

LIFE PRIMED (LIFE17NAT/GR/000511) -Restoration, management and valorisation of PRIority habitats of MEDiterranean coastal areas

Project funded with the contribution of the European Commission under the LIFE programme



PARTNERSHIP

Coordinator **Associated Beneficiaries**









DURATION 6 ½ years

BUDGET INFO

Total budget: ca. 2 M

% EC Cofinancing: **75%** (ca. 1,6 M)





















LIFE PRIMED

Restoration, management and valorisation of PRIority habitats of MEDiterranean coastal areas

#2 NATURA 2000 SITES

Delta of Nestos River, Eastern Makedonia, Greece (SCI GR1150010)

Bosco di Palo Laziale, Rome, Lazio, Italy (SCI IT6030022)





PARTNERSHIP

Coordinator

Associated Beneficiaries







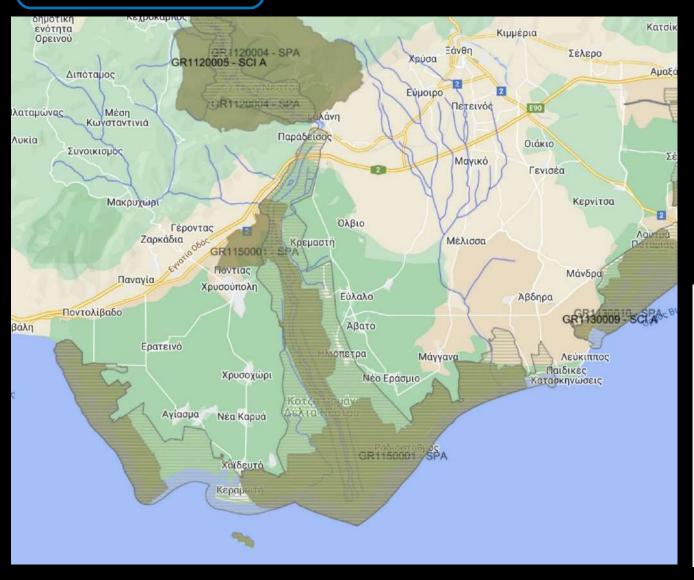


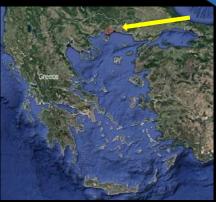






Nestos Delta





Area designated in:



GR1150001 - SPA

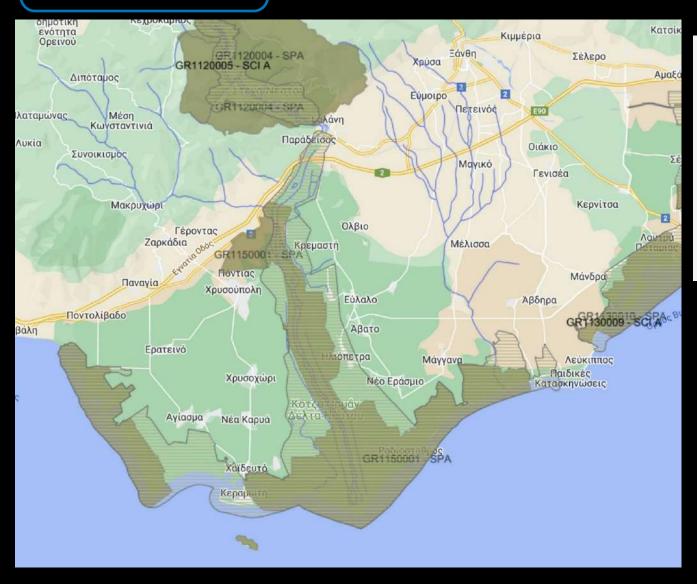
List of Wetlands of International Importance -Ramsar Convention

Special Protection Areas for birds of the European Union





Nestos Delta



- 28 habitat types
- 307 bird species (34 endagered)
- 20 mammal species (otter, golden jackal)
- 21 fish species
- 11 amphibian species
- 22 reptile species

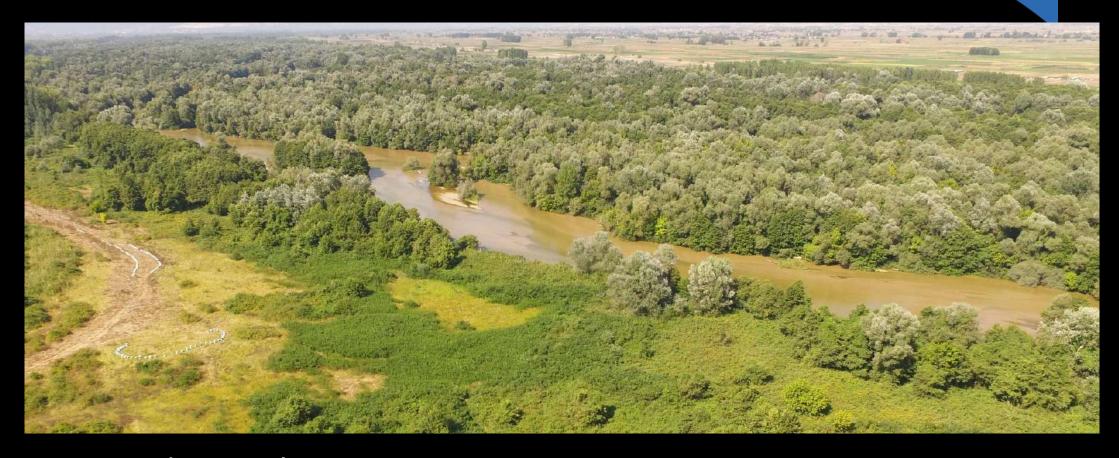








Nestos Delta - Kotza Orman



Land cover changes

From 12,000 ha in 1920 reduced to 1,700 ha





Nestos Delta – habitat 91E0*



Habitat 91E0*

Alluvial forests with *Alnus glutinosa* (L.) Gaertn. and *Fraxinus excelsior* L.), but also *Fraxinus angustifolia*, *Salix alba*, *Populus alba*, *Populus nigra*, *Juglans regia*, *Cornus sanguinea*, *Quercus robur* subsp. pedunculiflora and *Ulmus minor* subsp. canescens



Nestos Delta – habitat 91E0*



Main threats

- River regulation and land improvement projects (flood control, irrigation, drainage)
- Shrub expansion (reduction of natural regeneration)
- Presence and spread alien and invasive species







Nestos Delta – habitat 3170*



Habitat 3170*

"Mediterranean temporary ponds" Includes very shallow seasonal ponds (a few centimeters deep)

Main threats

- River regulation and land improvement projects (flood control, irrigation, drainage)
- Fragmented distribution of plant communities
- Grazing during flowering periods, soil compaction (wild boars) and trampling of vegetation (wild boars and cattle)





LIFE PRIMED

Objective: innovative solutions for the long-term conservation of forest and standing freshwater habitats, and associated species

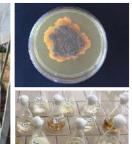
Specific objectives:

- to **identify and quantify the causes** affecting the status of the habitats to define and implement appropriate restoration actions
- to develop mechanisms that ensure the **continuation of conservation and management measures** after the project's end
- to scale-up the restoration, management and valorisation approach in other similar Mediterranean ecosystems





















