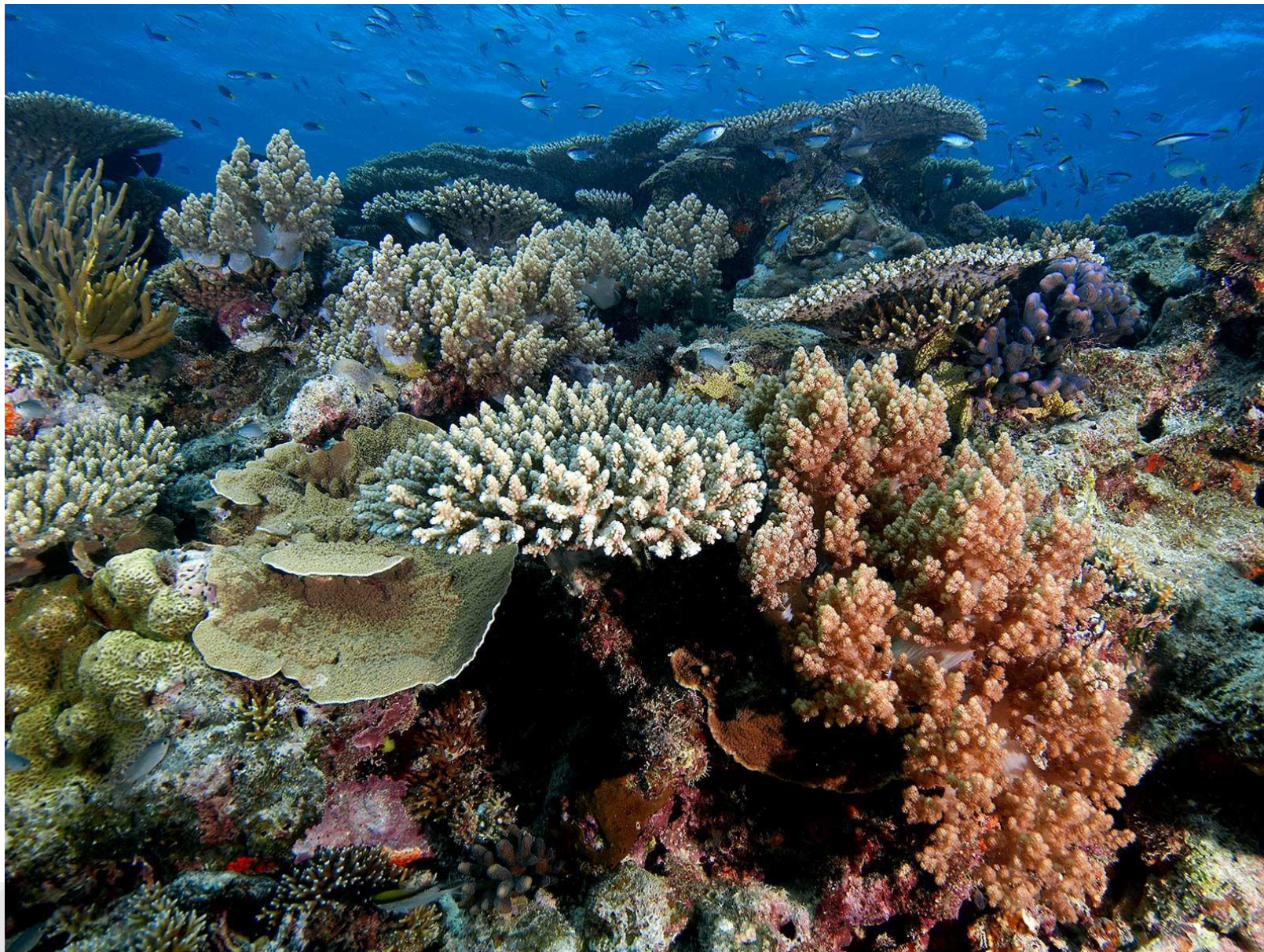
How do natural systems work?



- Resistance
- Resilience
- Adaptation



What are natural coastal bioconstructions?



Coral reefs

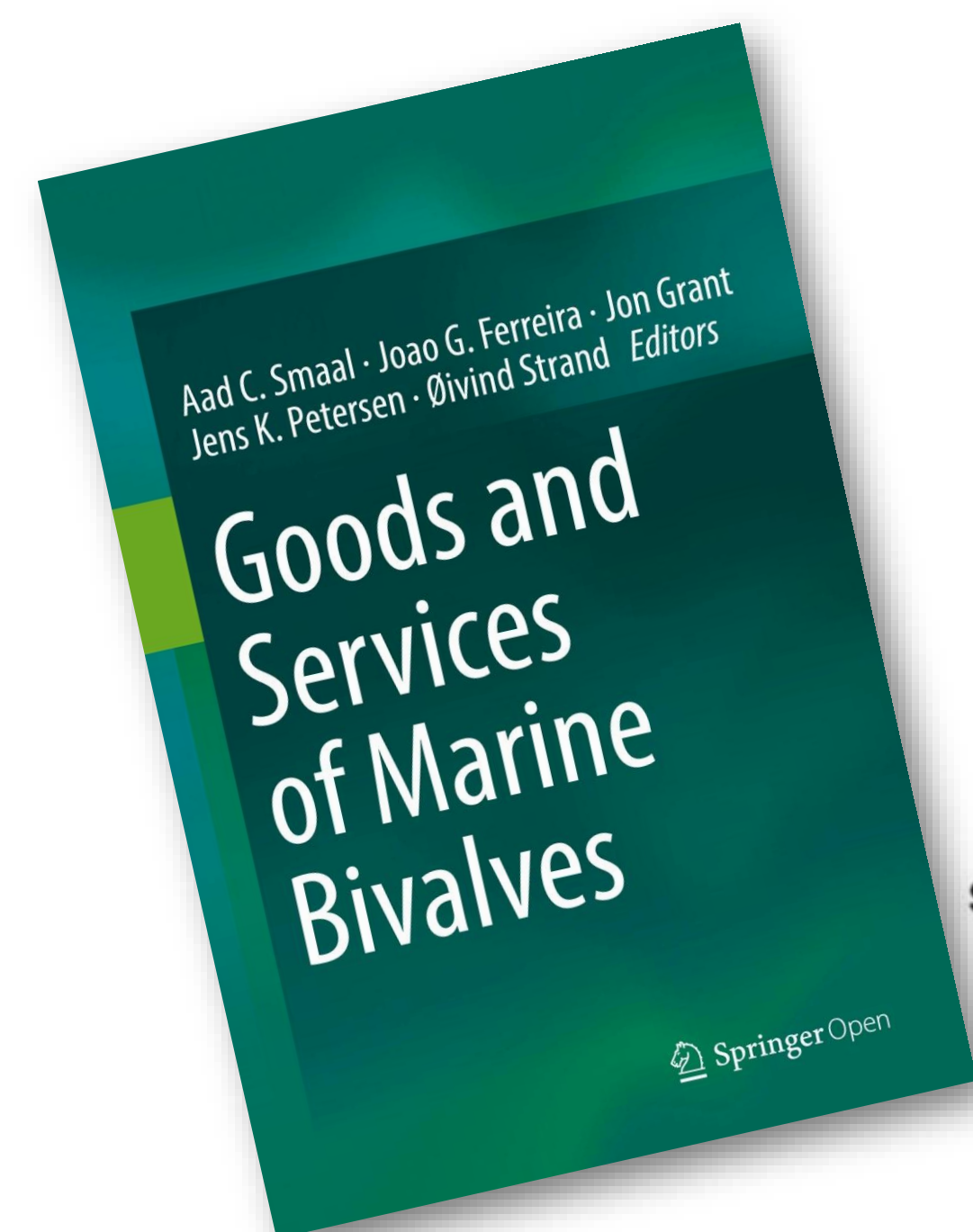
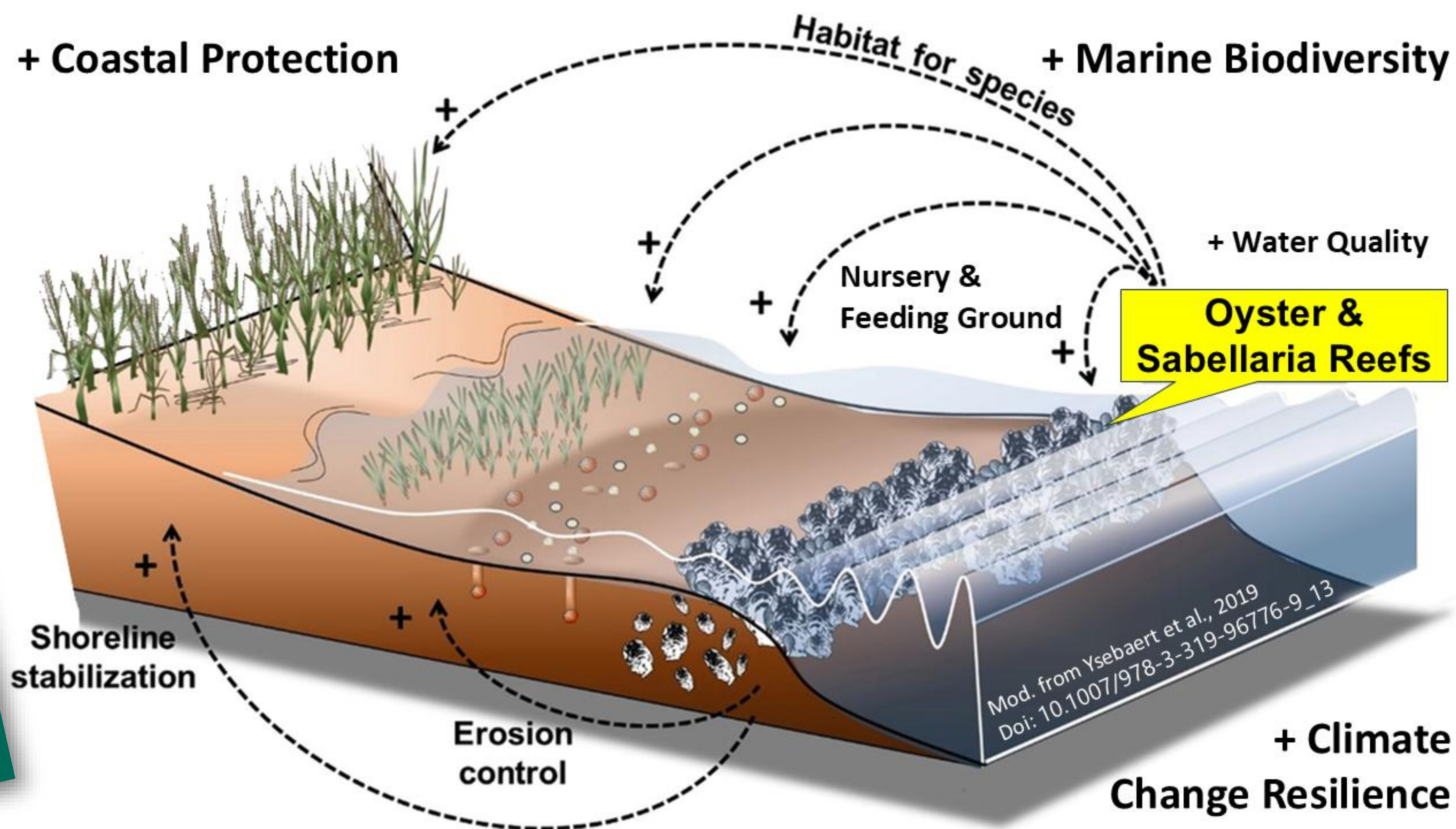


