

E depois do Adeus?

Requalificação de zonas ribeirinhas
projetos Interreg Ripidurable e Ricover



INSTITUTO
SUPERIOR D
AGRONOMIA
Universidade de Lisboa



Requalificação de zonas ribeirinhas projetos Interreg Ripidurable e Ricover

- ▶ Projeto Ripidurable
 - ▶ Parceiros
 - ▶ Outputs
 - ▶ Caso de estudo
- ▶ Projeto Ricover
 - ▶ Parceiros
 - ▶ Outputs
 - ▶ Caso de estudo
- ▶ E depois do Adeus?



RIPIDURABLE

Parceiros

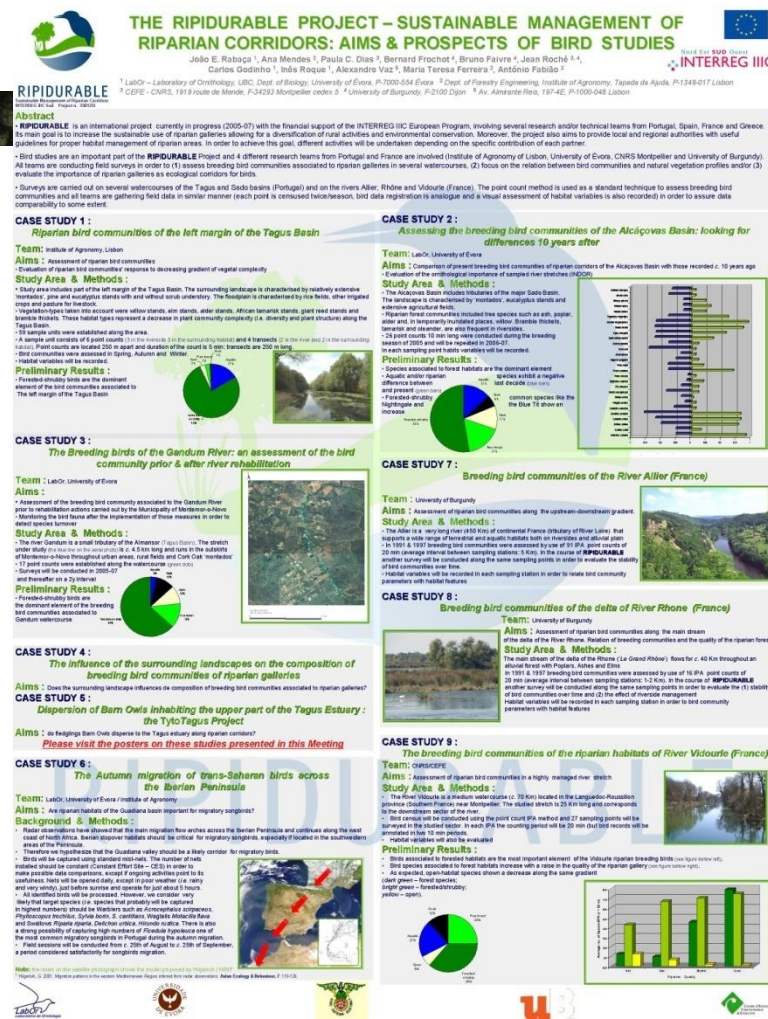
- Câmara Municipal de Alpiarça (PT)
- Câmara Municipal de Montemor-o-Novo (PT)
- Instituto Superior de Agronomia (PT)
- Universidade de Évora(PT)
- Banco de Sementes da Generalidade Valenciana (SP)
- CNRS - Montpellier (FR)
- Universidade de Borgonha (FR)
- Insituto de Águas Interiores (GR)
- Universidade de Ioaninna (GR)
- Agencia de Desenvolvimento de Amvrakikos (GR)



Nord Est **SUD** Ouest
INTERREG IIIC

A total of 18 studies were developed:

-



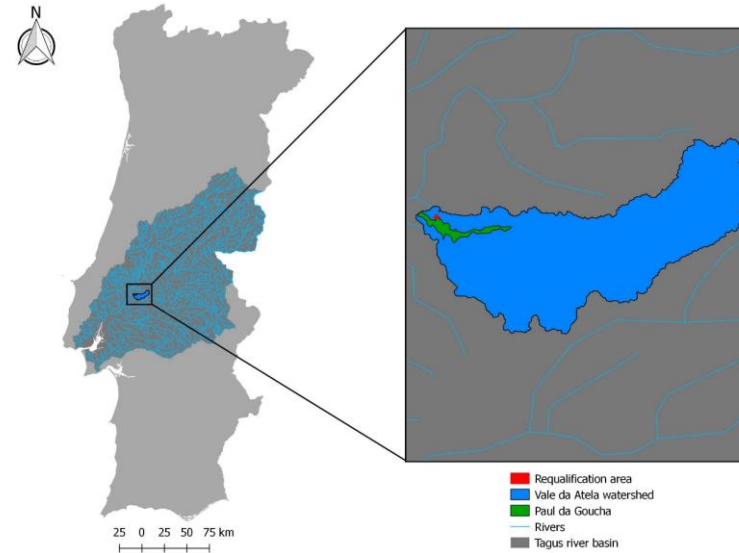
CASE STUDY – PAUL DA GOUCHA, PORTUGAL

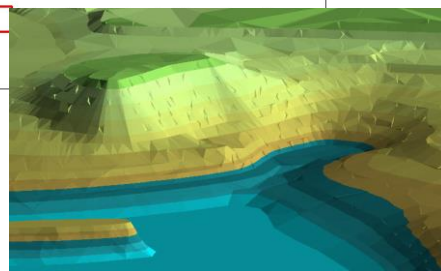
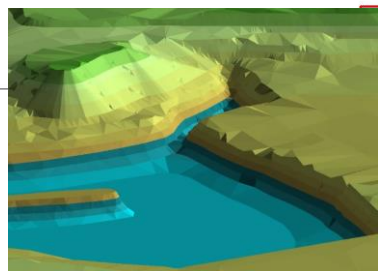
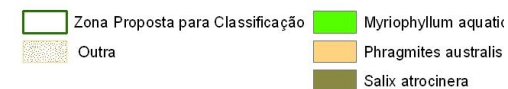
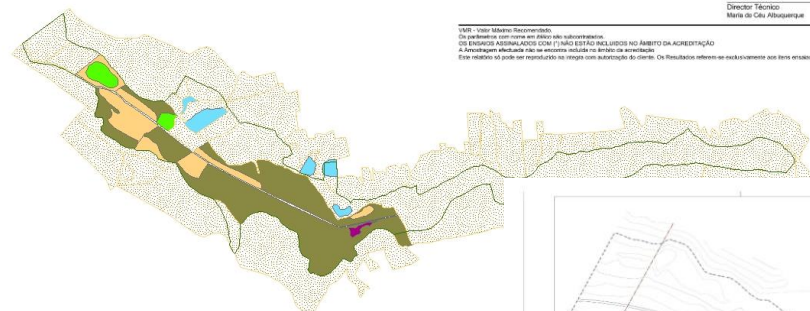
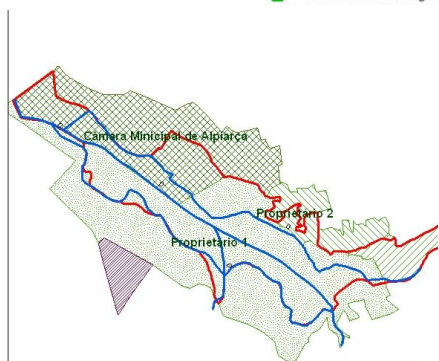
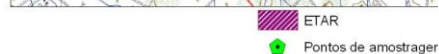
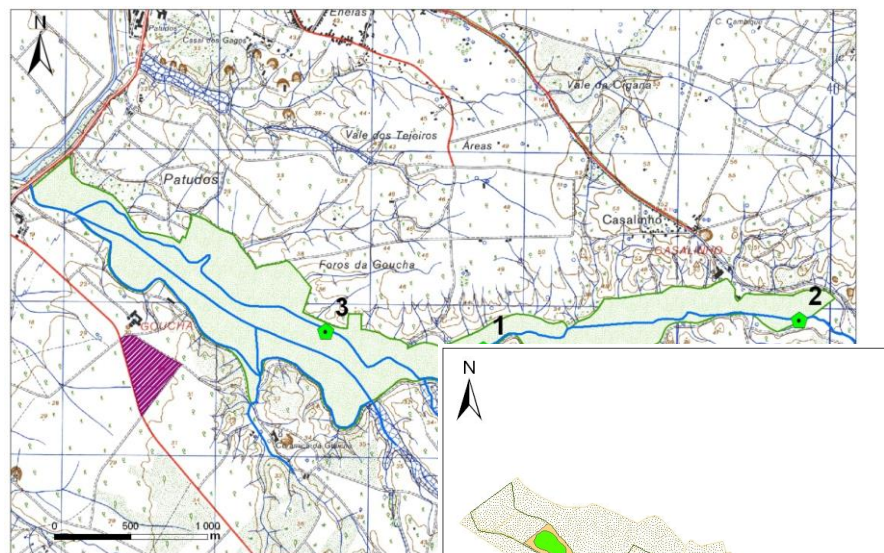
ENVIRONMENTAL
REHABILITATION