Standard-based ecological restoration: the SER/FAO's Five Components of the Restoration Process





Action	Component	
ASSESSMENT		
A1	Agreements and action plan	
A2	Topographic survey	
А3	Soil analysis	
A4	Climatic and weather analysis	
A5	Structure and dynamics of wood ecosystems	
A6	Study of the Mediterranean temporary ponds (3170*)	
PLANNING AND DESIGN & IMPLEMENTATION		
C1	Forestry nursery and reforestation	
C2	Temporary ponds and habitat recovery	
C3	Hydraulic interventions	
C6	Keystone species propagation	
	ONGOING MANAGAMENT	
C4	Sustainable Forest Strategic Management Plan	
C5	Water Resource Management Plan	

Action	Component	
MONITORING AND EVALUATION		
D1	Wildlife monitoring	
D2	Monitoring ecosystem decline and pathogens	
D3	Monitoring of plant species in ponds	
D4	Monitoring of wood structure and dynamics	
D5	Soil monitoring	
D6	Socio-economic impact monitoring	
D7	Ecosystem services impact monitoring	
CROSS-CUTTING ACTIONS		
E1	Website	
E2	Project communication	
E3	Scientific Workshops	
E4	Information Panels	
E5	Layman's Report	
E6	Networking with LIFE and non-LIFE projects	













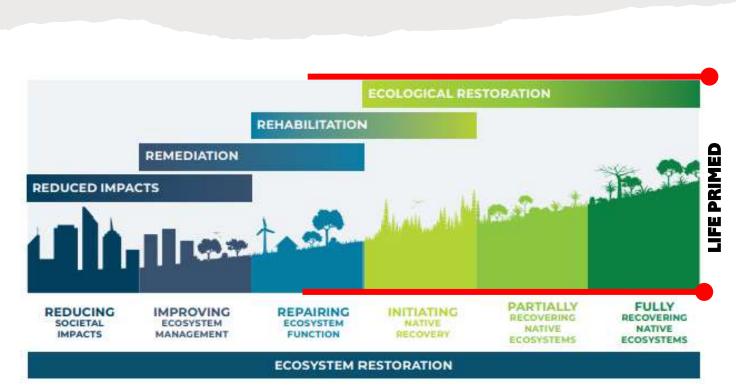






SER/FAO's Continuum of Ecological Recovery



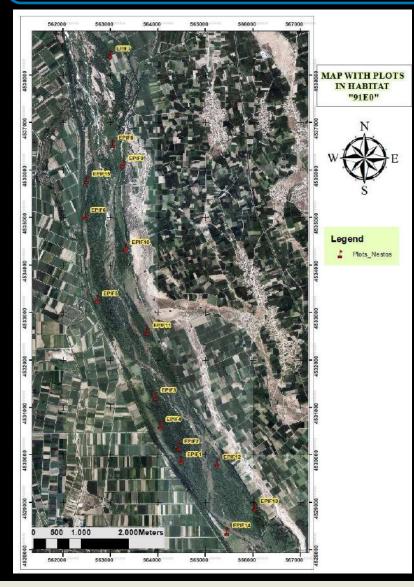


- SOCIETY FOR ECOLOGICAL RESTORATION

 Food and Agriculture Organization of the United Nations
- UNITED NATIONS DECADE ON ECOSYSTEM RESTORATION 2021-2030

- **Hydraulic Works** (C.3): Implementation of hydraulic systems (well-points, drainage trenches, underground cistern) to restore water balance and mitigate drought impacts (*Rehabilitation*).
- Management of Forest Resources (C.4): Sustainable forest management practices to enhance forest resilience and dynamics (*Rehabilitation*).
- Management of Water Resources (C.5): Long-term strategies to address water availability and salinity issues, ensuring ecosystem functionality (*Rehabilitation*).
- Nursery and Reforestation (C.1): Propagation of pathogen-free saplings and reforestation efforts to recover native vegetation and biodiversity (*Ecological Restoration*).
- **Creation of Temporary Ponds** (C.2): Establishment of ponds to support native biodiversity, including aquatic plants and amphibians (*Ecological Restoration*).
- Long-Term Monitoring and Sustainability (Ds/Fs): Combined actions address hydrological and ecological challenges, aiming for self-regenerating ecosystems and sustainable management (*Ecological Restoration*).

Habitat 91E0* - Preliminary Actions



Initial assessment of Structure and Dynamics of Wood Ecosystem

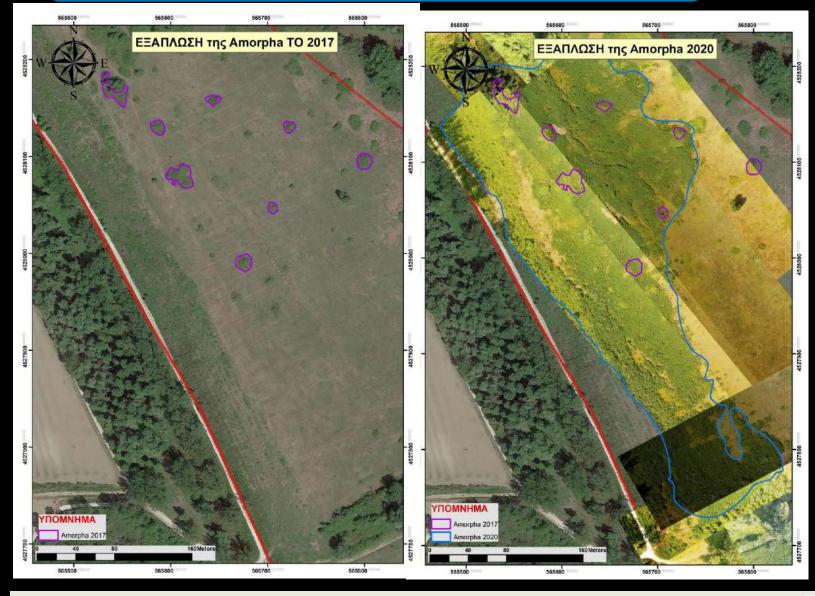
To quantify the current state of conservation and the ecological trend of the alluvial forest 91E0* in the Nestos Delta, Greece

- 15 circular permanent plots, with a radius of 15m each, were established in Nestos
- In each plot, tree species, DBH and tree height were measured
- Basal area and Index of Regeneration were calculated





Amorpha fruticosa encroachement



- Total area: 14ha
- A. fruticosa covers 60% of the area compared to 2017



Amorpha fruticosa



- fast growing shrub of 1 4 m height
- produces a high number of viable seeds, with good germination ability for 2–3 years
- flowers from May to June
- fruits from July to September
- reproduces both generatively and vegetatively, by sprouting
- light demanding species

