



Reach IAS Control in Mediterranean Coastal Ecosystems

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***WORKSHOP “Protected Areas in Europe: the next 50 years”
on the occasion of the 50th anniversary of the
European Diploma for Protected Areas***

Park Migliarino San Rossore Massaciuccoli, Italy

Foto A. Perfetti/Archive ParkMSRM



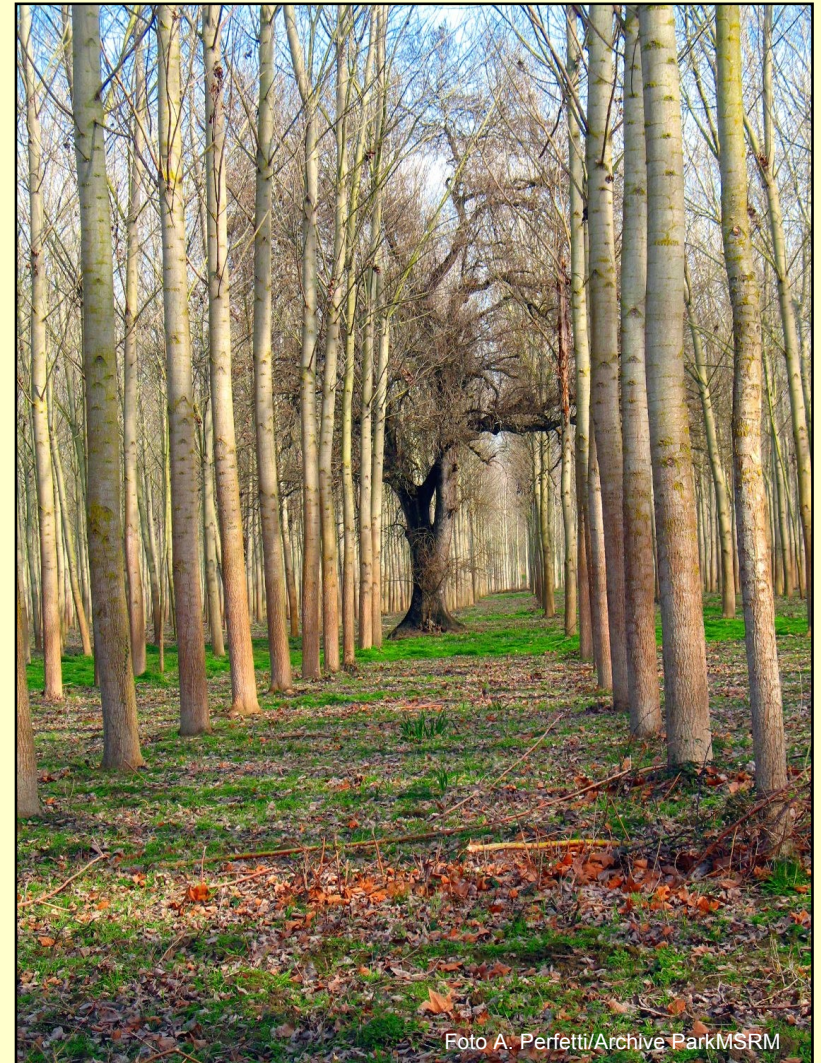
Northern Tuscany Coastal Ecosystems



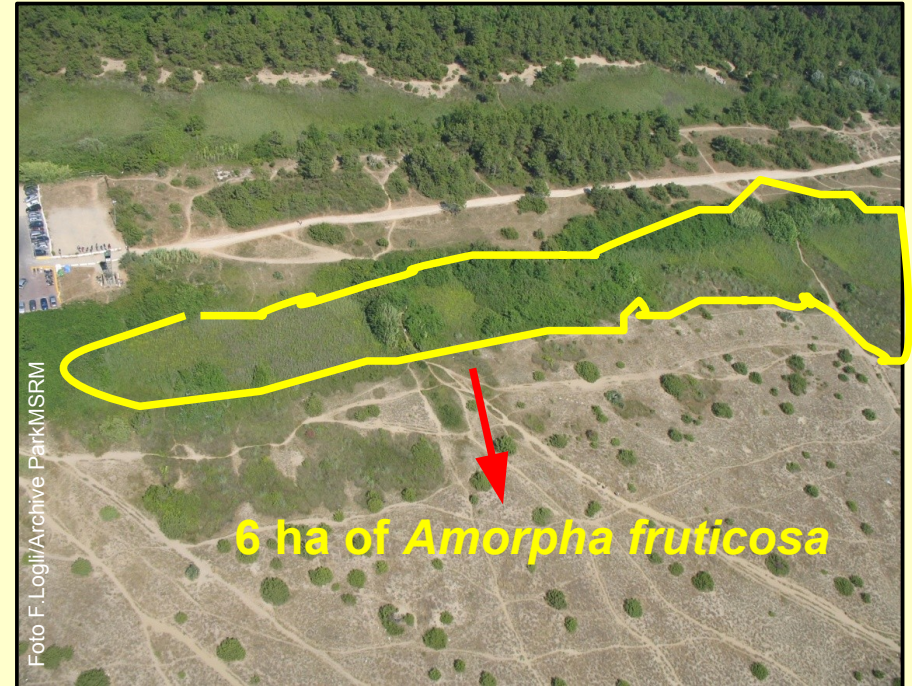
Park MSRM land descr.	Area (ha)
Forest	9.190
Agricultural area	9.355
Beach and dune	228
Wetland	3.060
Urbanized zone	420
Partially urban. zone	860
Total	23.113