TRIGGER / IMPROVE
NATURAL RIPARIAN
VEGETATION
COLONIZATION

REHABILITATE THE
FEEDING, NESTING
AND RESTING AREA
FOR BIRDS

ENVIRONMENTAL
EDUCATION





Teófilo do Vale do Tejo, Rua José Dias Simão
Alfama, 2200-082 Alentejo
T: 241372357; F: 241371644
E: a-kgone@mail.tejepar.pt
www.a-kgone.com

Ciente:
Município de Alpiarça
Rua José Relvas, nº 374
2094-909 Alpiarça

Relatório de Ensaio Nr: 782

Versão: 1.0 Pág 1 de 1

Tipo de amostra: Águas de consumo humano
Coilheita: Lagoa (junto à antiga "Pedreira Hilário")
Zona de Abastecimento: Alpiarça
Coilheita por: Cliente
Relatório / ID: 5000717 / 5003724

Data de Recolha: 07/02/2006
Data de Recepcão: 07/02/2006
Data Inic. Análise: 07/02/2006
Data Fim Análise: 21/02/2006
Data de Emissão: 03/03/2006

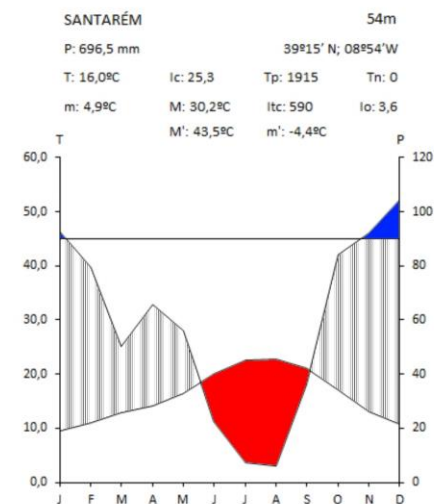
Ensaio	Resultado	Unidade	Limite Lei	VMR
Acetato *	<11,6g	µg/L	10	...
Acetato-mn (PT2 143)	...	...	...	...
Cádmio *	<0,56µg	µg/L	5,0	...
Mn-Mn-mn (PT2 143)	...	...	...	...
Chumbo *	1,29µg	µg/L	Fe	200
Mn-Mn-mn (PT2 143)	...	...	...	...
Cálcio *	4,2e+1	mg/L	Ca	...
Chumbo (PT2 143)	...	...	...	...
Chumbo *	<20,6µg	µg/L	2,5	...
Mn-Mn-mn (PT2 143)	...	...	...	...
Cobalto *	3	mg/L	Cu	20
Mn-Mn-mn (PT2 143)	...	...	...	...
Colméia *	<0,58µg	µg/L	50	...
Mn-Mn-mn (PT2 143)	...	...	...	...
Magnésio *	22	mg/L	Mg	...
Chumbo (PT2 143) - 3000 µg/g	...	...	...	...
Magnésio-mn (PT2 143)	16	µg/L	Mn	50
Mn-Mn-mn (PT2 143)	...	...	...	...
Níquel *	<2,0	µg/L	20	...
Mn-Mn-mn (PT2 143)	...	...	...	...
Platina *	>90,6µg	mg/L	...	...
Mn-Mn-mn (PT2 143)	...	...	...	...
Sódio *	66	mg/L	200	...
Mn-Mn-mn (PT2 143)	...	...	...	...
Zinco *	<44,6µg	mg/L	...	...

Notas
Os Parâmetros avaliados possuem os valores normatizados do Decreto Lei 243/2000

Maria do Céu Albuquerque A-Logos

Directora Técnica
Maria do Céu Albuquerque

VMR - Valor Máximo Recomendado.
Os parâmetros com norma em *Itálico* são subcontratados.
OS ENSAIOS ASSINALADOS COM (*) NÃO ESTÃO INCLuíDOS NO ÂMBITO DA ACREDITAÇÃO
A Amostragem efetuada não se encontra incluída no âmbito da acreditação
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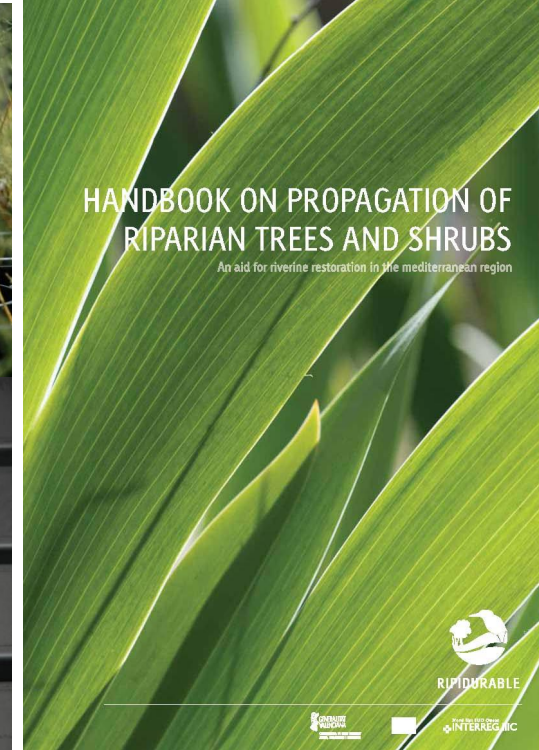
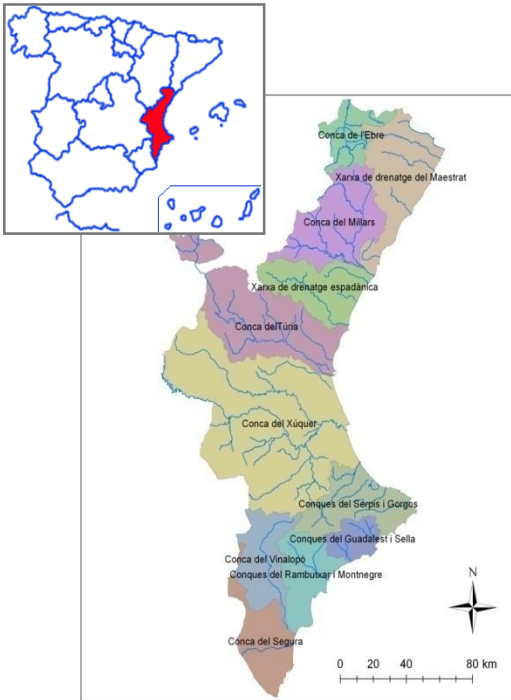


