

# SUBMERGED AQUATIC VEGETATION MANAGEMENT

Acció Ecologista-Agró  
Fundación Global Nature

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#### BACKGROUND AND EXPECTED RESULTS



#### BOLETÍN DIGITAL Nº1 PRIMAVERA 2014



"Asprella", es el nombre que recibe en l'Albufera la vegetación acuática sumergida, prácticamente desaparecida en los años 70 de las aguas del humedal por la crisis de contaminación. Recuperar esta vegetación es paso imprescindible para la recuperación del humedal. Hemos querido darle este nombre al boletín como reconocimiento a su importancia ecológica y valor cultural. Trabajaremos por tener la "asprella" de vuelta en l'Albufera.

## B2. Vegetation management

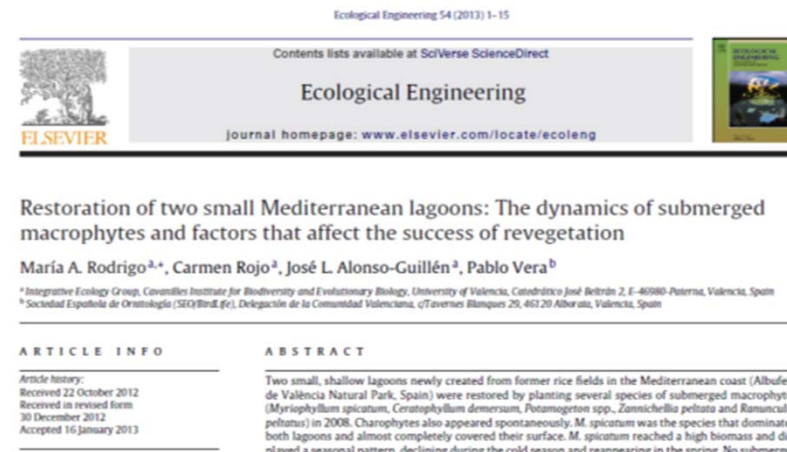
### Submerged vegetation

#### Design strategy:

- Technical group meeting (December 2013):
- CIP El Palmar (GVA)
- Devesa-Albufera Service (Valencia City Council)
- PN Albufera
- University of Valencia

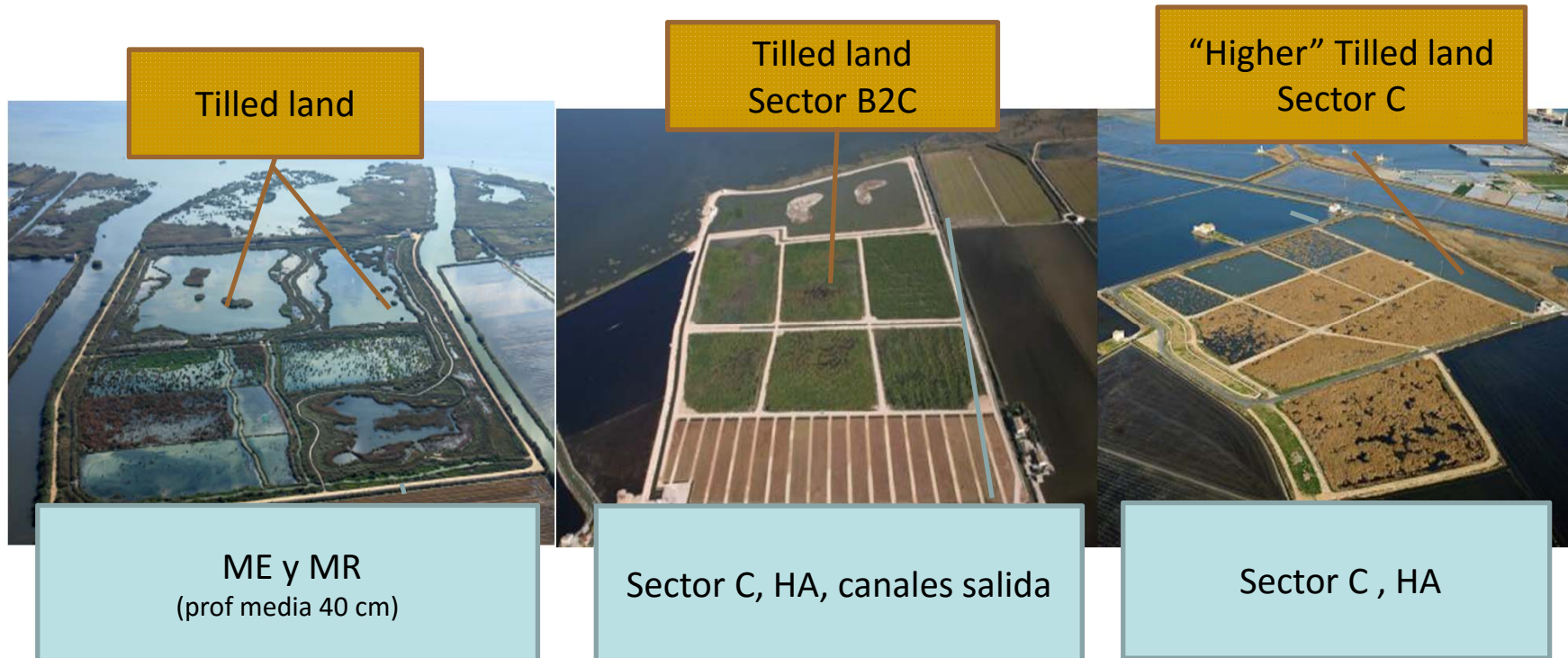
#### Conclusions:

- protection of predation
- treatment substrate
- selection of species



## B2. Vegetation management

### Submerged vegetation



## B2. Vegetation management

### Submerged vegetation

**2014**-2015-2016

HATP= 4 Has

Drying and Tilled land of ME

Fish removal: 300 kg biomass

HATI=4 Has

Drying and Tilled land of Sector C

Fish removal: X + X

HATM=3Has

Drying and Tilled land of S. B2C

Fish removal : X



## B2. Vegetation management

Submerged vegetation

**2014**-2015-2016

**MAY 2014**

**65** cages placed in the 3 AW

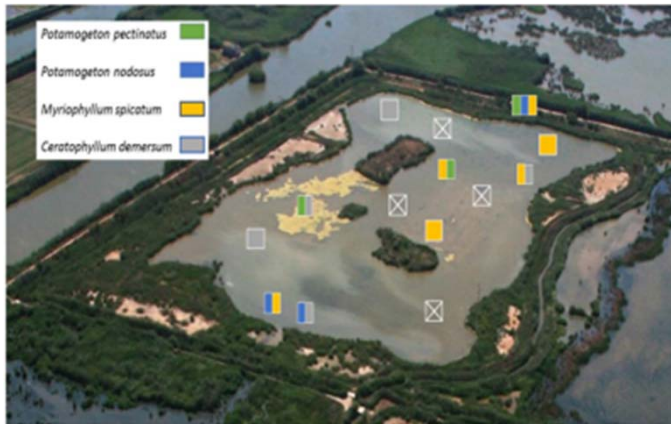
Size 2x2 m



## B2. Vegetation management

### Submerged vegetation

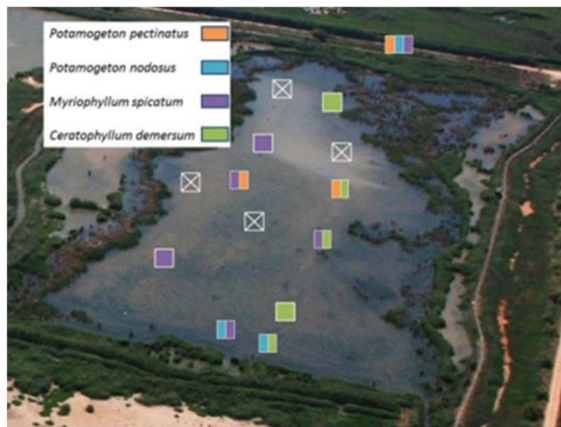
HATP (28): 13 in both AW and 2 in output channels



HATM(20): 10 S.C, 4 HA, 6 in output channels



HATI(17): 12 S.C , 5 HA



### 2014-2015-2016



En el marc del projecte LIFE+Albufera, vos convidem a una **PLANTACIÓ DE VEGETACIÓ AQUÀTICA**, el **dilluns 26 de Maig a les 11:30**. **Tancat de la Pipa.**

**PROGRAMA**  
 -Explicació del Projecte LIFE+Albufera i de l Tancat de la Pipa  
 -La importància ecològica de la vegetació aquàtica "osprelló"  
 -Voluntariat de plantació a les llacunes del Tancat



## 4 species:

- Myriophyllum spicatum*
- Potamogeton nodosus*
- Potamogeton pectinatus*
- Ceratophyllum demersum*