Foto A. Perfettu/Archive ParkMSRM

Northern Tuscany Coastal Ecosystems



Problem: Invasive alien species



Problem: Men related threats



5/20



High tourist pressure in dune ecosystems give:

- Over-trampling
- Domestic animal competition
- Heavy machinery to clean up the beaches

Dune Ecosystems Destruction



Problem: Men related threats



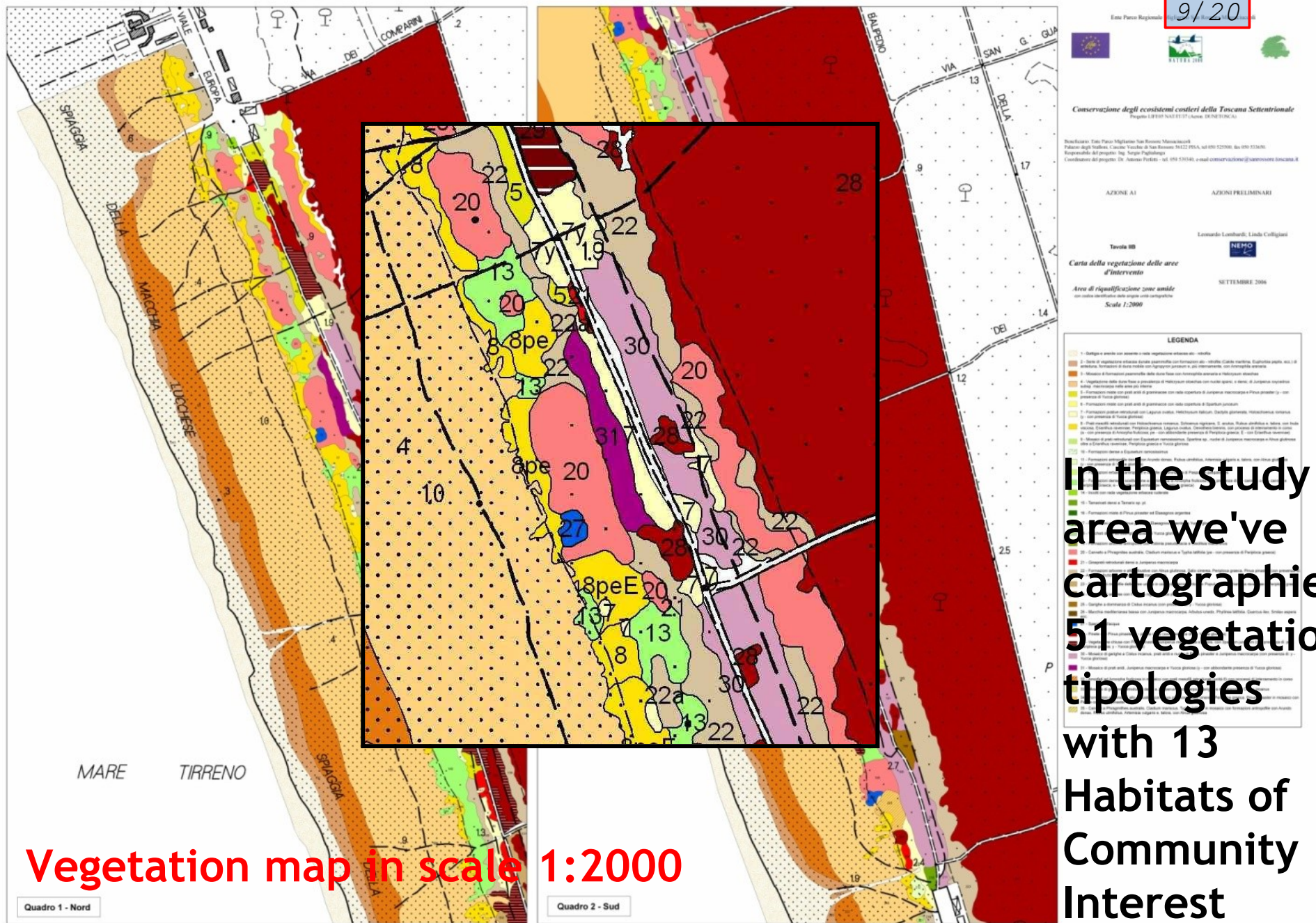
Problem: Ungulate over-population



Means for coenosis removal

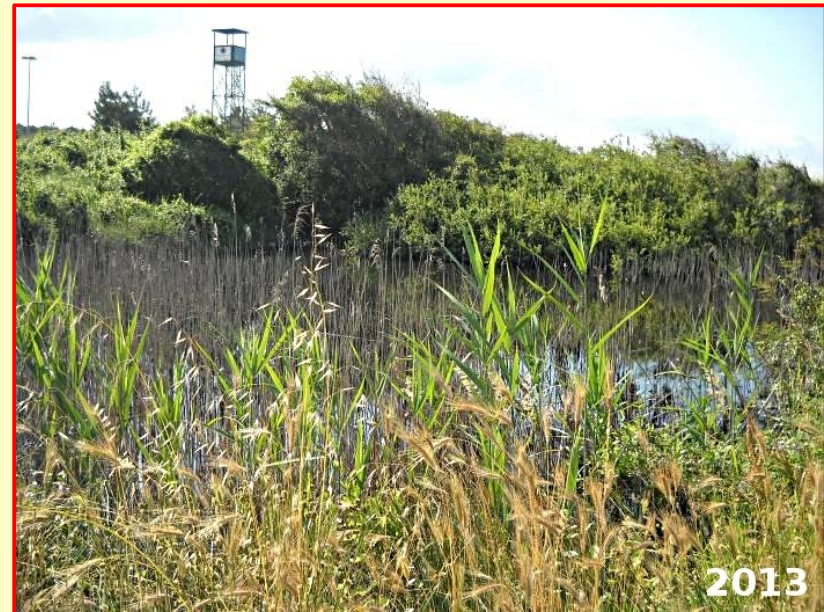


Planning actions



Source: Dunetosca LIFE05 IT/000037 Project: Antonio Perfetti – Vegetation: Leonardo Lombardi

Action 1/4: restore ecosystems through control of *Amorpha fruticosa*



Action 2/4: restore ecosystems through control of populations of *Yucca gloriosa* L.



Source: Dunetosca LIFE05 IT/000037 Project: Antonio Perfetti – Vegetation: Leonardo Lombardi