Oyster reefs



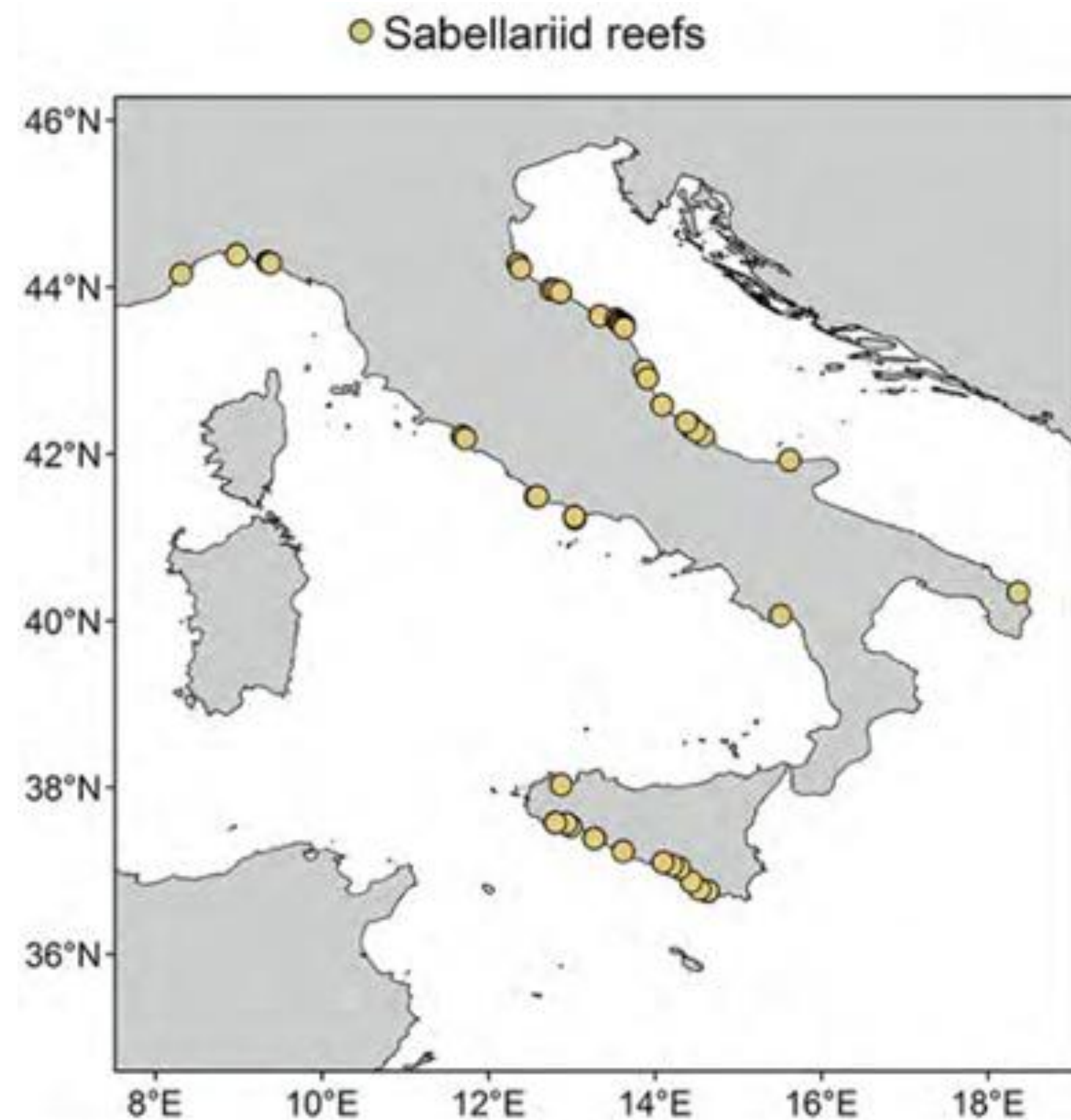
Sabellaria reefs

An oyster reef... it's much more than just a pile of shells!