Developed activities -
Direct Cost: 44 893€



Native Plant Propagation

The lack of suitable plant material from the same geographic region for pilot restoration projects was addressed

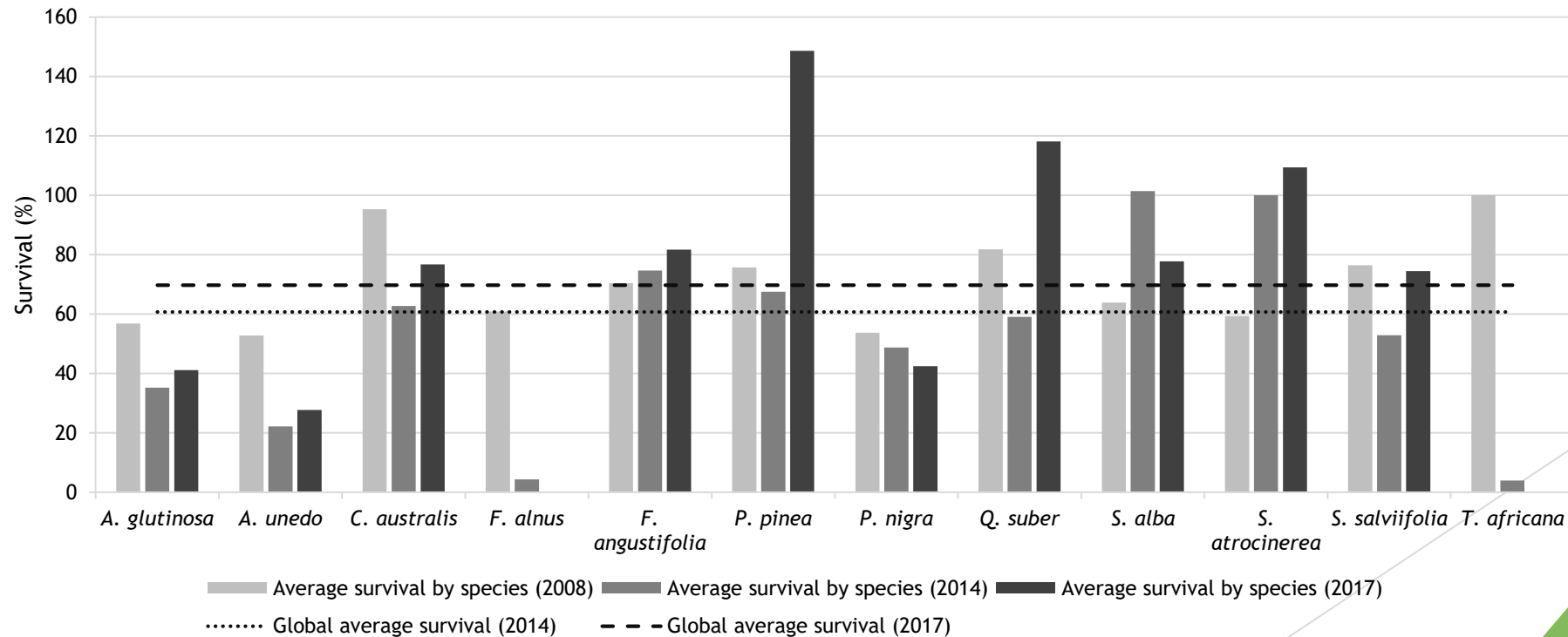


February 2008



MONITORING

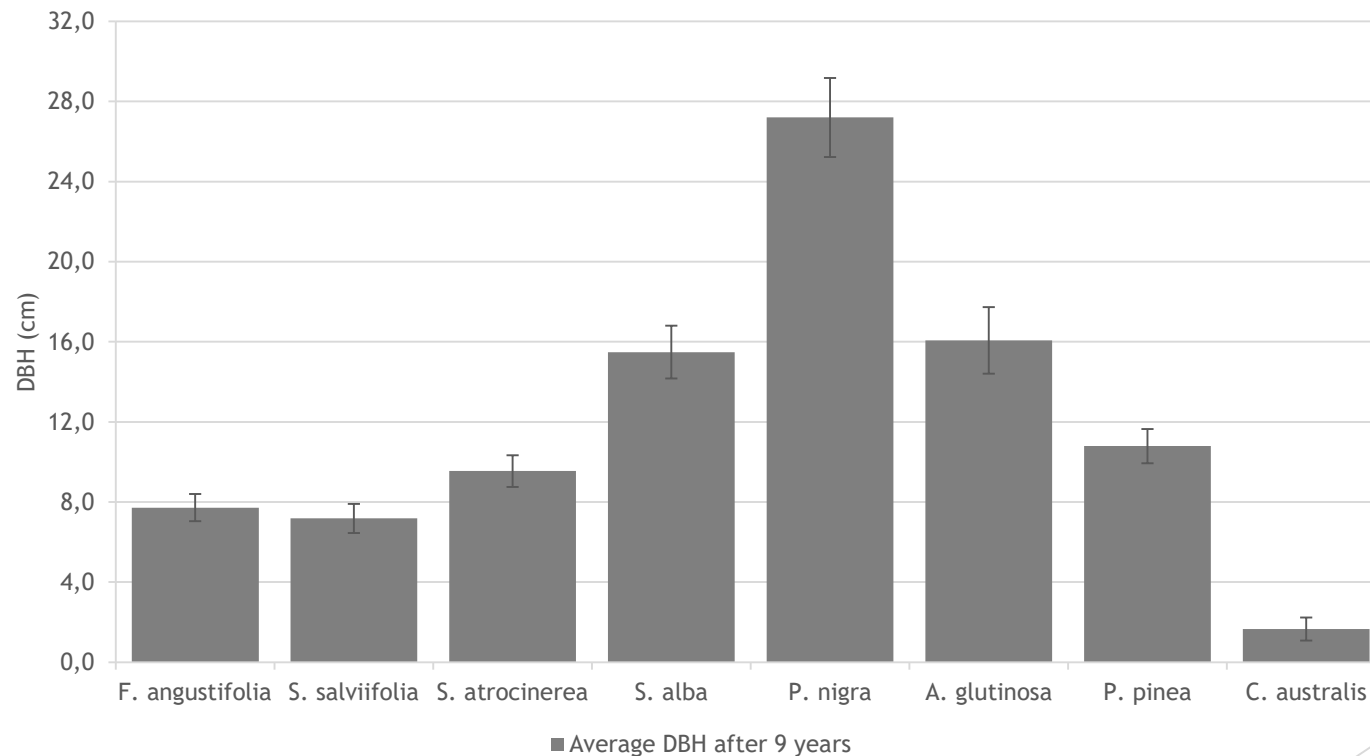
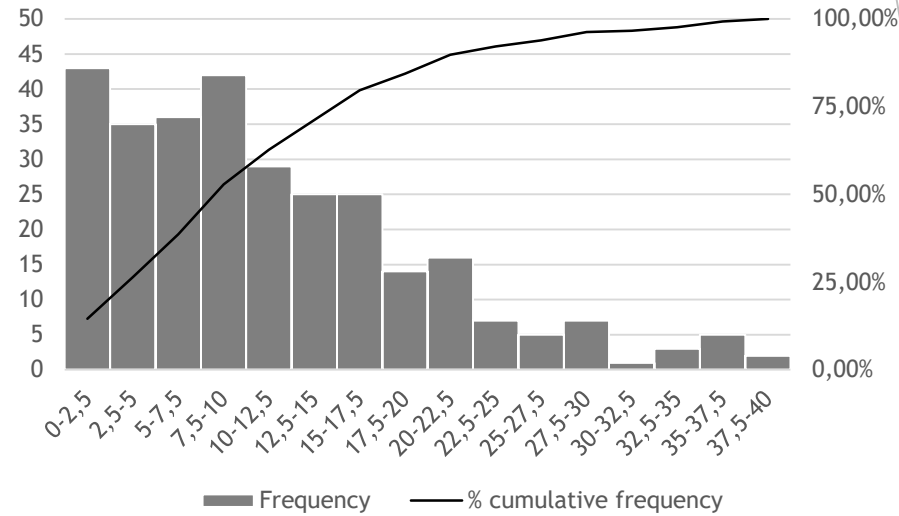
- Global average survival after 9 years was 70% (stolen plants were recorded, but counted as dead).
- About 7% of the plants were stolen with *Populus nigra* (23% of the plants stolen) and *Arbutus unedo* (17% stolen) being the most attractive for robbers.