C.S. 3/4: restore ecosystems through control of over-trampling



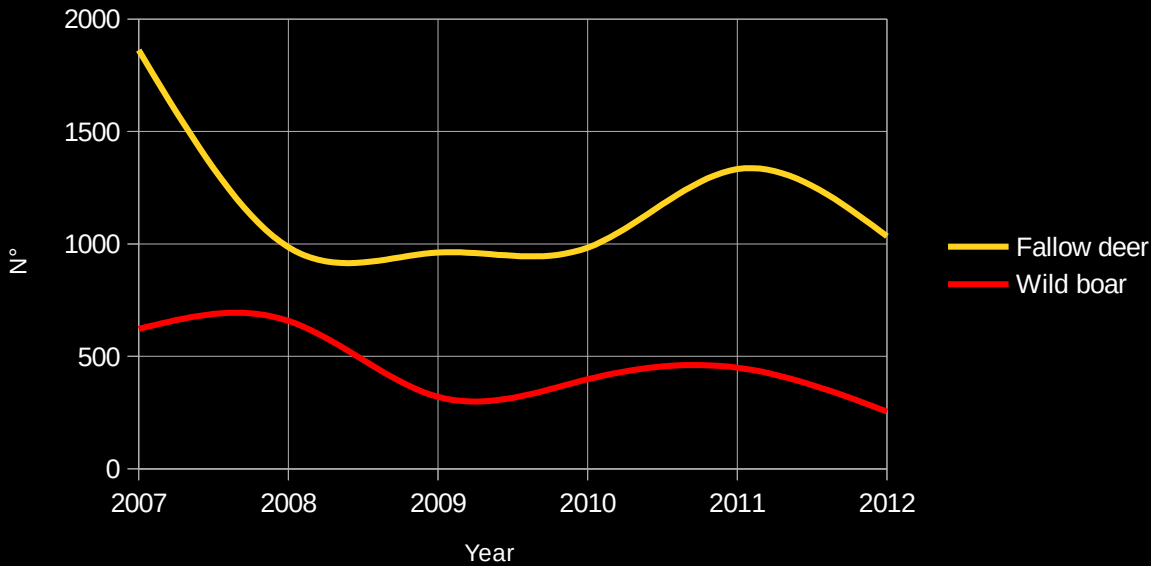
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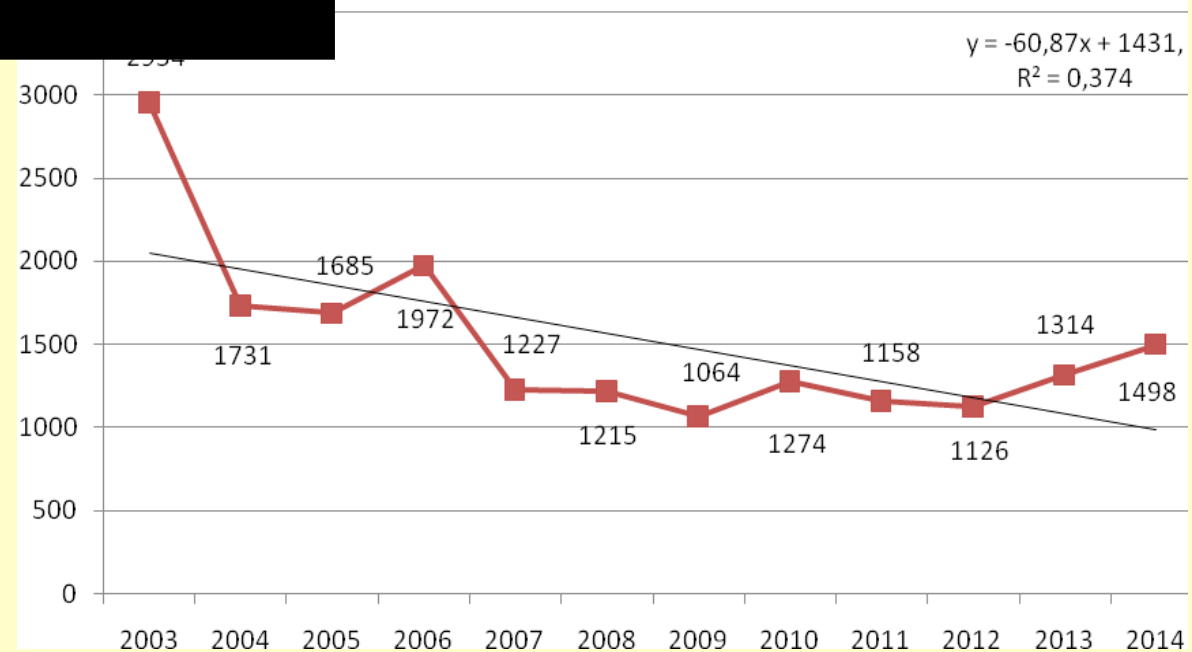