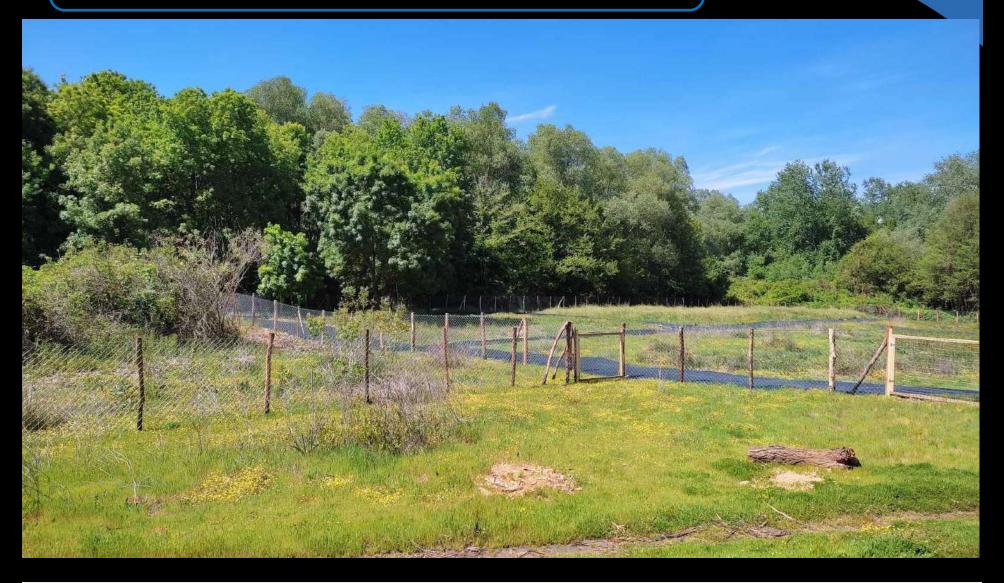


Effects

- As it occupies forest openings and edges, it may suppress native tree species of the priority alluvial forest (91E0*) in the Nestos Delta.
- It may also reduce the area covered by temporary ponds.
- Furthermore, it encroaches upon floodplain pastures and meadows, posing a risk to the **survival of species** listed in Directive 92/43/EEC, such as *Emys orbicularis, Testudo hermanni* and *Callimorpha quadripunctaria**



A. fruticosa science-based treatments







I. Vegetation shading



After vegetation was removed, a shading net was placed at 3 m height





II. Plantings of Alnus glutinosa



140 A. glutinosa seedlingsnatural shading





III. Plantings of *Populus alba*



140 *Populus alba* propagated plants – natural shading





IV. Use of geotextile as a ground cover





V. Controlled grazing

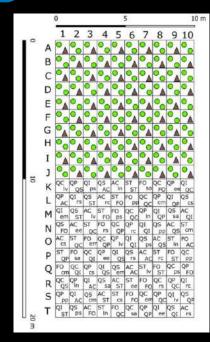




VI. High-density mixed plantation (Miyawaki method)









Effectiveness of control methods



 Shading has a good effect preventing excessive dominance but it is difficult to replicate at a larger scale





Effectiveness of control methods



• A. glutinosa plantations seems to hinder the establishment of A. fruticosa but long-term monitoring is required





Effectiveness of control methods





 Grazing is the most effective and fast method, but side-effects (trampling, nitrification, etc.) must be monitored



Nestos Delta – habitat 3170*



Habitat 3170*

"Mediterranean temporary ponds" found in one site



Nestos Delta – habitat 3170*



A grid was placed in the MTP to monitor the plant communities





Project objectives



- Habitat 3170* study / protection measures
- Creation of new pondswith a total area of 0.1 ha
- Hydraulic interventions for the restoration and preservation of habitat
 3170*



