

Mediterranean ecosystem

Restoration sites



Reconstructing coastal dunes against erosion in Italy

The intervention area is located within a municipal protected area of public property called “Sterpaia Park”. It is a coastal protected area (ANPIL ex L.R. n. 56/2000), managed by the Municipality of Piombino, characterised by high naturalistic and landscape values (relict coastal dune vegetation, plant and animal species of conservation interest) but with high anthropogenic pressures (for example coastal tourism, coastal erosion, artificialization of the coast). The coastal zone is characterised by a narrow dune belt, with a maximum thickness of 50 m, with shrubby herbaceous dune vegetation and relict pine forests.

Goals

Increasing the resistance and resilience of coastal ecosystems, counteracting the strong process of coastal erosion, mitigating the effects of the summer tourist load and redeveloping the areas degraded by the presence of alien and invasive plant species.

General information



Organisation
Region of Tuscany

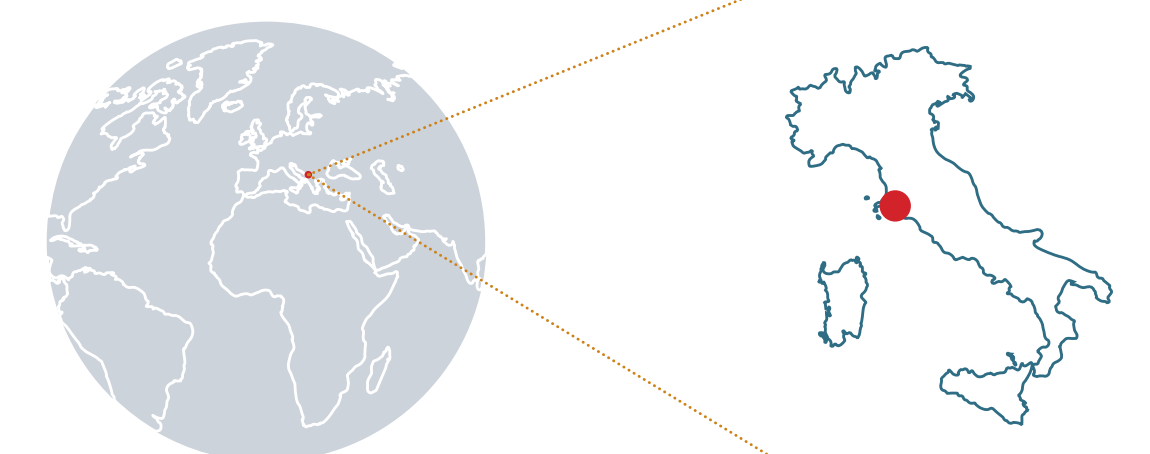
Type of organisation
Local or subnational government, including field extension services

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Site location



Latitude
43°57'17"N

Longitude
10°38'14"E

 **Implementation area**
23ha & 7 km
of coastline

 **Herbaceous & shrub planted**
16 000

 **Restoration started**
2012



Scan the code for full description

“ This practice/experience made us (designers and me as coastal manager) understand the importance of in-depth analysis. Complex issues cannot be answered with simple and pre-packaged solutions. It is necessary to invest in time and professionalism in the analysis of complexity, in the verification of errors and in the identification of new solutions to be tested through prolonged monitoring over time. Then, surely, this type of experience gave, to those lucky enough to participate, the satisfaction of creating useful works, which have important territorial and landscape effects and which try to give answers to current problems and largely linked to the theme of climate change, the protection of biodiversity and the sustainability of economic activities. And these are also useful answers at the level of the European Union and in particular of Communities that live thanks to the economic activities linked to the delicate transition ecosystems between the sea and the land.

In addition, for us technicians and designers it certainly has been a growth, as well as professional, in terms of the method of teamwork and interaction between different skills at local, regional, national and international level. On the end-users side we noticed a widespread satisfaction about the practice, deriving both from the decorative effect of the works with respect to the pre-intervention situation characterized by severe erosion and degraded vegetation, and from the feeling of wise management attention by the bodies in charge of future maintenance.



Type of restoration intervention

- Natural regeneration
- Assisted natural regeneration
- Tree planting
- Control of invasive alien species

Main drivers of degradation

- Introduction of invasive species
- Impact/pressure of summer tourism, climate change, coastal erosion, land subsidence, saline wedge intrusion in the freshwater aquifer
- Alteration of vegetation

What is the practice about

- Combined/integrated strategy of controlled accessibility, information/environmental education and active defence
- Vertical bundles of heather wood in chestnut wood structure
- Horizontal bundle in coconut roll
- Coconut roll filled with sand
- Pile of pine lumber blocked with vertical and horizontal chestnut wooden stake
- Dune reconstruction through sand layers protected with coconut net and felt and external erosion protection with pine twigs fixed with chestnut wooden stakes
- Dune external protection with coconut net and felt, and *Posidonia oceanica* leaves
- Planting of 600 trees, 16,000 herbaceous and shrub plants, the closure of 130 paths on the dune and the opening of 50 environmentally sustainable accesses
- Twenty information panels, training/environmental education courses and guidelines for sustainable cleaning

Achievements and impact

- Plant survival of herbaceous and shrub species: 70%
- 9,623 specimens of mastic (*Pistacia lentiscus*), 2,694 specimens of female cistus (*Cistus salvifolius*) and 282 specimens of prickly juniper (*Juniperus oxycedrus* subsp. *Macrocarpa*) planted.
- The average survival rate was 61% in 2014, 49% in 2015 and 42% in 2016.
- Construction of 70 plant cells of herbaceous species of 16 m² each



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UNITED NATIONS DECADE ON
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RESTORATION**
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