Actions and Results 4/4: control of ungulate populations



Annual ungulate control in the MSRM Park

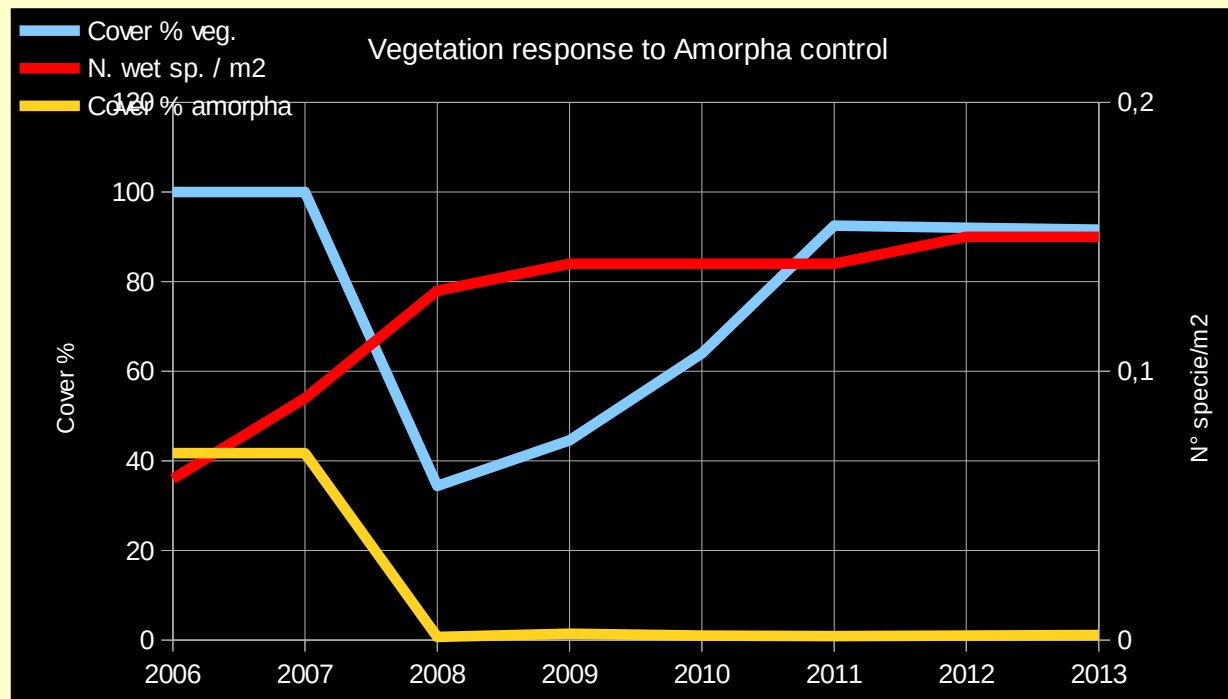


Trend of forecast population in San Rossore Estate from 2003 to 2014 (minimum error, after birth season)