Nestos Delta – habitat 3170*



Fencing





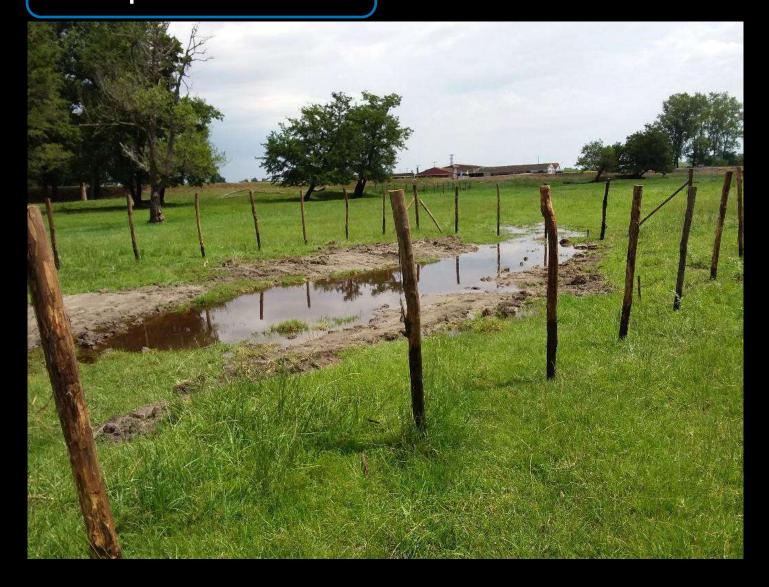
New areas for ponds



Identification of suitable areas for the installation of new ponds

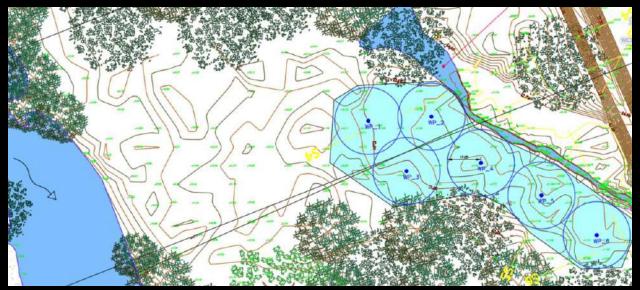


New ponds 3170*





Pre-configuration of well points location



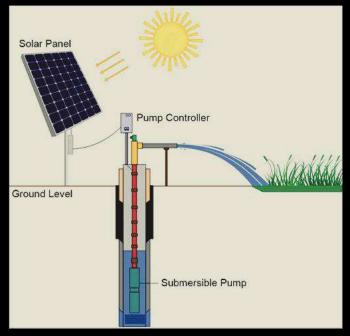


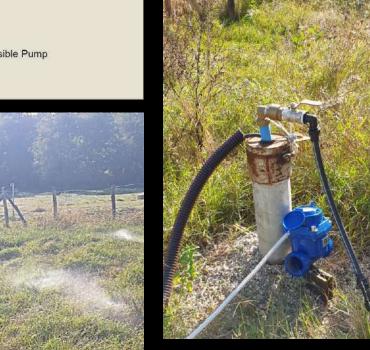






Hydraulic system automation



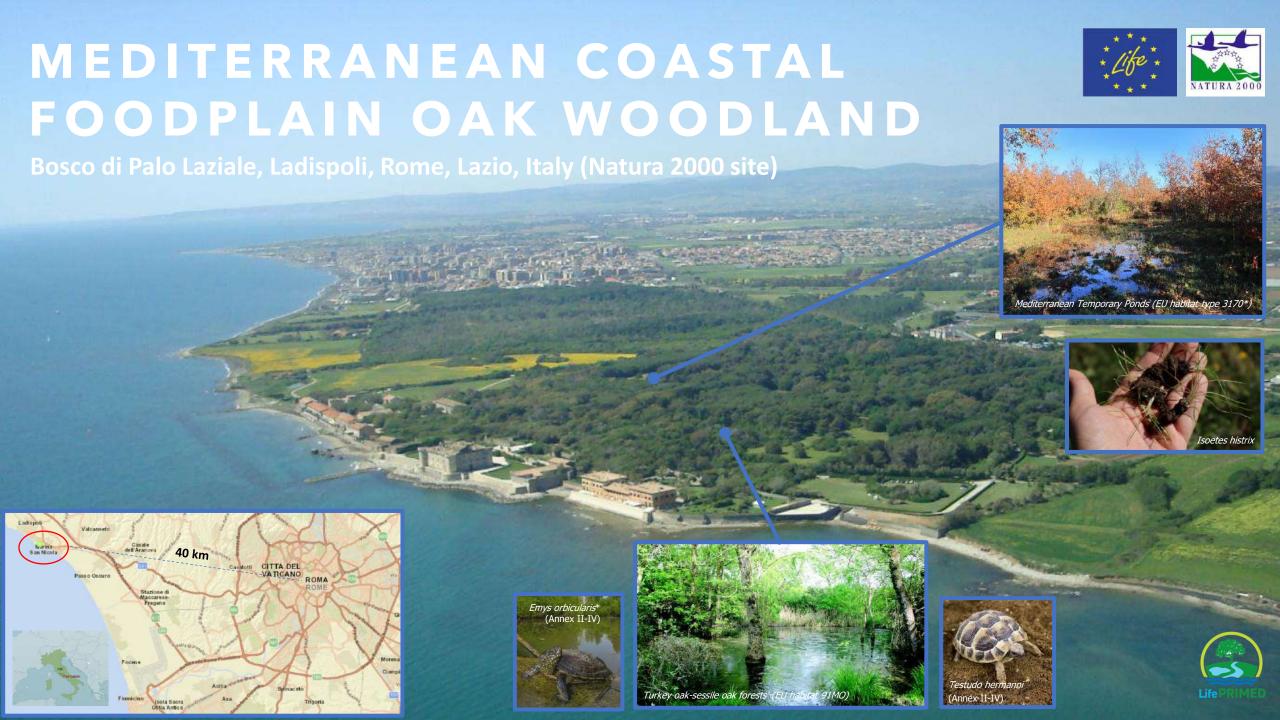








- Nebulising initiates based on soil moisture sensor readings at a depth of 20 cm.
- Soil moisture thresholds are set to start and stop the pump.
- Flow meters provide information on the volume of water used.
- Data is stored in the cloud.
- The system automatically sends alerts.



Forest Dieback

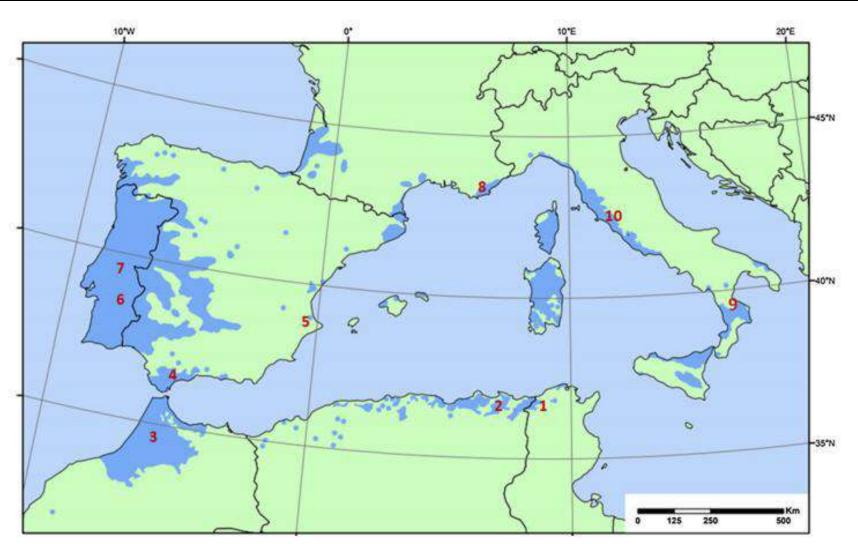
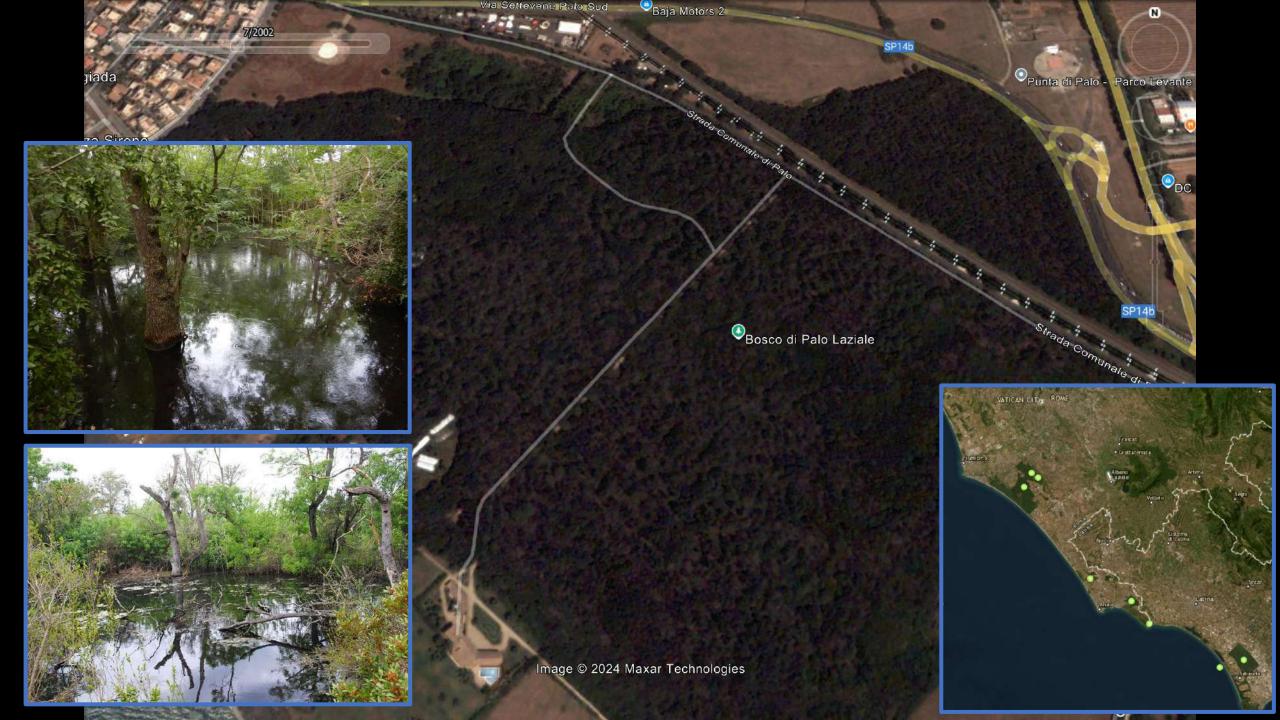
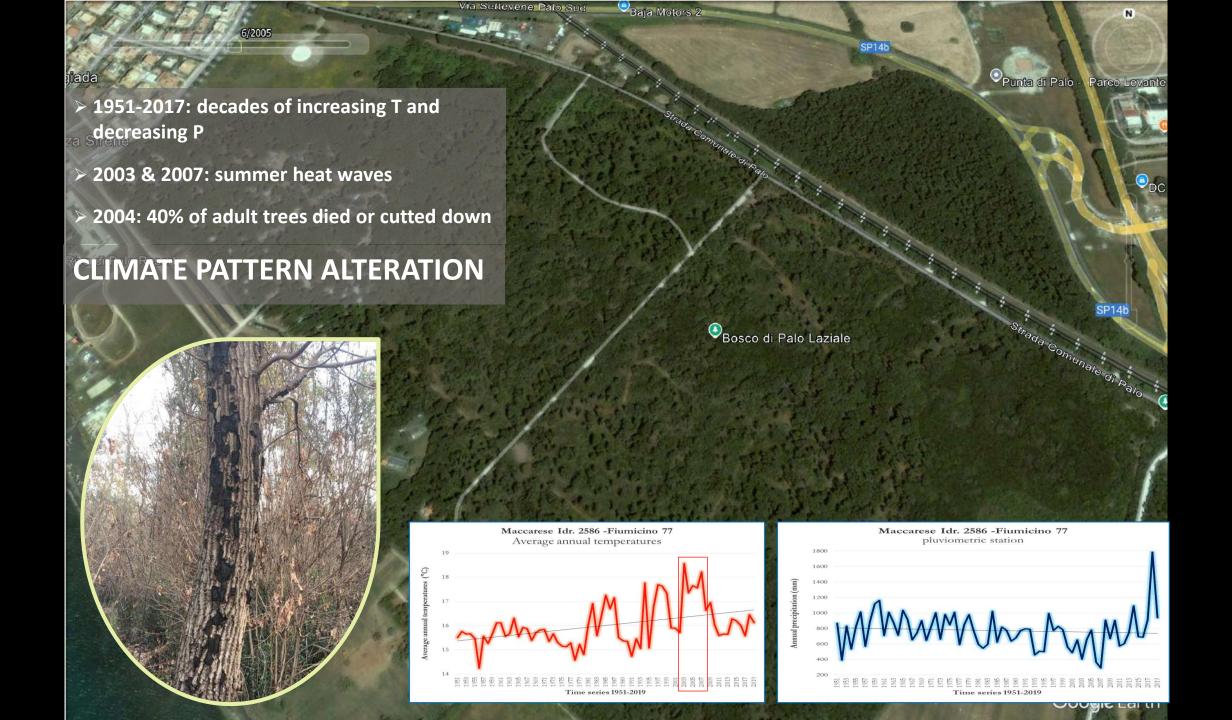