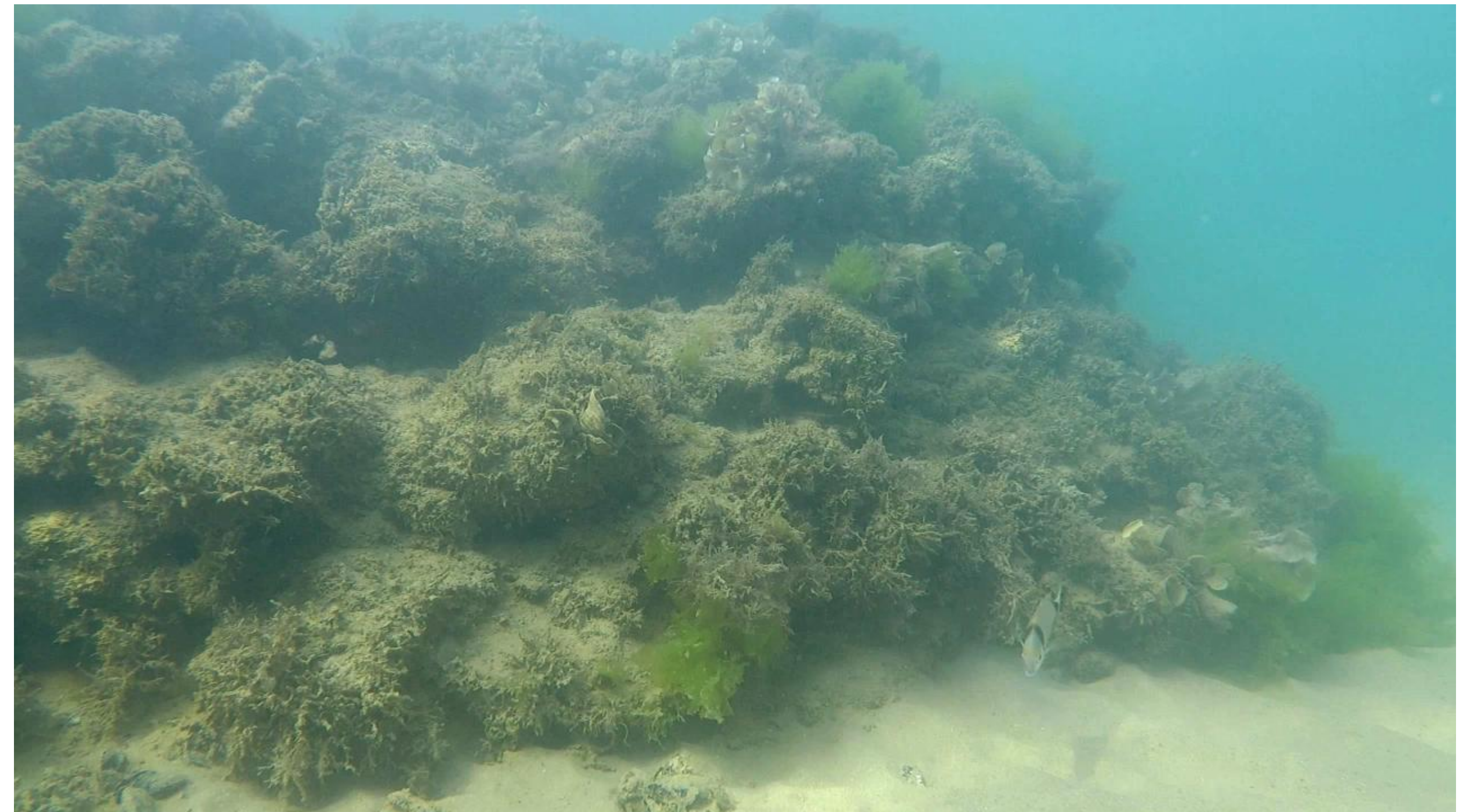


Ysebaert T, Walles B, Haner J, Hancock B (2019) Habitat modification and coastal protection by ecosystem-engineering reef-building bivalves. In: Smaal AC, Ferreira JG, Grant J, Petersen JK, Strand Ø (eds) Goods and Services of Marine Bivalves. Springer International Publishing, Cham, p 253–273.

We have the opportunity to restore our ancient natural reefs!



Current distribution of sabellaria reefs
(Ingrosso et al. 2018)



Sabellaria reef in Marina di Vasto (Abruzzo, Italy)

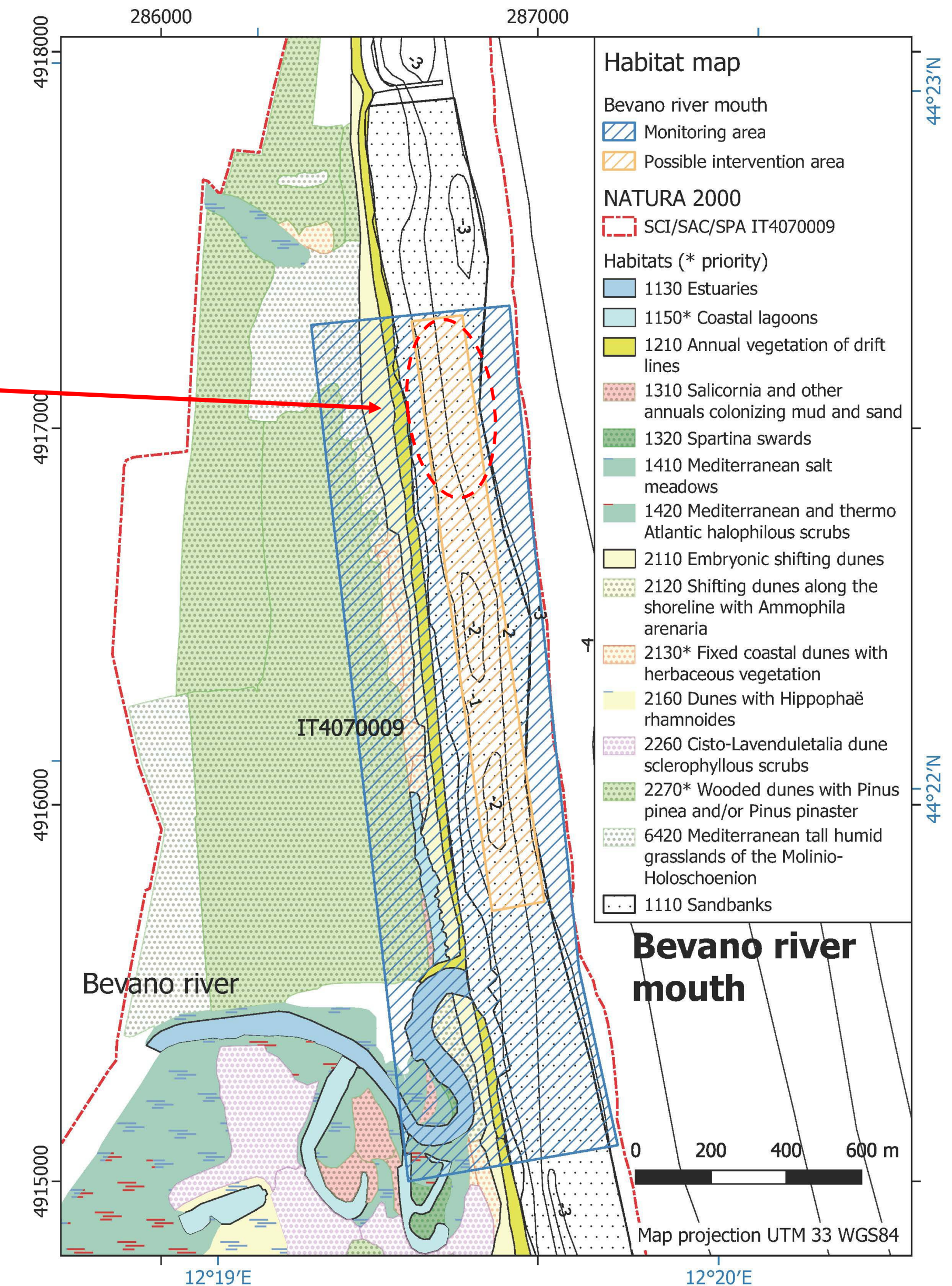
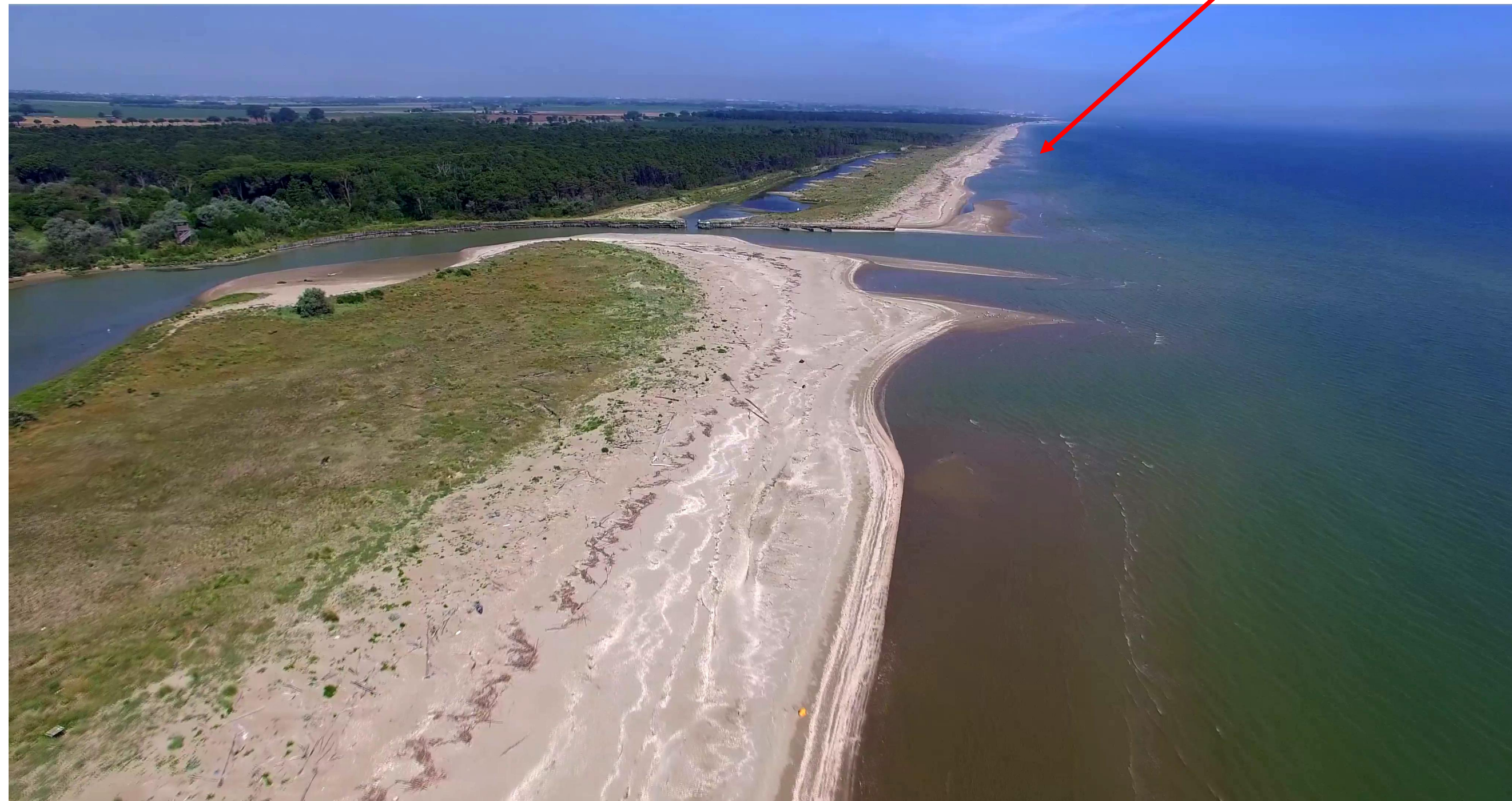