- monoculture
- polyculture
- control





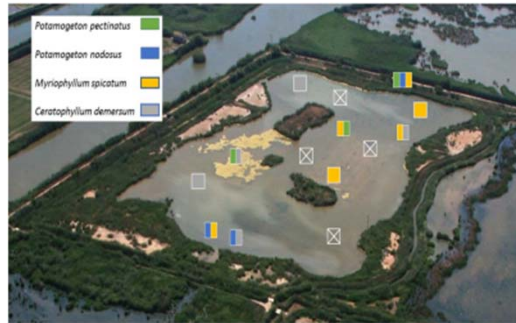
# B2. Vegetation management

## Submerged vegetation

**2014-2015-2016**

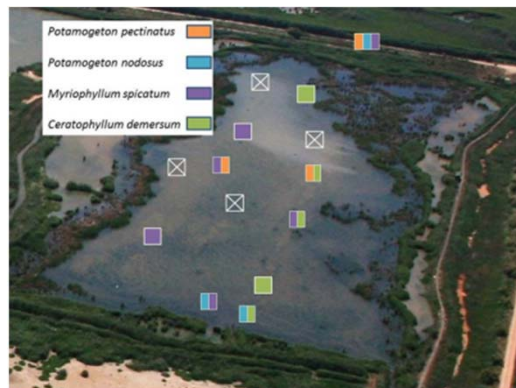
### MONITORING: May 2014-APril 2015

#### MR HATP



número	Especie	MAYO	JUNIO	JULIO	AGOSTO	OCTUBRE	DICIEMBRE	FEBRERO	ABRIL
3	Cd	Cd	Cd	Cd	Cd			ROTA	ROTA
3	Cd	Cd	Cd	Cd	Cd			ROTA	ROTA
4	Cd	Cd	Cd	Cd	Cd	Cd	Cd	ROTA	ROTA
4	Cd	Cd	Cd	Cd	Cd	Cd	Cd	ROTA	ROTA
6	Cd	Cd	Cd	Cd					
9	Cd	Cd	Cd	Cd	Cd	Cd	Cd	ROTA	ROTA
13	Cd	Cd	Cd	Cd	Cd	Cd	Cd	Cd	Cd
1	Ms	Ms	Ms						
1	Ms	Ms	Ms						
5	Ms	Ms	Ms						
8	Ms	Ms	Ms	Ms	Ms			Ms	Ms
8	Ms	Ms	Ms	Ms	Ms			Ms	Ms
11	Ms	Ms	Ms	Ms					Cd
13	Ms	Ms	Ms	Ms	Ms	Cd	Cd	Cd	Cd
14	Ms	Ms							
9	Pp	Pp	Pp	Pp	Pp Ms	Ms	Cd	ROTA	ROTA
11	Pp	Pp	Pp						
14	Pp	Pp							
5	Pn	Pn	Pn						
6	Pn	Pn	Pn						
14	Pn	Pn							
CONTROL									
2									
7									
10									
12									

#### ME HATP



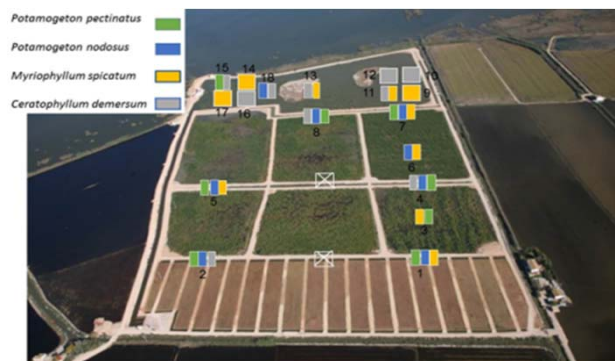
número	Especie	MAYO14	JUNIO14	JULIO14	AGOSTO14	OCTUBRE14	DICIEMBRE14	FEBRERO15	ABRIL15
1	Cd	Cd	Cd	Cd	Cd	Cd	Cd		
1	Cd	Cd	Cd	Cd	Cd	Cd	Cd		
5	Cd	Cd	Cd	Cd	Cd	Cd	Cd	Cd+ENEAE	Cd+ENEAE
7	Cd	Cd	Cd	Cd	Cd	Cd	Cd	Cd	Cd
10	Cd	Cd	Cd	Cd	Cd	Cd	Cd	ROTA	ROTA
10	Cd	Cd	Cd	Cd	Cd	Cd	Cd	ROTA	ROTA
12	Cd	Cd	Cd	Cd	Cd	Cd	Cd	Cd	Cd
4	Ms	Ms	Ms	Ms	Ms				
4	Ms	Ms	Ms	Ms	Ms				
6	Ms	Ms	Ms	Ms	Cd	Cd	Cd	ROTA	ROTA
7	Ms	Ms	Ms	Ms	Cd	Cd	Cd	Cd	Cd
11	Ms	Ms	Ms	Ms	Ms+Cd	Cd	Cd	Cd	Cd
11	Ms	Ms	Ms	Ms	Ms+Ce	Cd	Cd	Cd	Cd
13	Ms	Ms	Ms	Ms	Ms	Ms+ENEAE	Ms+ENEAE	Ms+ENEAE	Ms+ENEAE
14	Ms	Ms							
5	Pp	Pp	Pp	Pp	Cd	Cd	Cd+ENEAE	Cd+ENEAE	Cd+ENEAE
6	Pp	Pp	Pp	Pp	Cd	Cd	Cd	ROTA	ROTA
14	Pp	Pp							
12	Pn	Pn	Pn	Pn	Cd	Cd	Cd	Cd	Cd
13	Pn	Pn	Pn						
14	Pn	Pn	Pn	Pn				Ms+ENEAE	Ms+ENEAE
CONTROL									
2					ENEAE	ENEAE	ENEAE	ENEAE	ENEAE
3			C	C+ENEAE	ENEAE	ENEAE	ENEAE	ENEAE	ENEAE
8					ENEAE	ENEAE	ENEAE	ENEAE	ENEAE
9					ENEAE	ENEAE	ENEAE	ENEAE	ENEAE