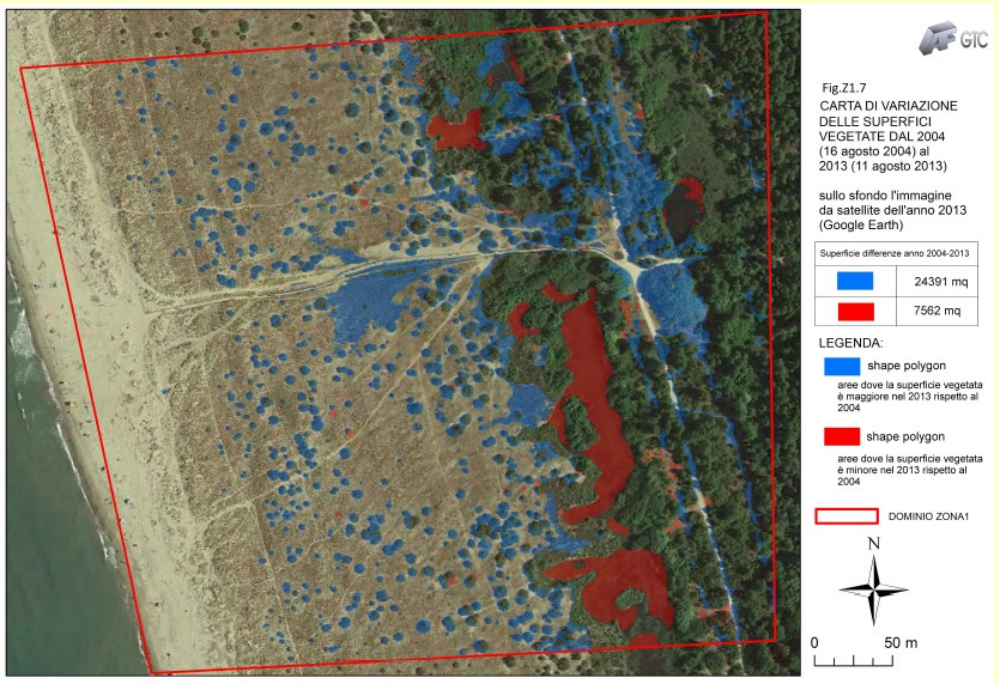
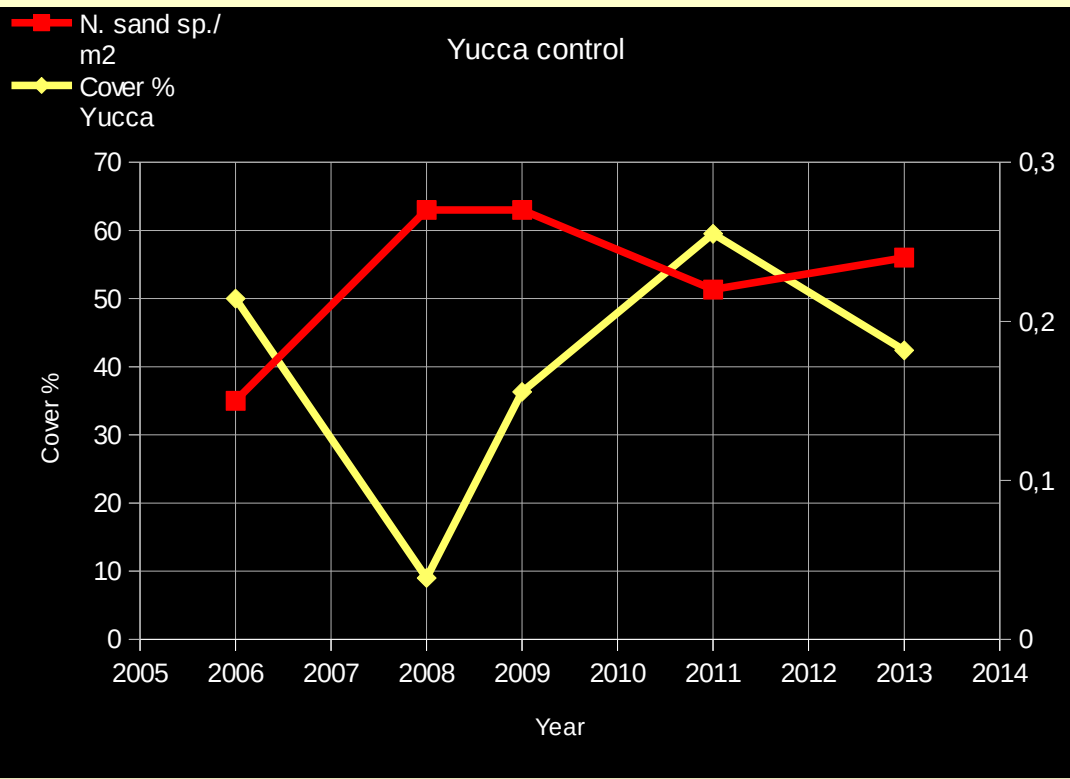