Sandy tubes made by *Sabellaria spinulosa*
(3D X-Ray CT scan by Eva Turicchia)

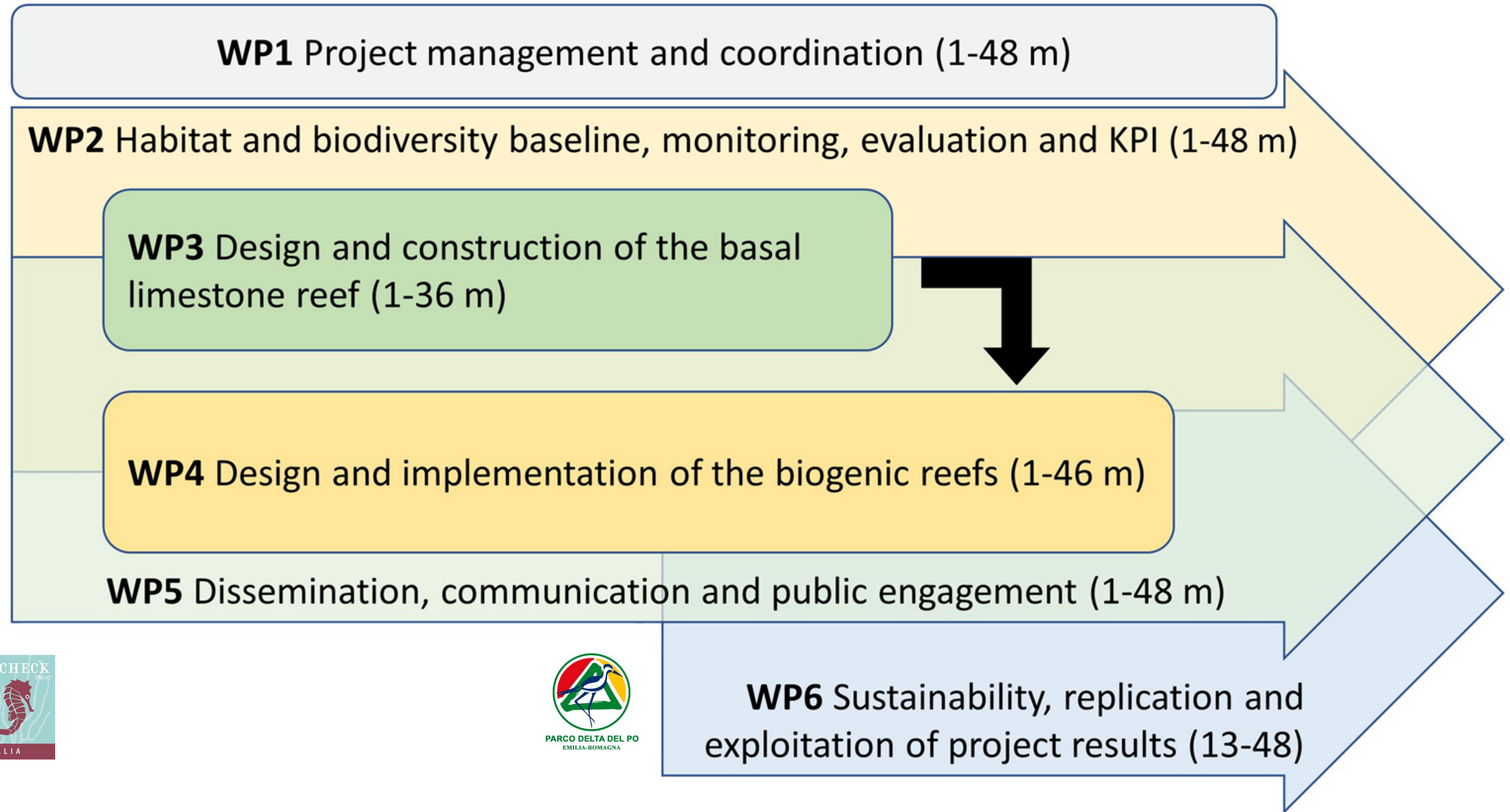
The project idea...