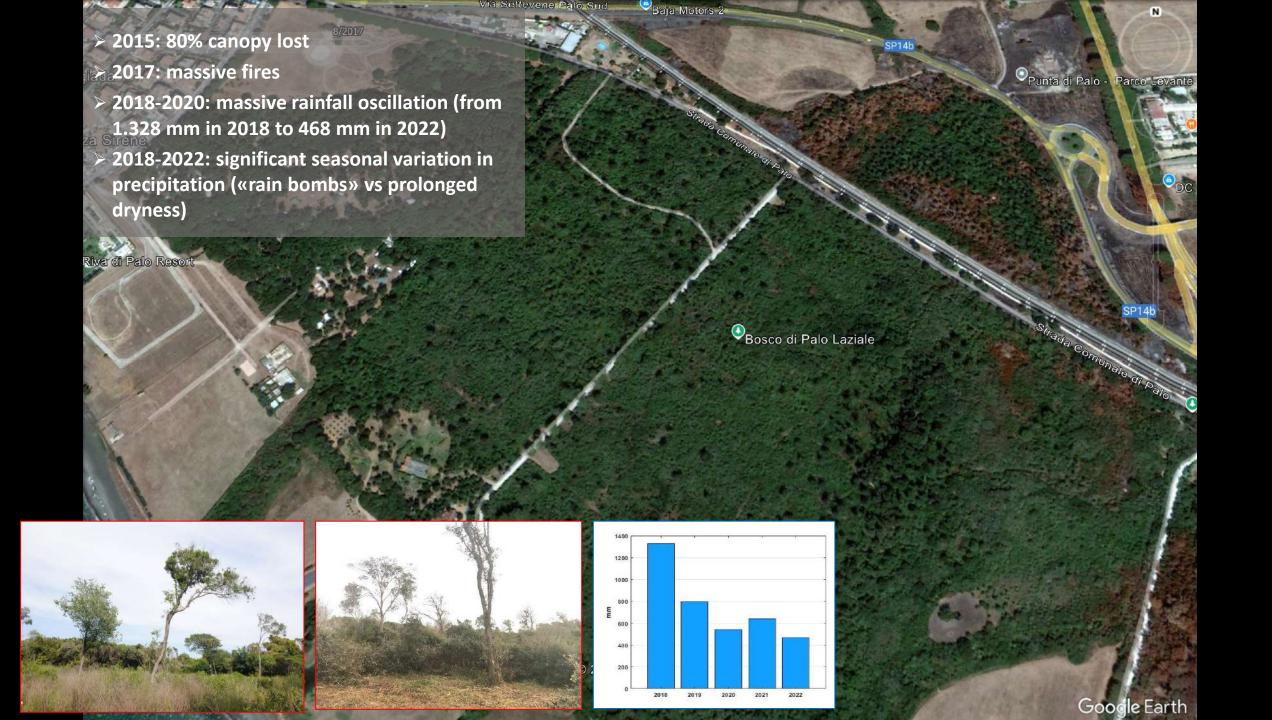
Fig. 1 Documented localities in the Mediterranean Basin with oak species mortality related to climatic stress from drought and high temperatures indicated with numbers. (See corresponding numbers in

Table 1). Source: the EUFORGEN database http://www.euforgen. org/species/quercus-suber

Touhami et al. (2019)









Restoration, management and valorisation of PRIority habitats of MEDiterranean coastal areas



www.lifeprimed.eu

HABITAT RECOVERY IN PALO LAZIALE: BUSH TRIMMING AND CREATION OF TEMPORARY PONDS (ACTION C.2) - ARSIAL

















- 1) Selective trimming to remove encroaching NATIVE shrubs (e.g. Rubus spp.) to
- a) reduce interspecific over-competition in the forest stands,
- b) to facilitate seedling recruitment

c) to restore existing firebreak roads



Fire-cut strips and access routes restored



















aquatic fauna

flora and vegetation

New temporary ponds (habitat 3170*) recolonized





Restoration, management and valorisation of PRIority habitats of MEDiterranean coastal areas



FORESTRY NURSERY AND REFORESTATION IN PALO LAZIALE (AZIONE C.1) - ARSIAL





















OBJECTIVES

Restore the floodplain oak forest (91M0) in the areas mostly affected by the forest dieback



2) Propagate the seedlings in the ARSIAL's nursery (Cerveteri, Lazio region)