MONITORING

- Most of the highest values observed 9 years after planting account for natural regeneration from the seed bank and adjacent reproductive tree sources.
- *Populus nigra* presented the highest average DBH (27.2 ± 2.0 cm), followed by *Alnus glutinosa* (16.1 ± 1.7 cm) and *Salix alba* (15.5 ± 1.3 cm).

Frequency histogram with DBH class distribution 9 years after plantation



Bioengineering Techniques

-  Plantation of yellow iris (*Iris pseudacorus*) rhizomes (>15x)
-  Live fascines (3x)
-  Wattle fences(2x)
-  Brush mattresses (1x)
-  Live cuttings combined with geotextile reinforced earth (1x)
-  Planted coconut fiber rolls (4x)
-  Vegetated log cribwall (1x)

Live fascines



Live fascines

After 6 months (October 2008)



After 41 months (September 2011)



Wattle fences



Photo: Cândida Rato

Wattle fences

After 15 months (May 2009)



After 41 months (September 2011)



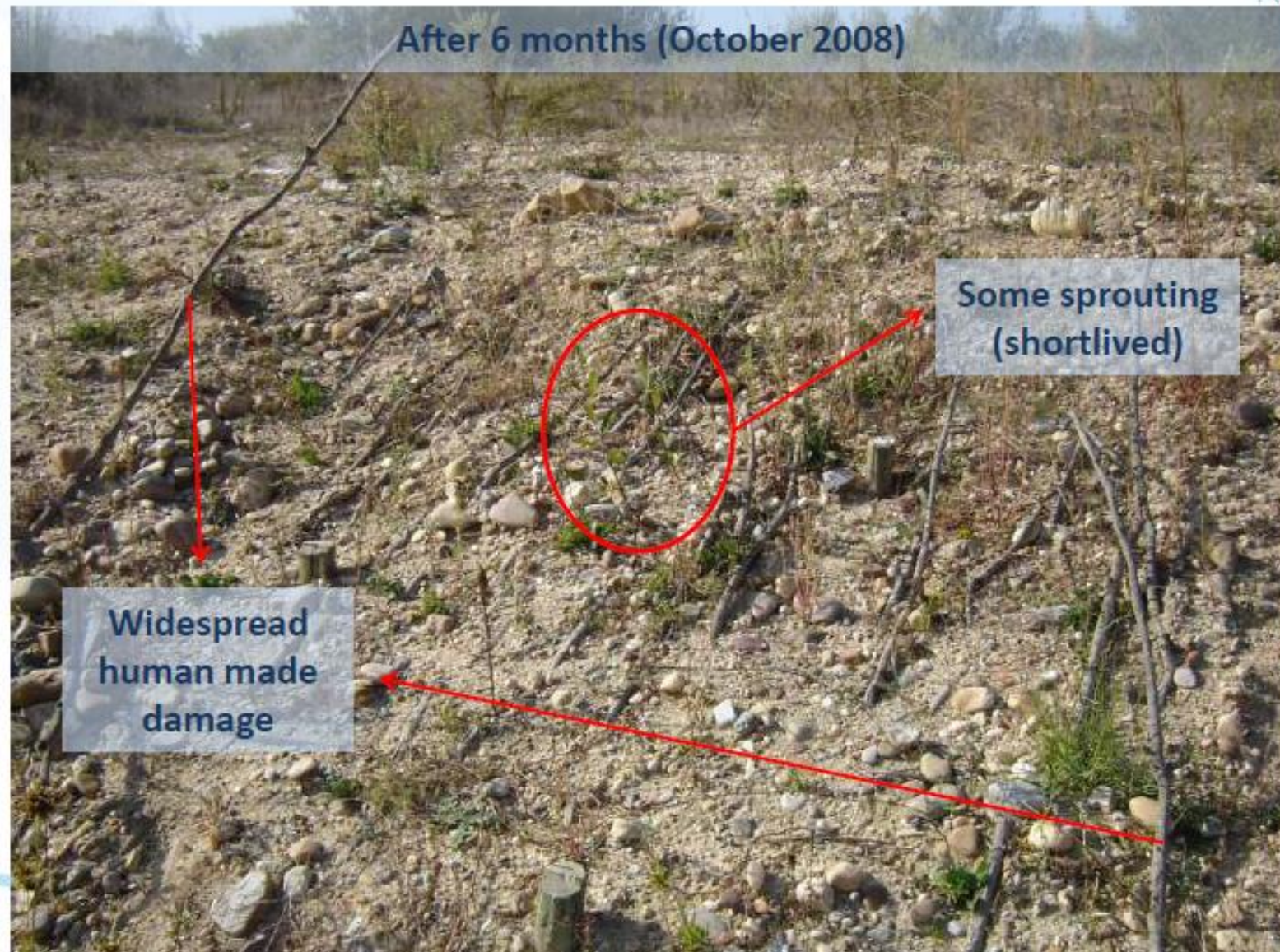
...DISCOVER...