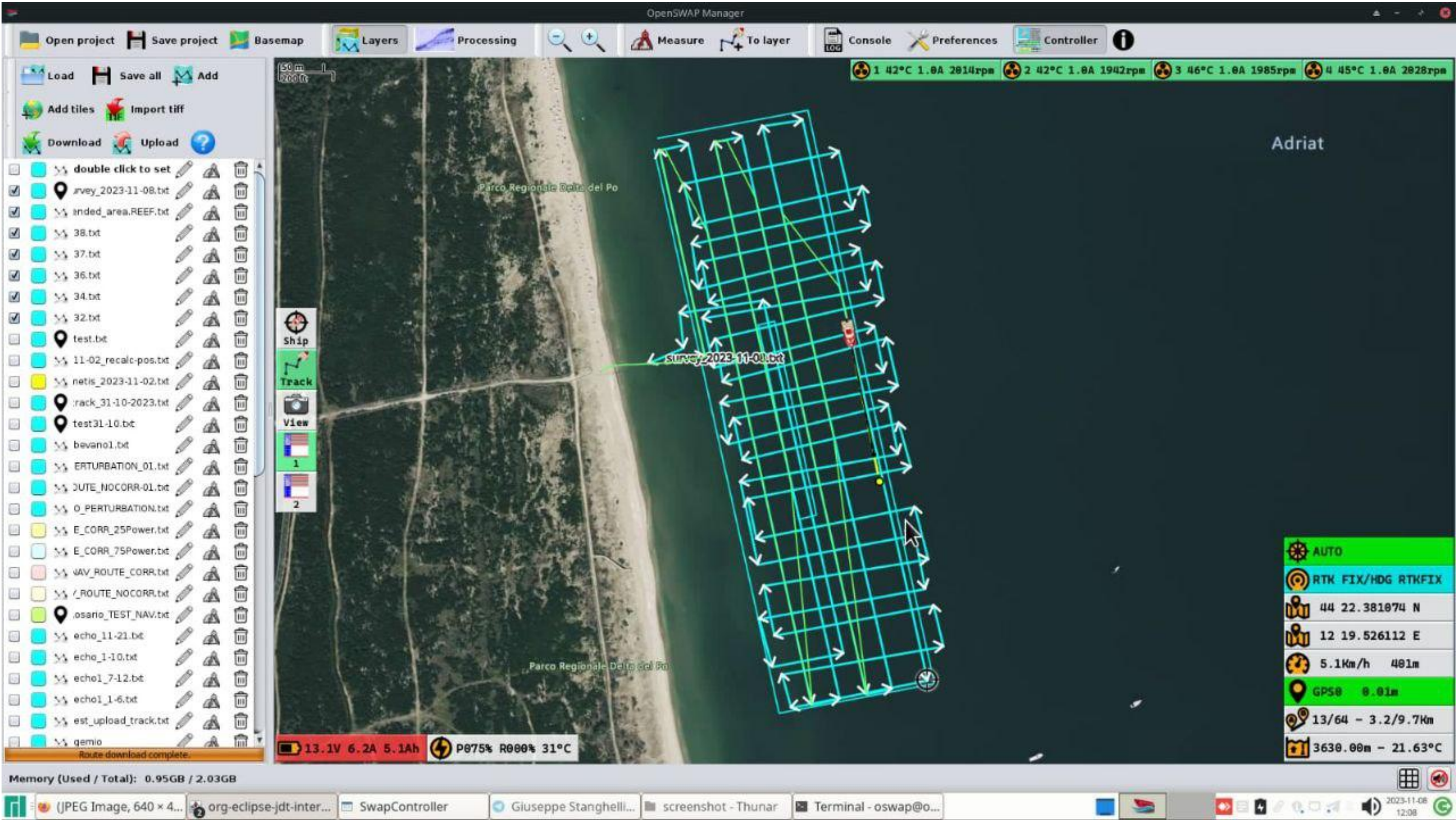
Demonstrate:

- the possibility of rebuilding oyster and sandbar reefs
- their effectiveness in protecting the coast
- and increasing biodiversity