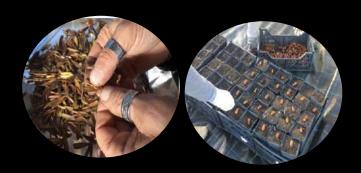
1) Produce healthy seedlings from seeds harvested from local plant species (Q. cerris, Q. pubescens, Q. ilex, Q. suber, Fraxinus angustifolia)



3) Plant at least 2.500 seedlings to recover the most affected areas

ARSIAL NURSERY - CERVETERI

- 7 Greenhouses
- 25000 seedlings propagated
- PEFC Certificate





Greenhouse $1 - 320 \text{ m}^2$ Greenhouse $2 - 320 \text{ m}^2$

Greenhouse 3 – 400 m²

Greenhouse 4 – 360 m²

Greenhouse 5 – 360 m²

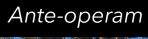
Greenhouse 6 – 250 m²

Greenhouse 7 – 250 m²





PLANTING PHASE



















SUSTAINABLE FOREST STRATEGIC MANAGEMENT PLAN (SFSMP) ACTION C.4 - ARSIAL





Conservation and Management objectives:

- conserve the habitats and species of community interest,
- enhance overall biodiversity,
- maintain or restore ecological balances.

The management plan (PGAF) will be in effect for ten years, with a review proposed at the end of this period for a potential extension of the same duration.