source: Filogari & Perfetti from Università di Sassari and Park Authority data

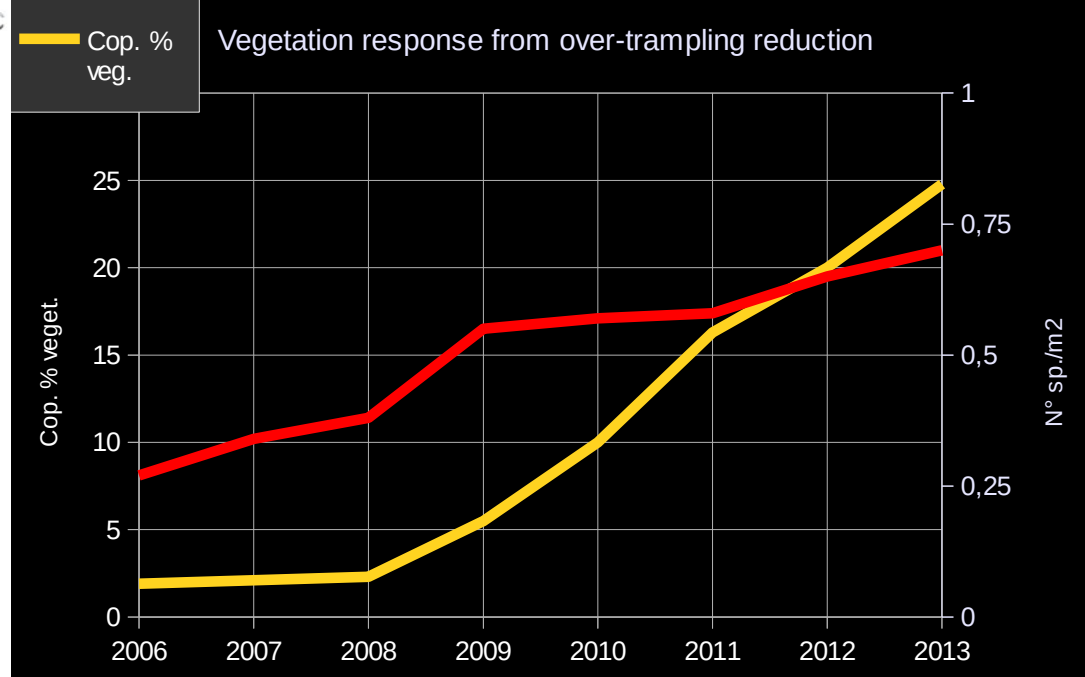
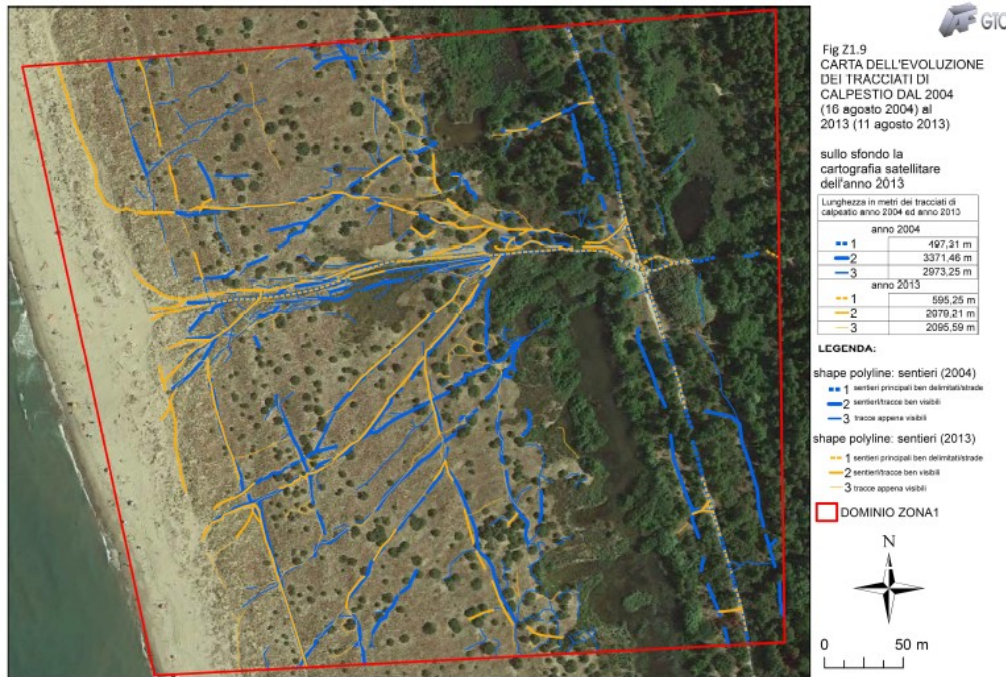
Results: Wetlands recovery after Amorpha control