Project activities



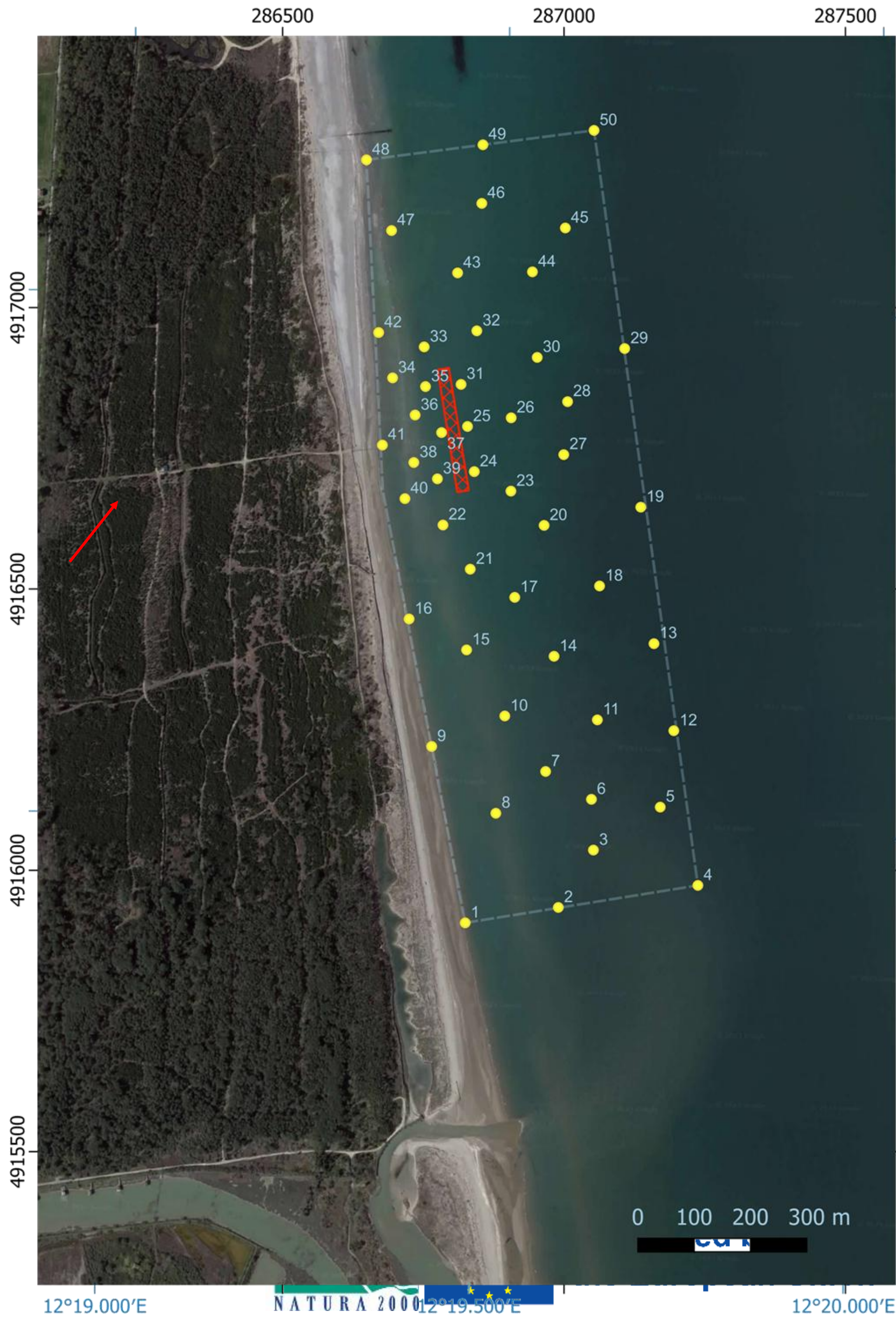


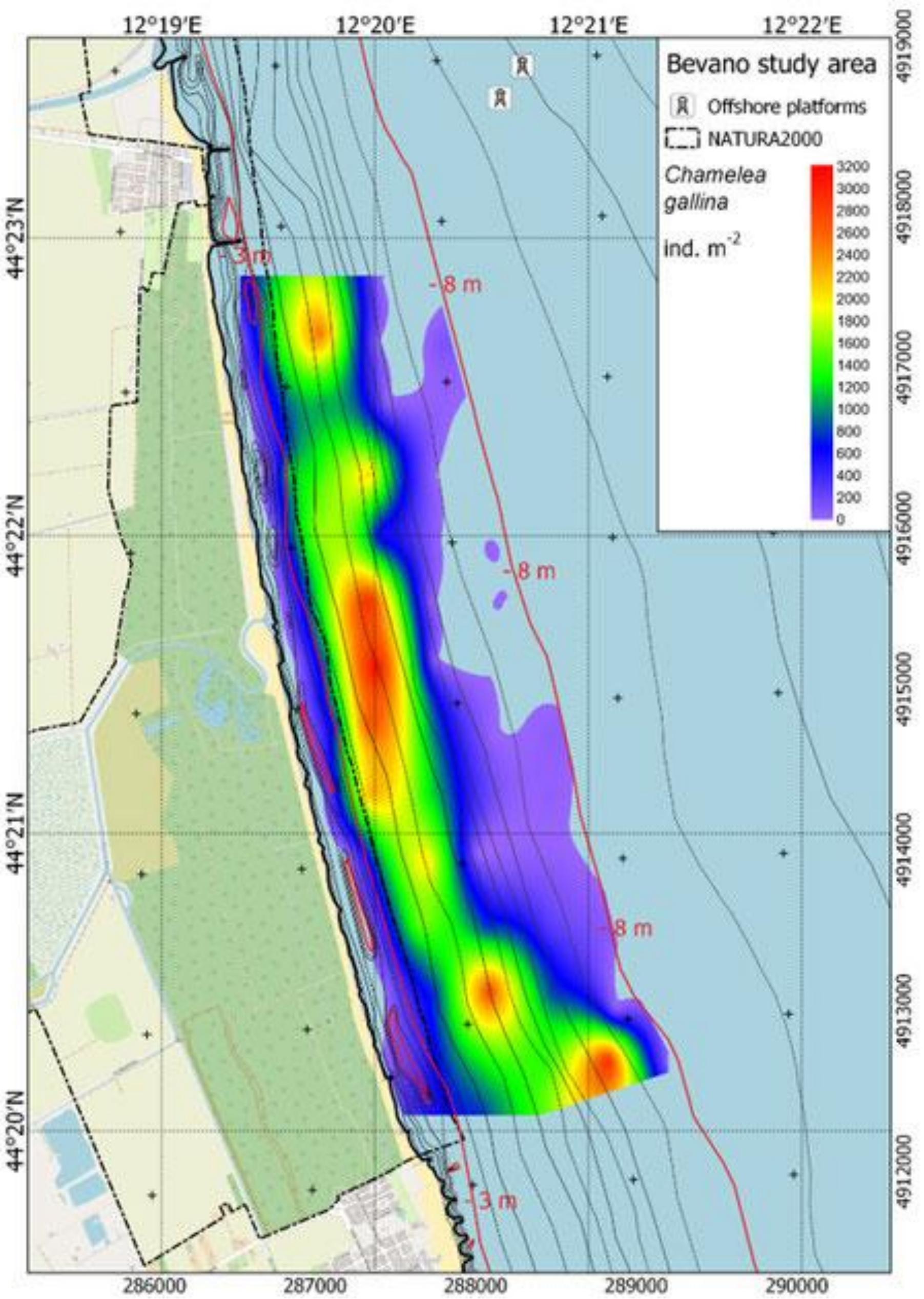
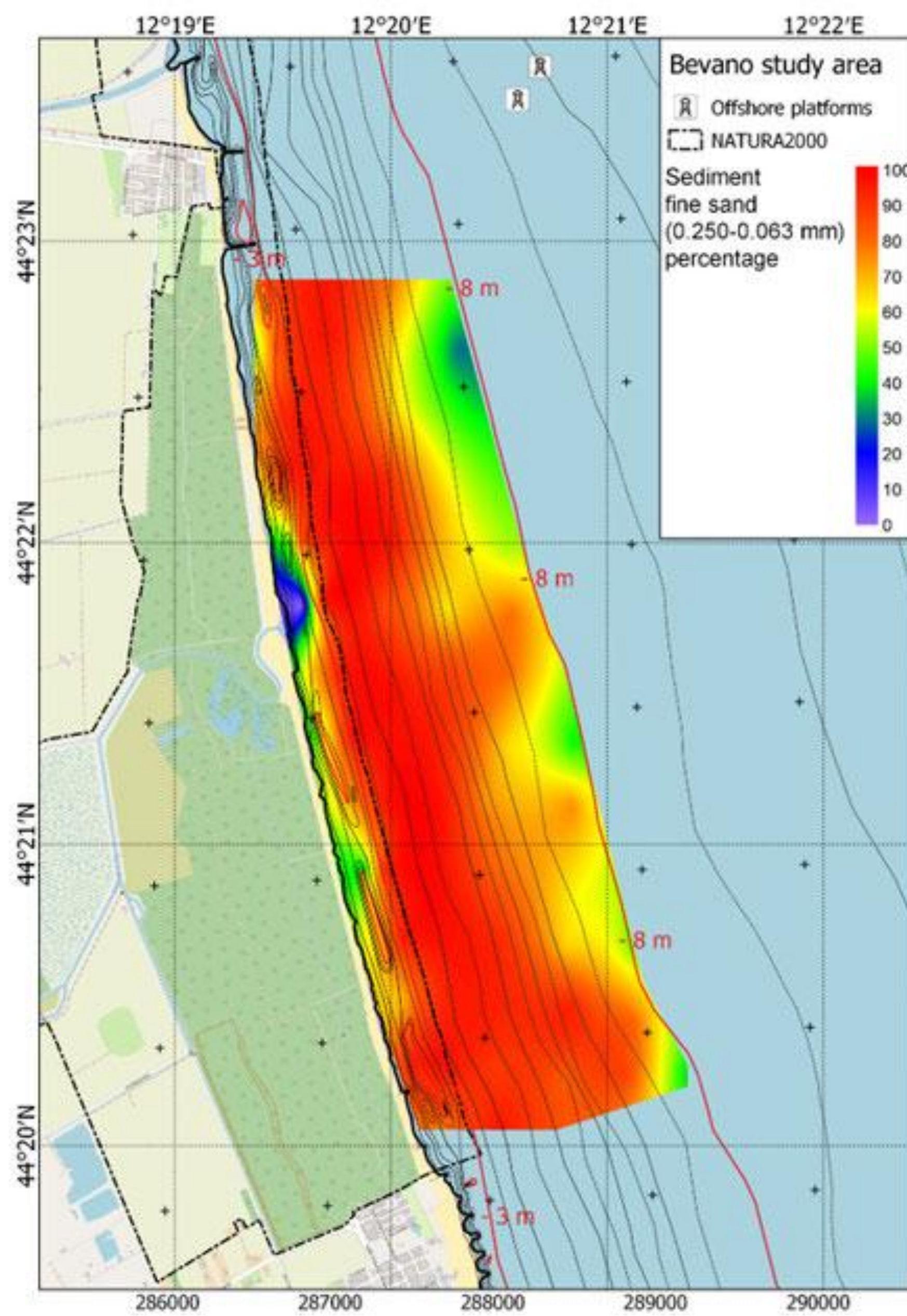
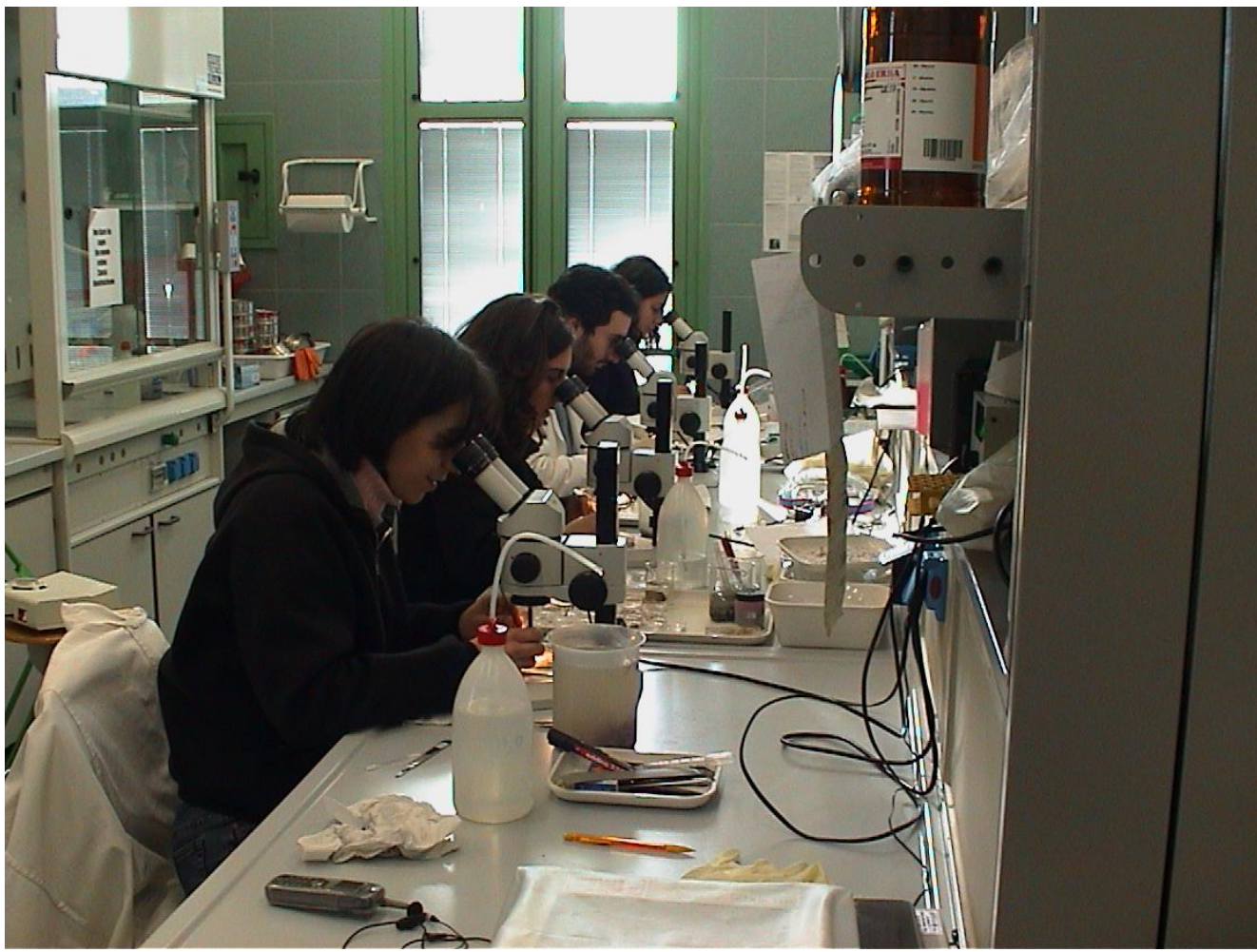
Digital bathymetry survey
(by PROAMBIENTE)