Brush mattresses



Photo: Cândida Rato

Brush mattresses



Planted coconut fiber rolls



Planted coconut fiber rolls

After 6 months (October 2008)



After 15 months (May 2009)



MONITORING - SOIL BIOENGINEERING

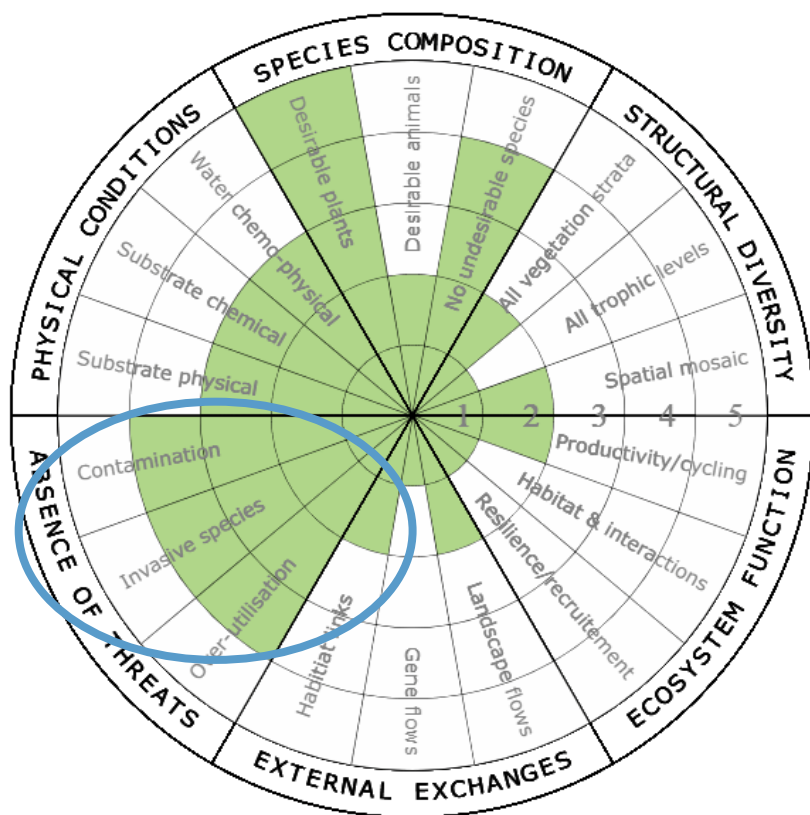
- Poles and live cuttings of *Salix atrocinerea* collected on the undisturbed sections of the Paul da Goucha
- Variable success, related mainly to the proximity to water and the use of live cuttings instead of rooted plants in the driest locations.



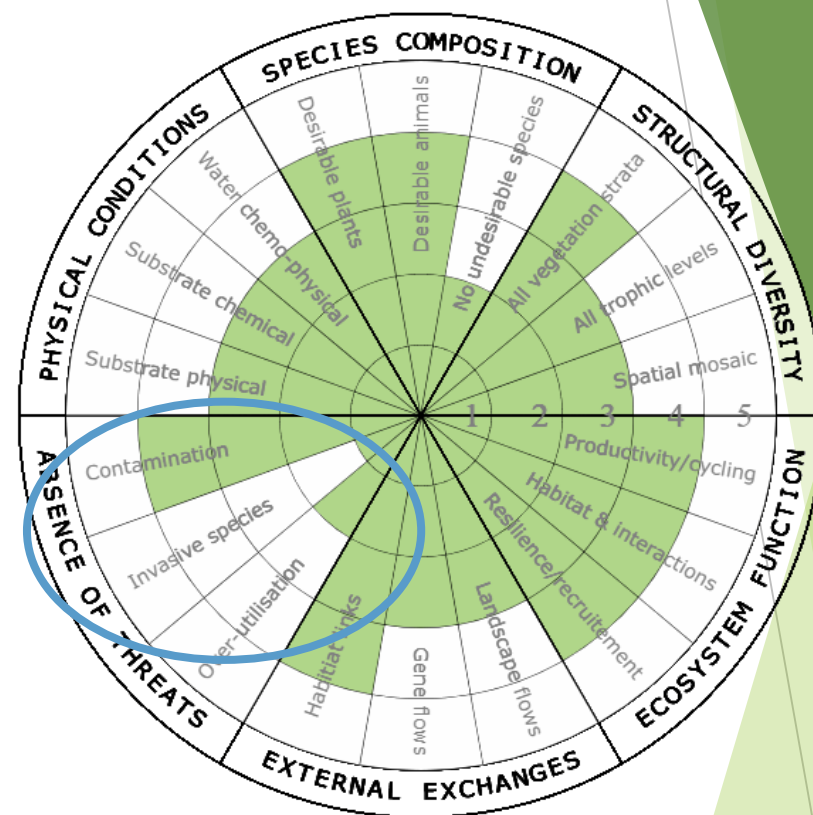
A, B e C: Cribwall
 D: Brush mattress
 E: planted coconut fiber rolls
 F: Wattle fences
 G: Live fascines

EVALUATION

2008, after 6 months



2017, after 9 years



Adjacent threats being managed or mitigated and very low threat from undesirable species onsite. A moderate subset of characteristic native species are established and some evidence of ecosystem functionality commencing. Improved connectivity in evidence.



Actividades desenvolvidas

Edu



ZOIA
acções ambientais

Ripidurable :: Visualização :: Maleta Pedagógica

Abril 2008



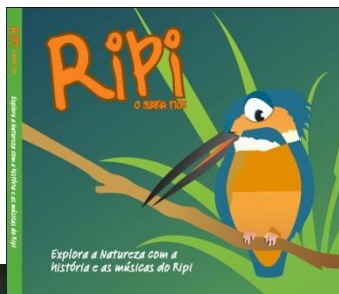
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Abril 2008