Results: Dunal recovery from Yucca control



Results: Dunal recovery after over-trampling control



		2004 (m ²)	2013 (m ²)	Δ+ (m ²)	Δ- (m ²)	Δ _{tot} (m ²)	Δ% _{norm}	Δ% _{ocalp_{norm}}	
Z2 Area m ² 129272	Chiaro	0	2953	2953		2953	22.84		
	Vegetazione	49363	57775	12391	3979	8412	65.07		
	Sentieri	Tipo 1	547	427		-120	-120	-0.93	-22.77
		Tipo 2	4022	2495		-1527	-1527	-11.81	
Tipo 3		2993	1697		-1296	-1296	-10.03		

General results

Re-built dunal integrity

Enhance of *Juniperus* priority habitats

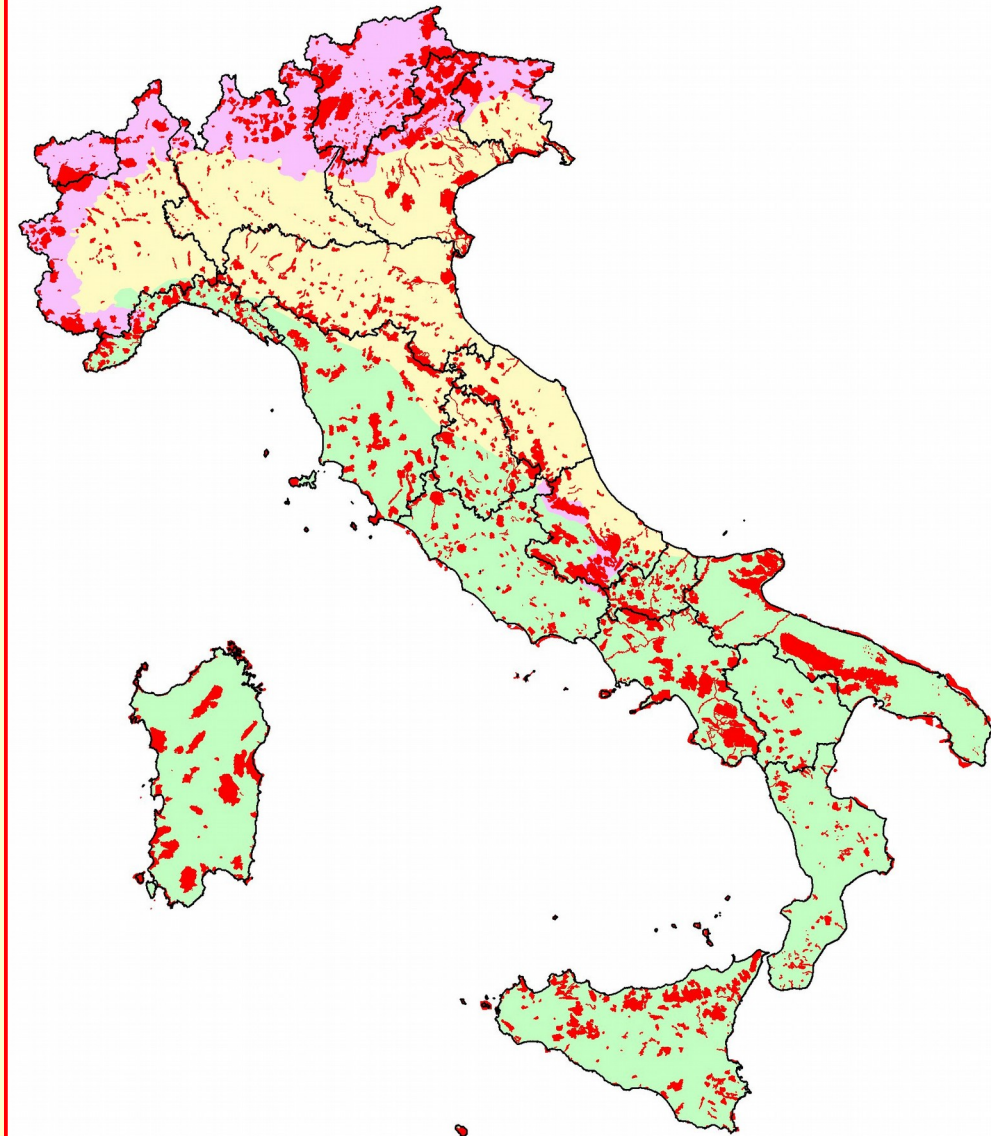


2002

New dunes

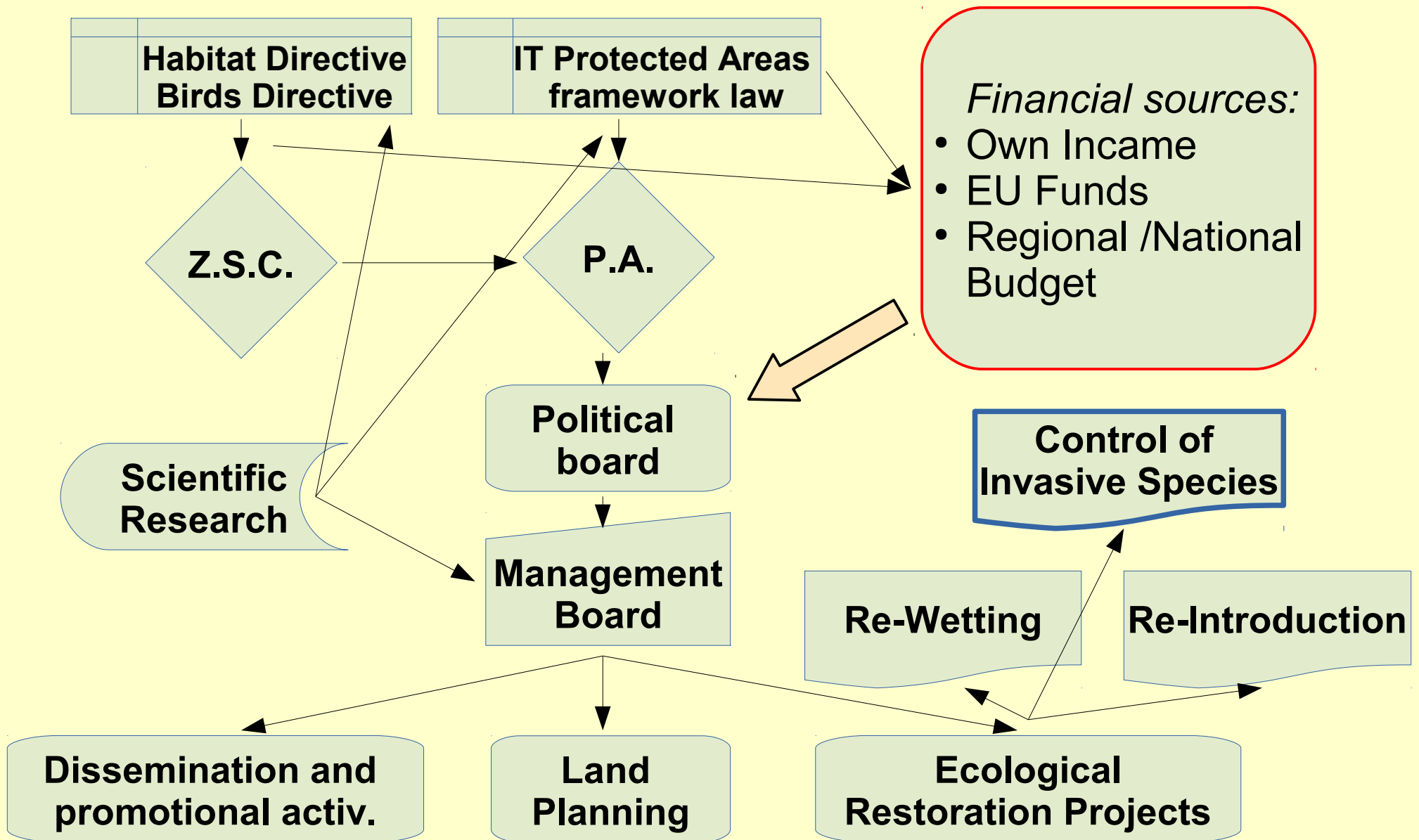
2013

Place of IAS control in management activities



- **Ecological Restoration**
(Re-wetting, dunal restore, Re-introduction, Control of invasive species)
- **Promotional activities**
(Volunteers, Citizen science, Environmental friendly production)
- **Land planning**

Place of IAS control in management activities



Thank you!