Underwater sampling
(by scientific divers at UNIBO)



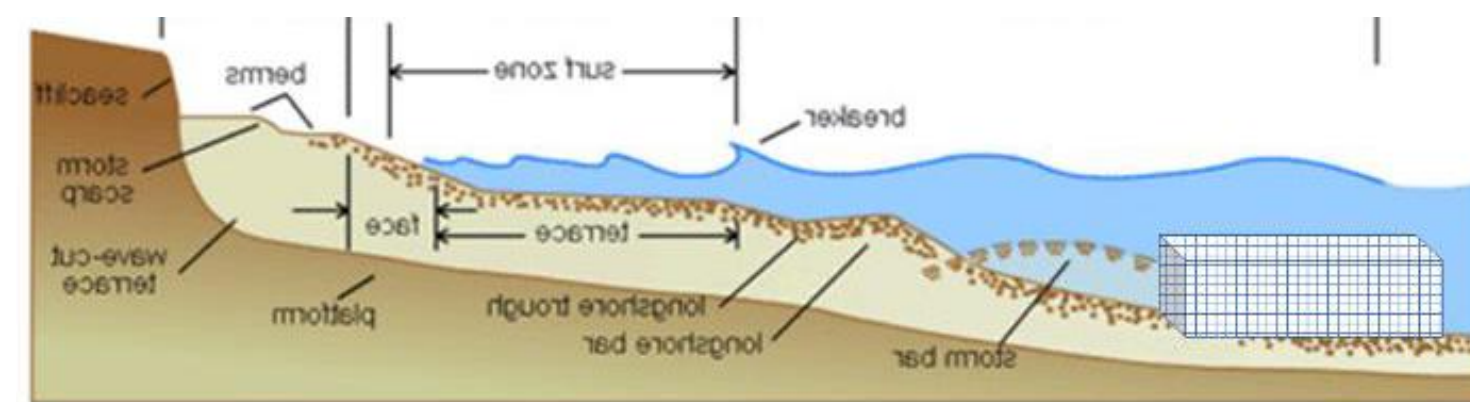
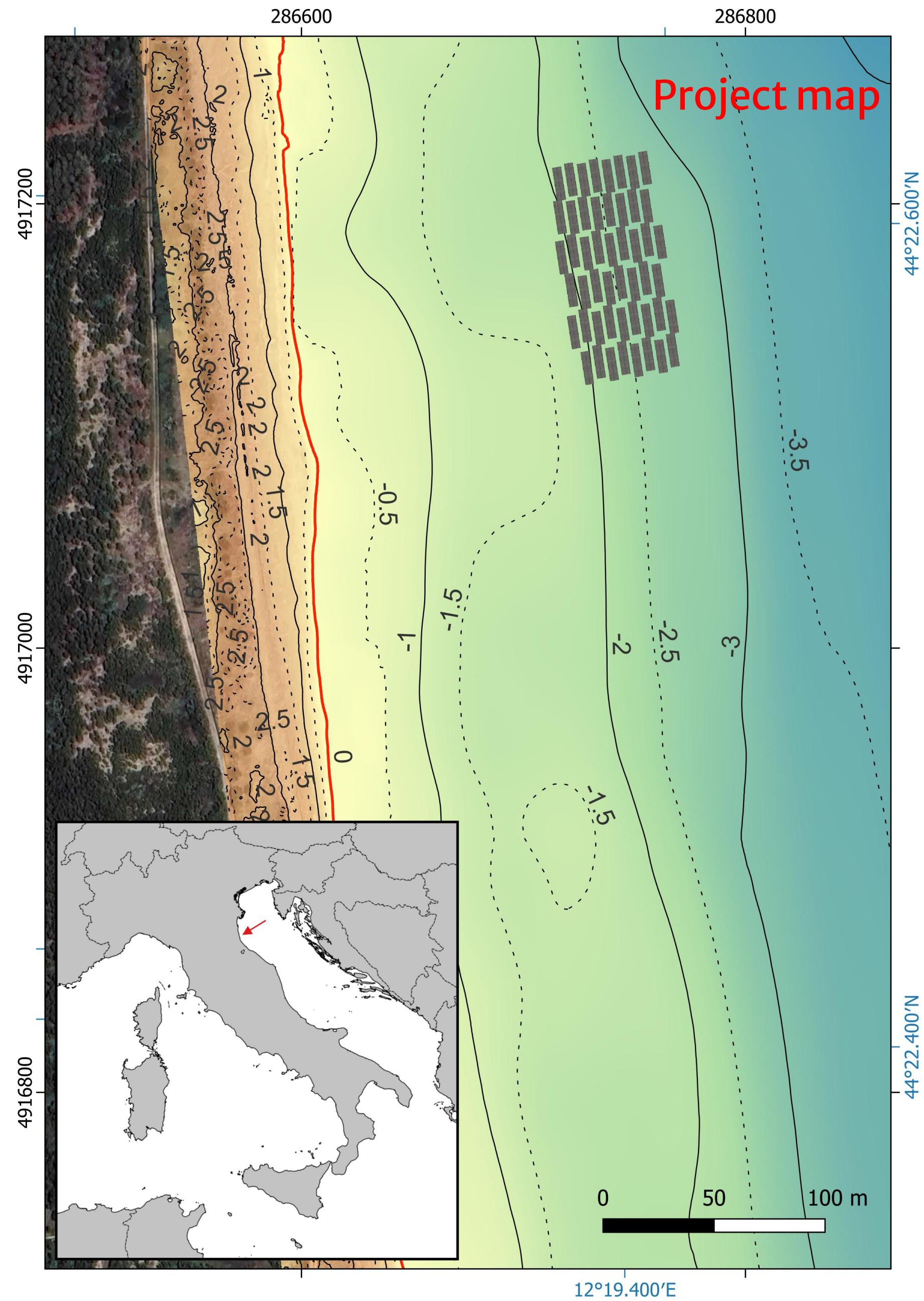