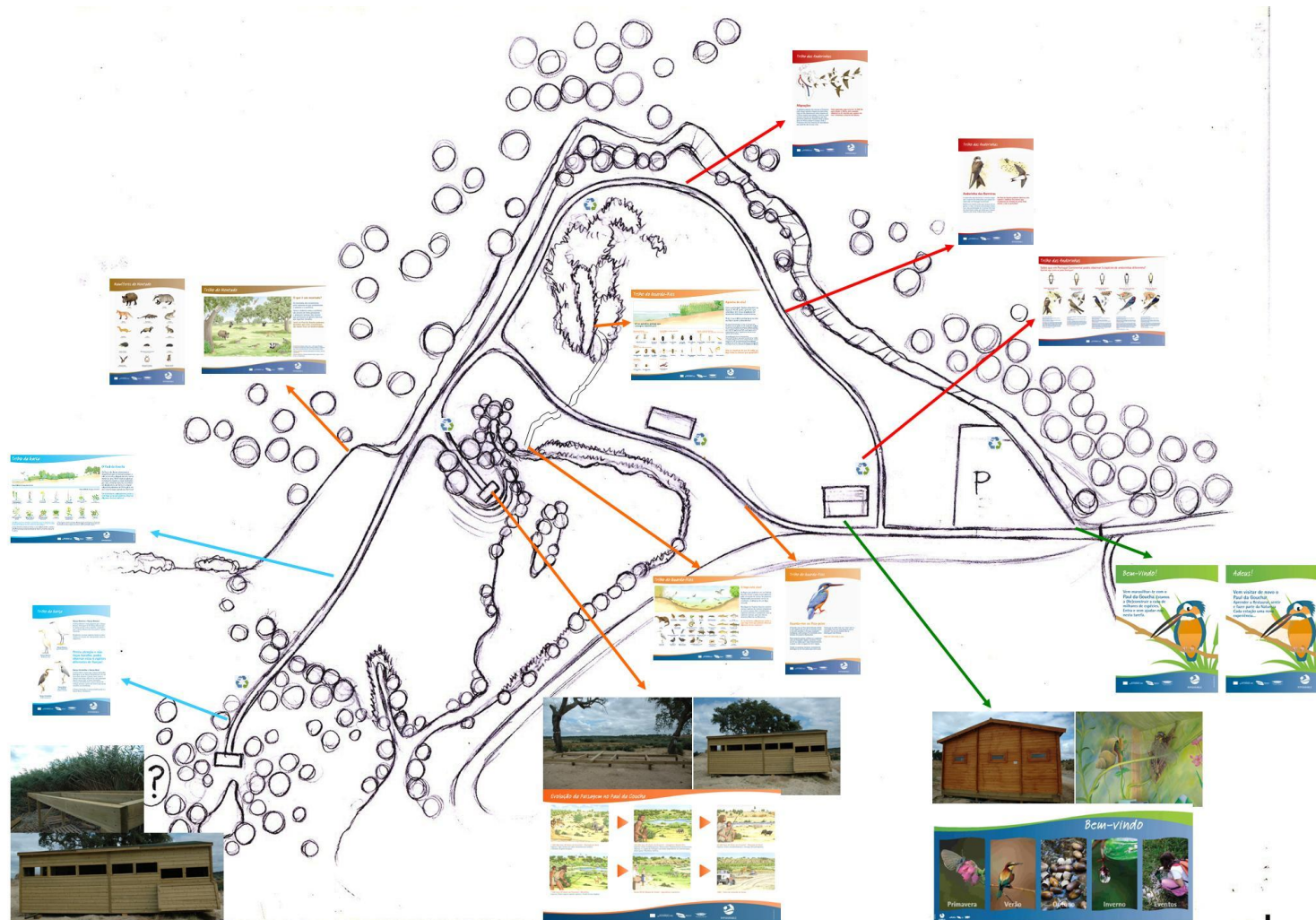


Agronomia /
Abril 2008



Instituto
Superior de
Agronomía
Abril 2008

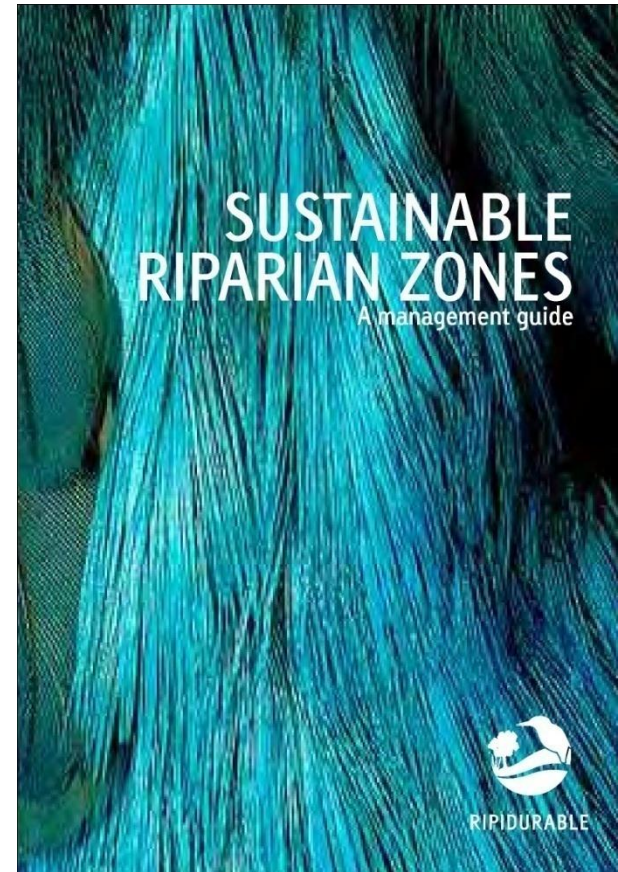
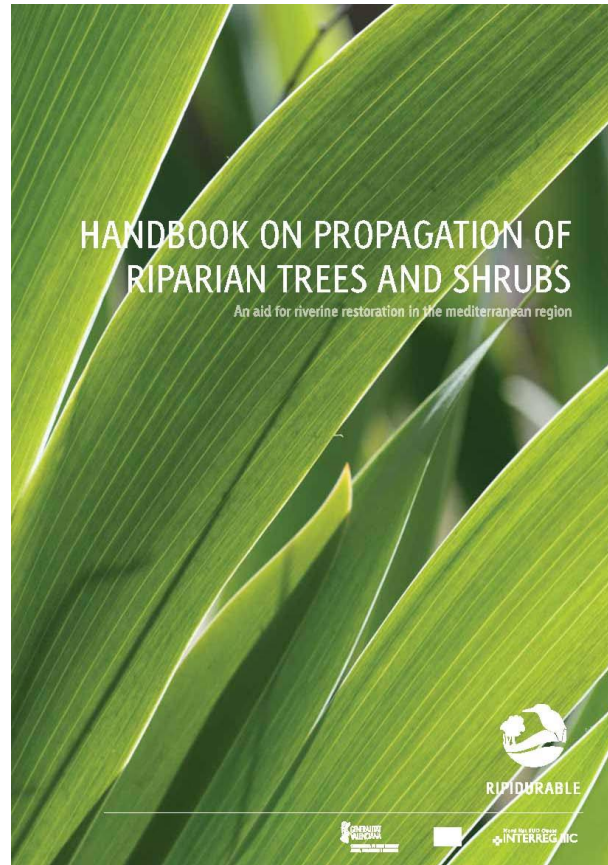




Outputs

Development of good practice model and its diffusion

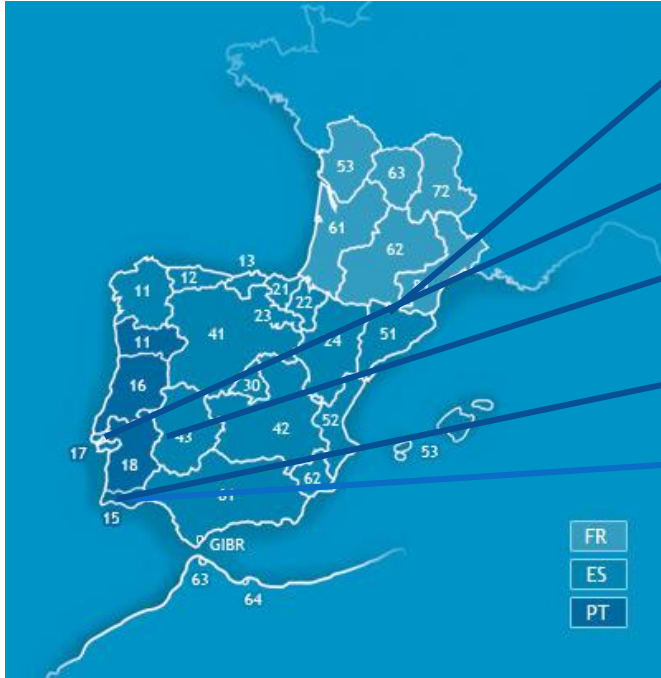
- Books
- Seminars
- Participation in congresses across Europe
- Leaflets
- Courses (propagation material and Bio-engineering)
- Stands at fairs
- Web-site
- Field visits
- TV spots



In the end...



From the desire to apply learned knowledge...