Rainwater harvesting systems for habitat restoration and resilience





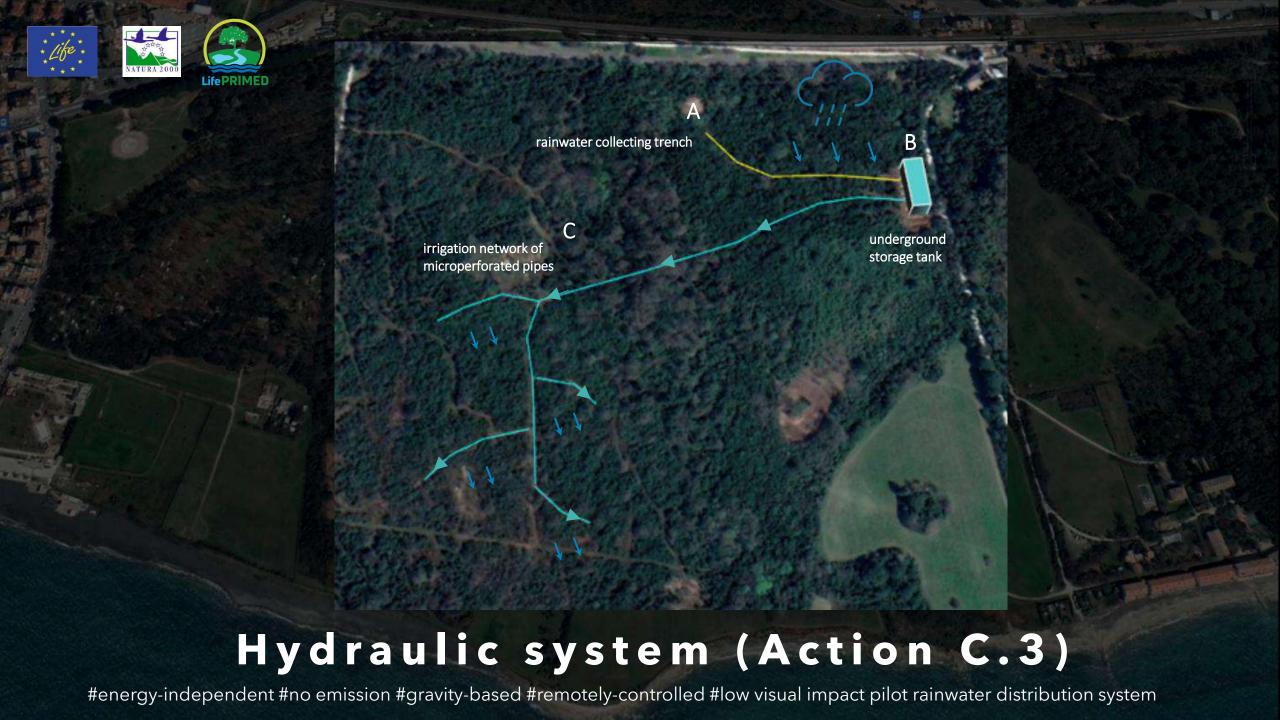




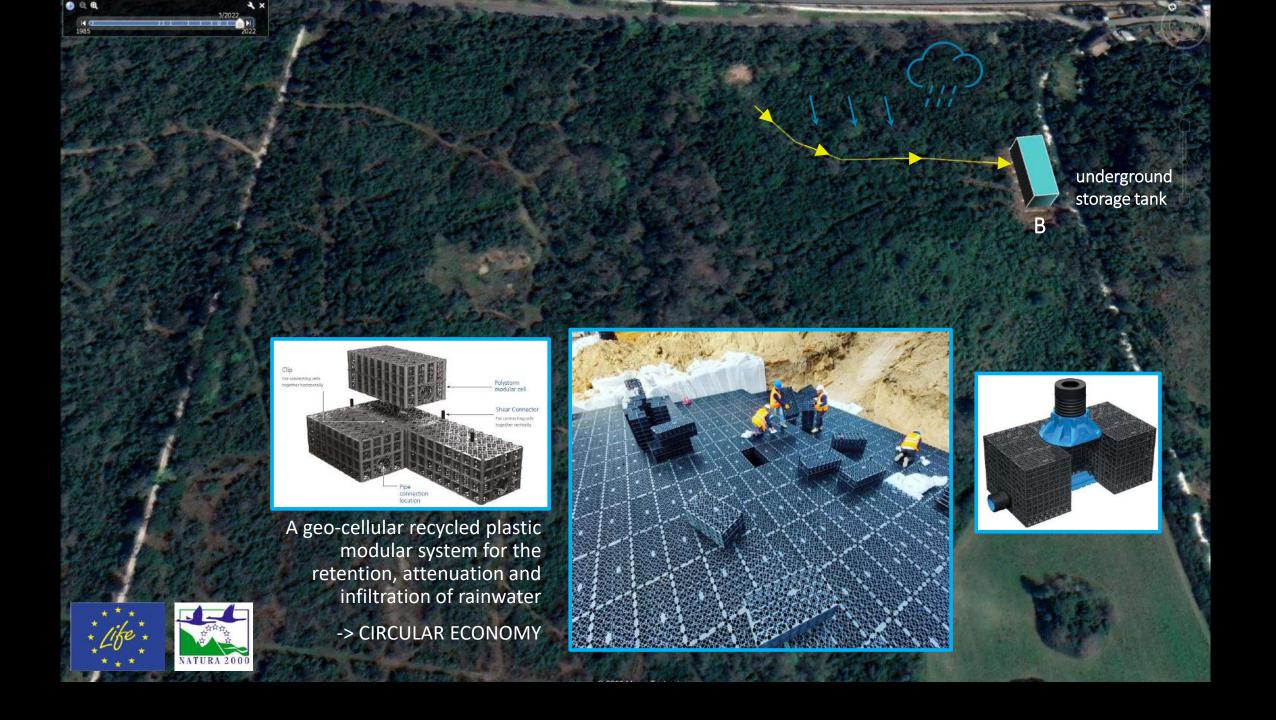


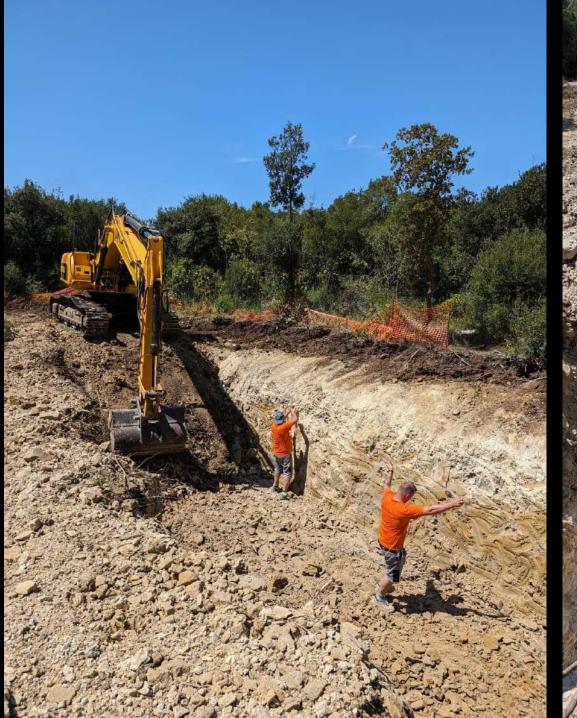


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OBSTACLES





Facing controversial protection regimes

Second World War weapon clearance



clearance preparation for machine access obliges for tree cutting which is controversial!



metal detection



drilling



OBSTACLES



Facing controversial protection regimes

Archeological survey









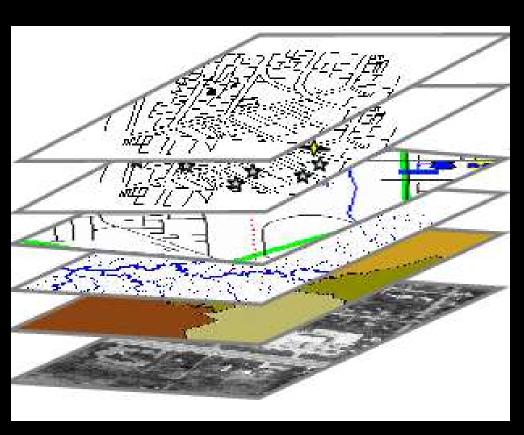
Findings from Roman Age (!)



LESSONS LEARNT



→ Natural, landscape, and cultural heritage are key values in the Mediterranean region. However, the current authorisation process for nature restoration works presents significant challenges and constraints.



WWII protection regime (weapon clearance)

Landscape protection regime

Archeological protection regime

Natura 2000 protection regime

Restoration site

MAIN CONSTRAINTS

- Coordination required with 10+ competent authorities.
- Conflicting regulations (e.g., Habitats Directive vs Archaeological Superintendence) with no clear prioritization.
- Lack of communication among authorities.
- High risk of delays, fund wastage, and work stoppages due to findings.
- Need for supplementary budgets for inspections and compliance.
- Material cost increases caused delays and required project adjustments.

→ NEED FOR GUIDANCE/STANDARDS!





KEY TAKEAWAYS

- Model for Restoration: Developed pioneering, interdisciplinary and sciencebased restoration practices as a reference for restoring dysfunctional and degraded Mediterranean ecosystems.
- Administrative Challenges: Exposed fragility in Med countries' bureaucratic processes for authorizing and executing nature restoration actions.
 - Complex Regulations: Required coordination with 10+ competent authorities due to overlapping protection regimes (natural, landscape, archaeological, hydrogeological).
 - **Regulatory Conflicts:** Highlighted mismatches between conservation priorities (e.g., Habitats Directive vs Archaeological Superintendence).
- Need for Streamlined Processes: Urgent call for harmonized, centralized authorization frameworks to reduce delays and resource strain.
- Importance of Communication: Effective dialogue between stakeholders and authorities is critical for operational efficiency and timely adjustments.
- **Future Guidance:** Stressed the necessity for standardized procedures to support implementation of the EU Nature Restoration Law and similar initiatives.







BiodivRestore Knowledge Hub

Rachel M. Kristensen Vito Emanuele Cambria Co-chairs of the Implementation Task Force





Rete Italiana per il Ripristino Ecologico (RIRE)









A Greek Hub on Ecological Restoration?

WHAT'S THE FUTURE FOR THE ECOLOGICAL RESTORATION IN THE MEDITERRANEAN REGION? (15.00-16.30)

Facilitator: Marcello De Vitis, SERE &

Rachel Kristensen, Biodiversa+ BiodivRestore Knowledge Hub

This session will focus on the Nature Restoration Law and its implementation, emphasising National Restoration Plans, assessment, and monitoring, with the goal of promoting Greece's progress in ecological restoration within the Mediterranean region

Presentations:

15:00-15:10 Society for Ecological Restoration's Principles and Standards

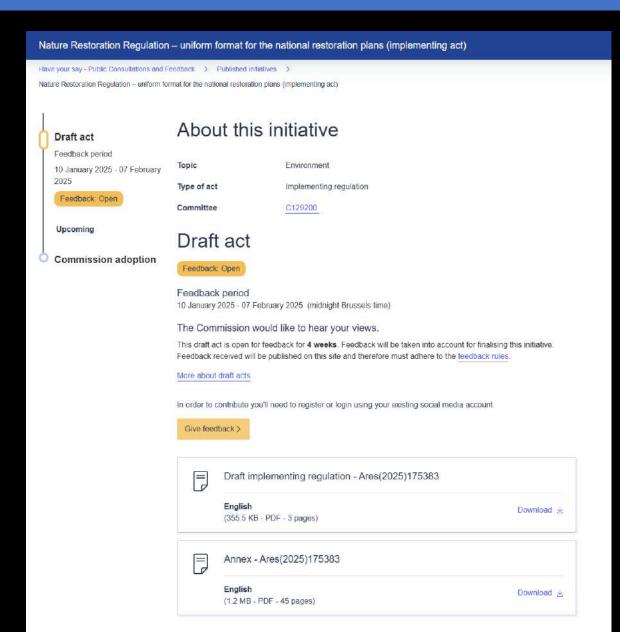
15:10-15:20 Biodiversa+ BiodivRestore Knowledge Hub Overview

15:20-15:30 Case Study: Italian National Hub on Ecological Restoration

Interactive Session:

15:30-16:15 An interactive session to map the current status of ecological restoration efforts in Greece

National Restoration Plan



Give your feedback on: Nature Restoration Regulation – uniform format for the national restoration plans (implementing act)
Have your say - Public Consultations and Feedback > Published initiatives >
Nature Restoration Regulation – uniform format for the national restoration plans (implementing act) > Give your feedback on:
Fleids marked with an asterisk (*) are required.
Language of my feedback*
English
My feedback*
4000/4000 characters remaining Attach a file Choose file
If you have research or findings that support your ideas, you can add them as an attachment.
Files must be less than 5 MB. Allowed file types: txt doc docx pdf odt rtf
Encrypted documents and those containing macros are not accepted.
I am giving my feedback as*
- Select a value -
First name*
Vito Emanuele