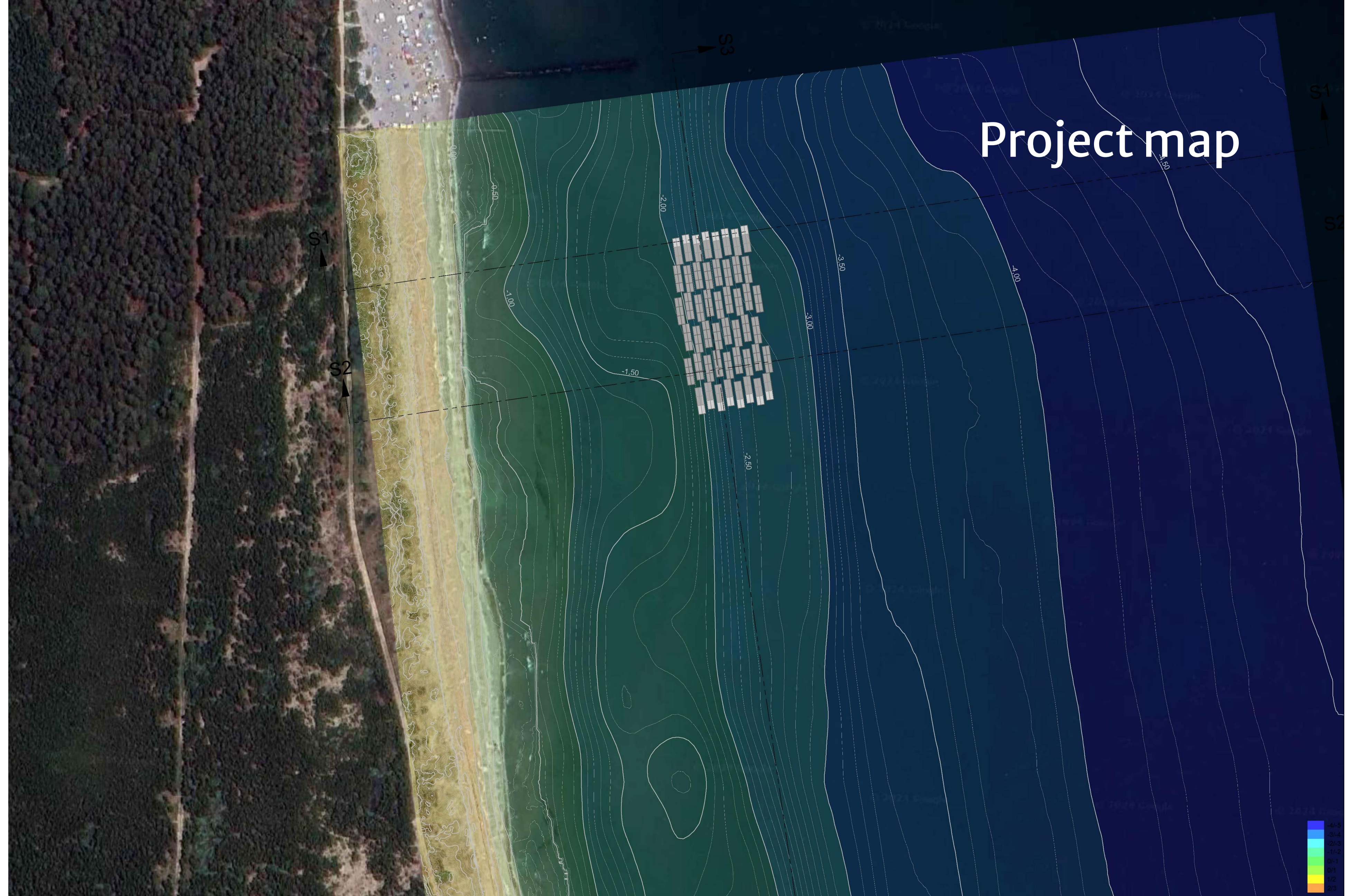
Habitat and species distribution mapping

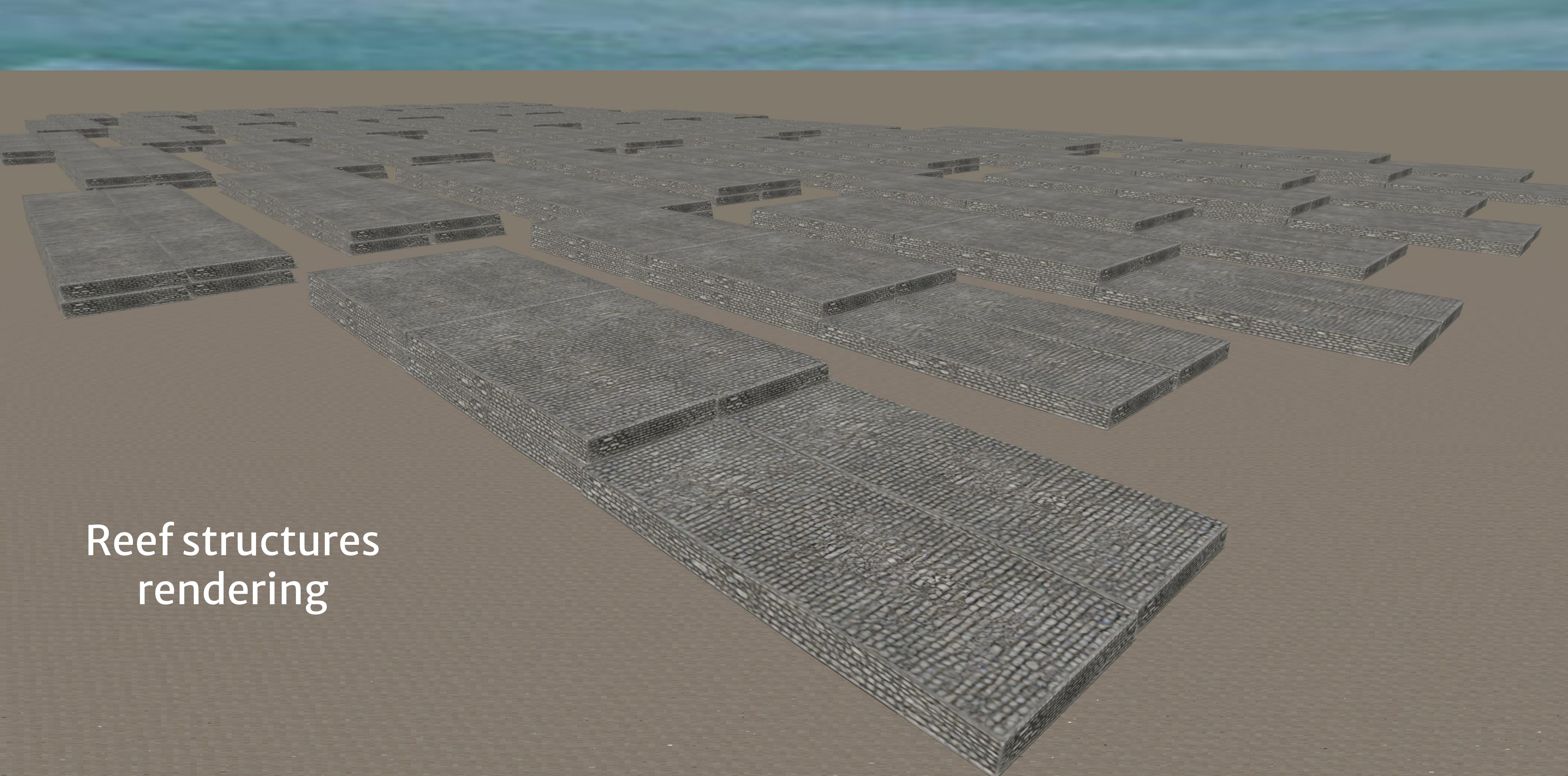


Co-funded by
the European Union

Location and construction of the reef







Reef structures
rendering



LIFE NatuReef

Nature-based reef solution for coastal protection and marine biodiversity enhancement



Programme UE: LIFE

LIFE-2022-SAP-NAT - Nature & Biodiversity - Standard Action

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Coordinator: Prof. Massimo Ponti – Alma Mater Studiorum Università di Bologna

Contact: massimo.ponti@unibo.it



Web: <https://site.unibo.it/life-natureef>