Forestry Centre of Catalonia (SP)

Institute of Agricultural Sciences
(PT)

Dept. of Evaluation and Environmental
Quality of Government of Extremadura
(SP)

Waters of Algarve, S.A. (PT)

Regional Water Administration of Algarve (PT)



Outputs

- ▶ Identification of degraded reaches in each region
- ▶ Studies on identification and control of exotic species (best techniques to apply)
- ▶ Propagation of native tree and shrub species
- ▶ Monitor fluvial biodiversity prior and post recovery actions (flora, macro invertebrates, fish and birds)
- ▶ Joint definition of the best techniques and methodologies for river restoration on fluvial ecosystems in the SUDOE region

Outputs

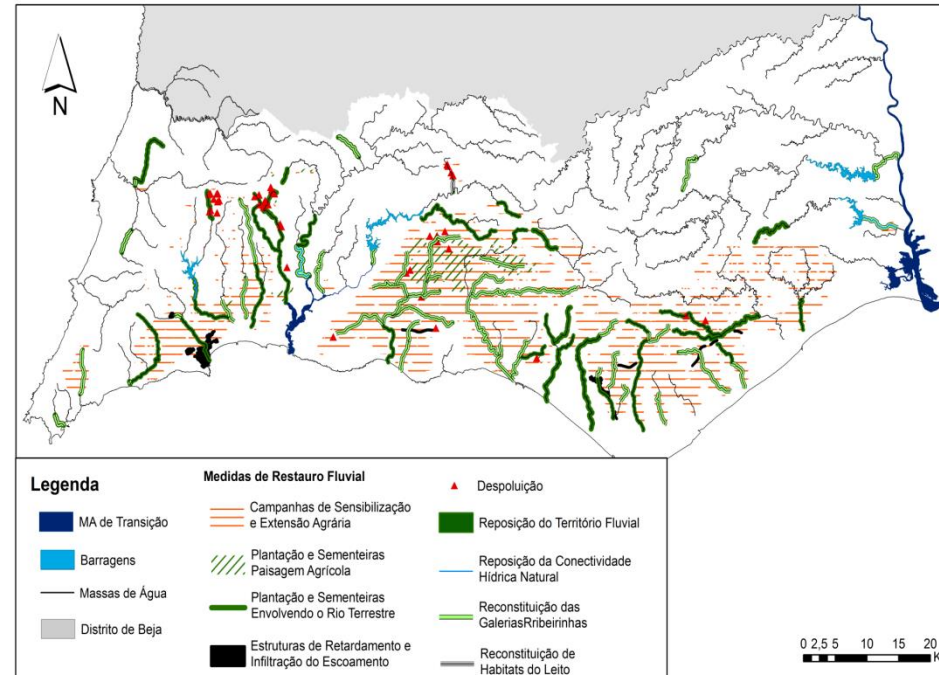
- ▶ River Restoration Projects:
 - ▶ PT – 3,5km in Odelouca Basin Algarve; 3 km in Algarve region;
 - ▶ SP – 19,3 km in the Catalonia region and 3 km in Extremadura region
- ▶ Best practice guide
- ▶ Report on the adequate machinery for river restoration projects
- ▶ Multidisciplinary courses for technicians (including e-learning module and in field practice)

Outputs

- ▶ Technical Seminars about: River management, Exotic species control, Bio-indicators of good ecological status, GIS applied to river management
- ▶ Public sessions for result diffusion, including recover technique application
- ▶ Leaflets about exotic and native species, regional plans of river recovery and pilot projects developed
- ▶ Web-site development
- ▶ Study trips

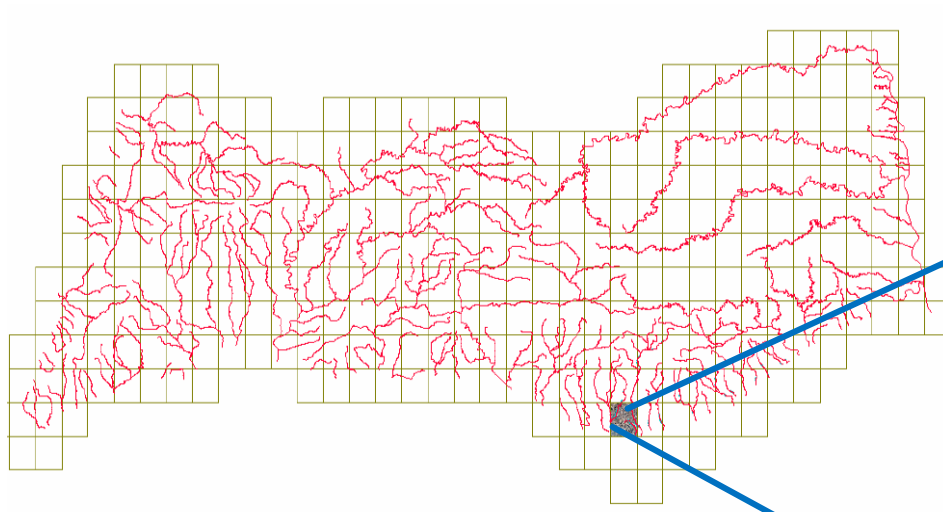
Instituto Superior de Agronomia

- Propagation of 12 000 plants for the river restoration projects for the Algarve region
- Production of the regional chart for river recovery of Algarve
- Propagation courses for plant nurseries



ARH do Algarve

- Algarve Regional chart of river restoration (PT)
- Alien species map (*Arundo donax*)
- Best suitable techniques for control



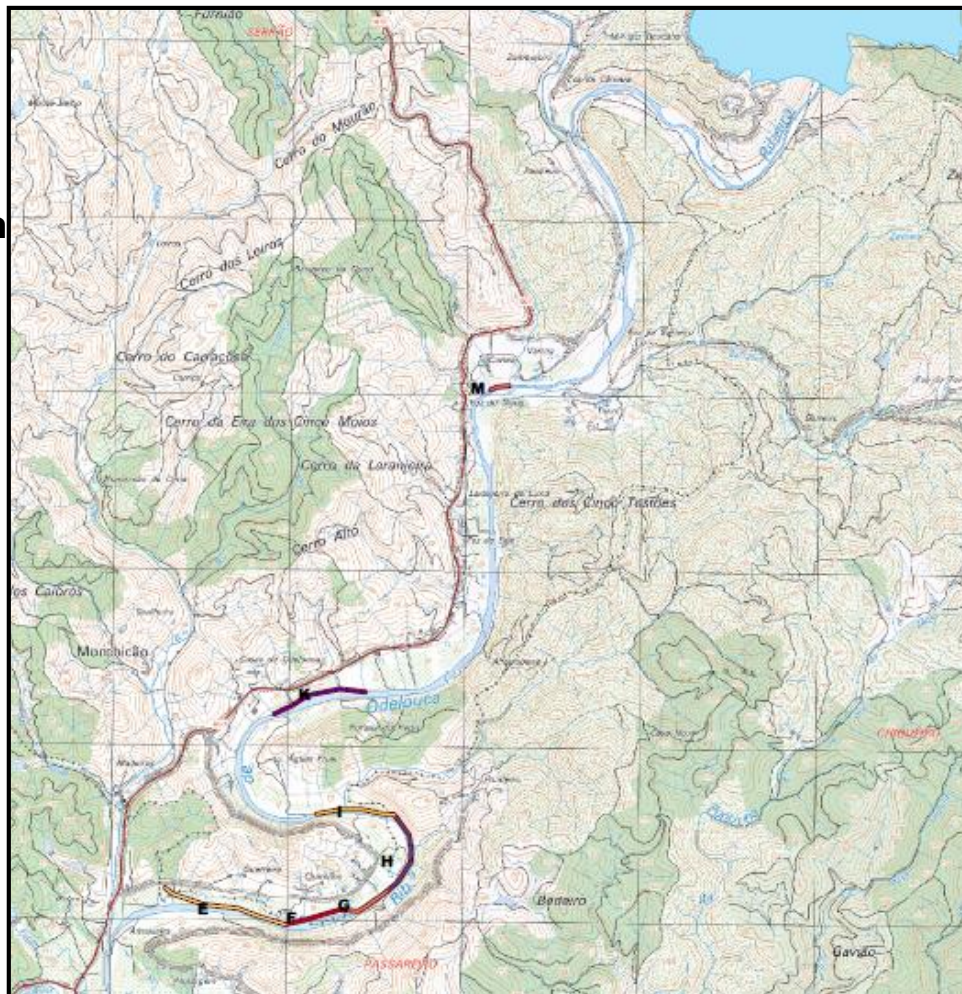
Águas do Algarve, S.A.