National Restoration Plan

Part A – Information across targets			
2. Preparing and establishing the NRP (Art.15	(3)(w))		
2.1 Public participation (Art.15(3)(w))			
2.1.1 Summary of the preparation process, outcome of public participation and stakeholders' involvement	Free text, suggested max. 3 000 characters		
2.2 Considerations of the diversity of situations in	n various regions (Art.14(16)(c) and 15(6))		
2.2.1 Considerations of the diversity of regional characteristics in regions, including their social, economic and cultural requirements and population density (Art 14(16)(c) and 15(6)) (optional)	a) cross-cutting consideration (free text, suggested max. 3 000 characters) b) article-specific consideration – indicate one or more article(s) from the code list of articles c) article-specific number (free text, suggested max. 3 000 characters)		
3. Contributions to overarching targets and objectives set out in Art.1			
3.1 Contribution to overarching objectives set out in Art.1(1) (optional)	Free text, suggested max. 3 000 characters		
3.2 Extent of land and sea areas that are subject to restoration measures by 2030	a) indicative extent of land areas planned to be covered by effective and area-based restoration measures by 2030 (km²) b) indicative extent of sea areas planned to be covered by effective and area-based restoration measures by 2030 (km²)		
3.3 Extent of land and sea areas that are subject to restoration measures by 2050 (optional)	a) best estimate or range of the indicative extent of land areas planned to be covered by effective and area-based restoration measures by 2050 (km²)		
4. General co-benefits, related policies and fi	nancial information		
4.1 General co-benefits and impacts (Art.15(3)(r)			
4.1.1 Co-benefits for climate change mitigation (Art.15(3)(r))	a) cross-cutting co-benefits (free text, suggested max. 3 000 characters) b) article-specific co-benefits – indicate one or more article(s) from the code list of articles (optional) c) article-specific co-benefits – free text, suggested max. 3 000 characters (optional)		
4.1.2 Co-benefits for land degradation neutrality [Art.15(3](r])	a) cross-cutting co-benefits (free text, suggested max. 3 000 characters) b) article-specific co-benefits – indicate one or more article(s) from the code list of articles (optional) c) article-specific co-benefits – free text, suggested max. 3 000 characters (optional)		
4.1.3 Foreseeable socio-economic impacts and estimated benefits of the restoration measures referred to in Art.4 to 12 (Art.15(3)(s))	a) cross-cutting co-benefits (free text, suggested max. 3 000 characters)		
	b) article-specific co-benefits – indicate one or more article(s) from the code list of articles (optional) c) article-specific co-benefits – free text, suggested max. 3 000 characters (optional)		
4.1.4 Other potential co-benefits (e.g. list of Sustainable Development Goals, food security) (optional)	a) cross-cutting co-benefits (free text, suggested max. 3 000 characters) b) article-specific co-benefits – indicate one or more article(s) from the code list of articles c) article-specific co-benefits – free text, suggested max. 3 000 characters		
4.2 Policies and measures taken into account	Total History Control of the Control		

Part B – National approach to meeting restoration targets and fulfilling obligations, by article		
6. Restoration of terrestrial, coastal a	nd freshwater ecosystems (Art.4)	
6.1 National approach and contextual int	formation	
6.1.1 National approach		
6.1.1.1 Descriptive overview of the Member State's approach to meeting restoration targets and fulfilling obligations for terrestrial, coastal and freshwater ecosystems, based on latest scientific evidence [Art.15[3]c) (optional)	Free text, suggested max. 3 000 characters.	
6.1.2 Contextual information about habitat t	types (Art.4(1), (4) and (9))	
6.1.2.1 Total area of habitat types	Indicate one of the following (in km²): a) best estimate or range from Art.17 Habitats Directive data (2013-2018) b) best estimate or range from Art.17 Habitats Directive data (2019-2024) c) best estimate or range from other data source d) if c) is selected, indicate source and justification (free text, max. 1 000 characters)	
6.1.2.2 Total area of habitat types 'not in good condition'	Indicate one of the following (in km²): a) best estimate or range from Art.17 Habitats Directive data (2013-2018) b) best estimate or range from Art.17 Habitats Directive data (2019-2024) c) best estimate or range from other data source d) if d) is selected, indicate source and justification (free text, max. 1 000 characters)	
6.1.2.3 Total area of habitat types with 'unknown' condition	Indicate one of the following (in km²): a) best estimate or range from Art.17 Habitats Directive data (2013-2018) b) best estimate or range from Art.17 Habitats Directive data (2019-2024) c) best estimate or range from other data source d) if c) is selected, indicate source and justification (free text, max. 1 000 characters)	
6.1.2.4 Total area to be re-established to reach favourable reference areas	Indicate one of the following (in km²): a) best estimate or range from Art.17 Habitats Directive data (2013-2018) b) best estimate or range from Art.17 Habitats Directive data (2019-2024) c) best estimate or range from other data source d) if c) is selected, indicate source and justification (free text, max. 1 000 characters)	
6.1.3 Minimum areas to be restored		
The following fields can be pre-filled, based o	n information provided in fields under 6.1.2.	
6.1.3.1 Minimum area to be improved for all habitat types (Art.4(1))	a) by 2030 (best estimate or range in km², corresponding to 30% of the total value of field 6.1.2.2) b) by 2040 (best estimate or range in km², 50% of the total value of field 6.1.2.2)*	

Part C – Measures	
14. Measures Art.15(3)(c)	
For each measure, the following fields should	d be completed;
14.1 Basic information	
14.1.1 Name of the measure	a) Full name. Free text, max. 200 characters b) Unique measure ID. Free text, max. 20 characters
14.1.2 Main ecosystem type concerned	Indicate one ecosystem from the code list of ecosystem types. a) wetland ecosystems (coastal and inland) b) grassland ecosystems c) rivers, lakes, alluvial and riparian ecosystems d) forests and woodland ecosystems e) heath, shrubs and scrub ecosystems f) rocky, dune and sparsely vegetated ecosystems g) croplands h) urban i) marine ecosystems
14.1.3. Other ecosystem types concerned (optional)	(multiple choices possible) a) wetland ecosystems (coastal and inland) b) grassland ecosystems c) rivers, lakes, alluvial and riparian ecosystems d) forests and woodland ecosystems e) heath, shrubs and scrub ecosystems f) rocky, dune and sparsely vegetated ecosystems g) croplands h) urban i) marine ecosystems
14.1.3 Scale of planning	Indicate the relevant level (select one): a) national b) sub-national (please indicate name of region or regions – NUTS1 or NUTS2) c) local (please indicate name and/or the relevant NUTS3 or local administrative units) d) transnational (please indicate code of other Member State(s) involved) e) if b), c) or d) selected, free text (max 3000 chars)
14.1.4 Current status of implementation	Select one of the following. If the status differs in different areas, more than one option may be selected. a) planned b) adopted plan



EUROPEAN PARTNERSHIP









Vito Emanuele Cambria

Co-chairs of the Implementation Task Force

For any other questions regarding the Knowledge Hub, please feel free to contact us at: ondrej.kusbach@tacr.cz



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BiodiversaPlus