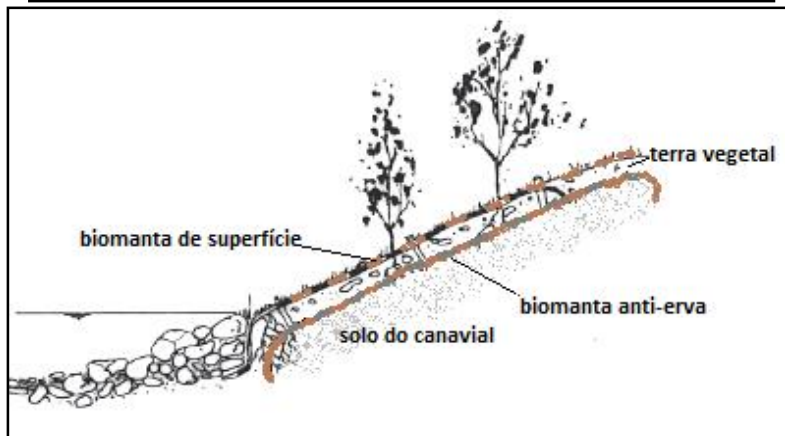
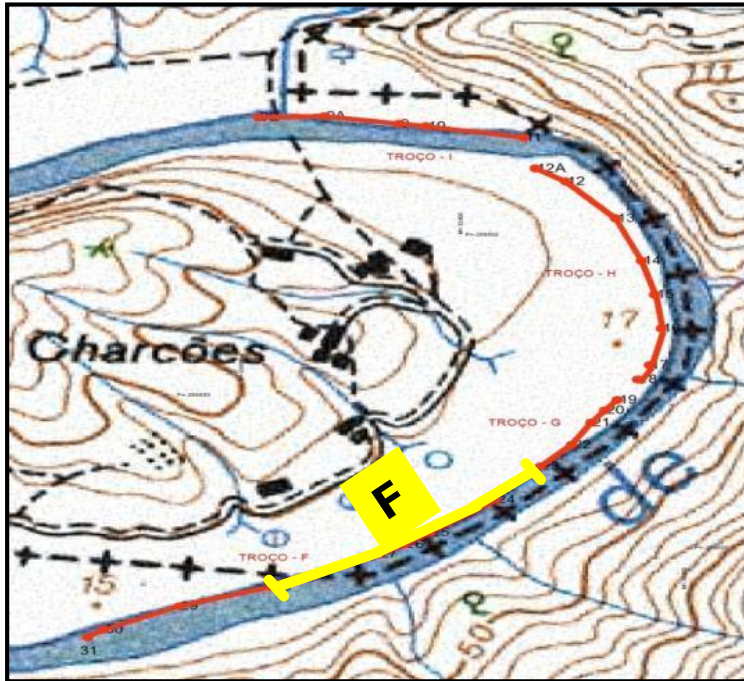
Recovery project of Riparian Areas

7 reaches identified that need intervention

Troço M (115m)
Troço K (1241m)
Troço I (460m)
Troço H (510m)
Troço G (210m)
Troço F (320m)
Troço E (690m)

Total: total aprox. 3,5 km





Stretch F

- length – 550m
- height – 8/10m
- Sedimentation zone
- High concentration of exotic *Arundo donax*



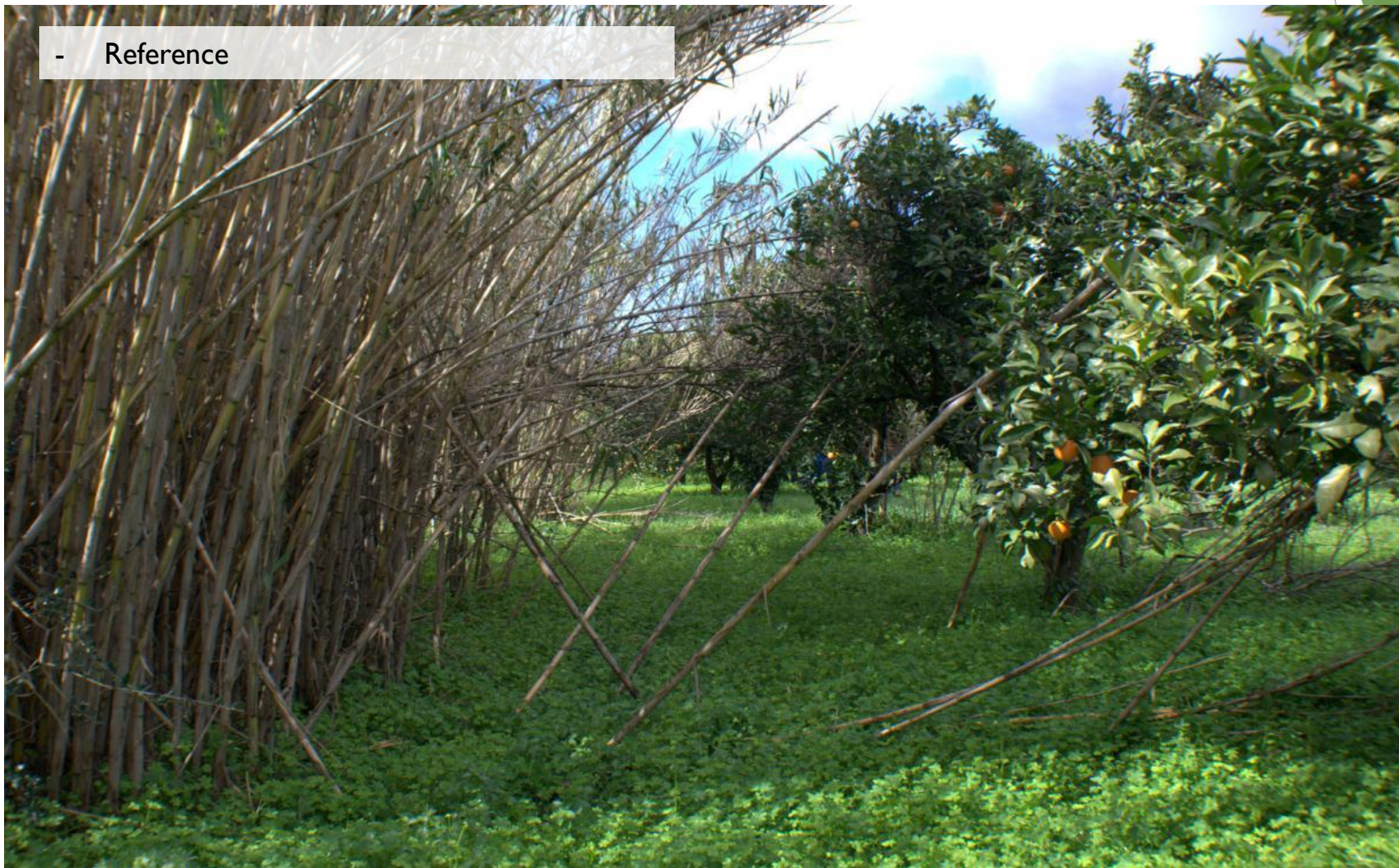
Intervention

- Exotic species control;
- Organic blanket application for soil
- Covering bio-blanket with vegetal earth (20cm);
- Willow plantation: trees and live cuttings
- Bedrock at base

- Reference



- Reference













E depois do Adeus?



Paul da Goucha