# B2. Vegetation management

## Submerged vegetation

**2014-2015-2016**

### MONITORING: HATM



### HATI



Cercado	Especie	JULIO14	JULIO14	AGOSTO14	SEPTIEMBRE14	OCTUBRE14
1	Pp+Pn+Ms	15	15			
2	Pp+Pn+Cd	10	10			
3	Pp+Ms	15				
4	Pp+Pn+Cd	15				
5	Pp+Pn+Ms	10				
6	Pn+Ms	30	30	30	30	0
7	Pp+Pn+Ms	15	15	10	10	10
8	Cd	15	0			
9	Ms	0				
10	Cd	0				
11	Ms+Cd	0				
12	Cd	0				
13	Ms+Cd	0				
14	Ms	0				
15	Pp+Cd	-				
16	Cd	-				
17	Ms	-				
18	Pn+Cd	0				



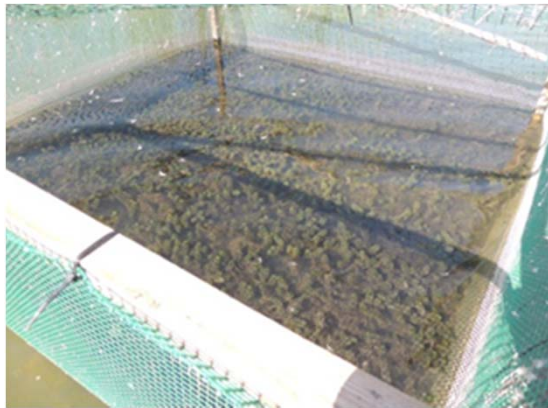
Cercado	Especie	JULIO14	AGOSTO14	SEPTIEMBRE14	OCTUBRE14	NOVIEMBRE14	DICIEMBRE14	ENERO15	FEBRERO15	MARZO15	ABRIL15	
1	Pp+Pn+Ms	25	0									
2	Pp+Pn+Cd	25	25	25	20		20	25-30	35	35	50	50
3	Pp+Pn+Ms	50	30	0								
4	Ms	0	0									
5	Ms+Cd	0	0									
6	Ms	0	0									
7	Ms+Pp	0	0									
8	Cd	0	0									
9	Cd+Pn	40	30	0								
10	Cd	40	40	0								
11	Cd+Pp	0	0	0								
12	Ms+Pn	50	30	30	30	20	25	35	35	35	35	35

## B2. Vegetation management

### Submerged vegetation

2014-2015-2016

#### MONITORING



ME *Ceratophyllum demersum* 100% cobertura



ME *Chara vulgaris* (Control)  
Agosto'14



ME *Myriophyllum spicatum*  
Abril'15



MR *Potamogeton pectinatus* Junio'14



ME *Typha domingensis* (Control)  
Agosto-October 2014



MR *Cyprinus carpio*  
Agosto'14



MR Algas filamentosas  
Abril'15

## B2. Vegetation management

### Submerged vegetation

2014-**2015**-2016

JUNE HATP

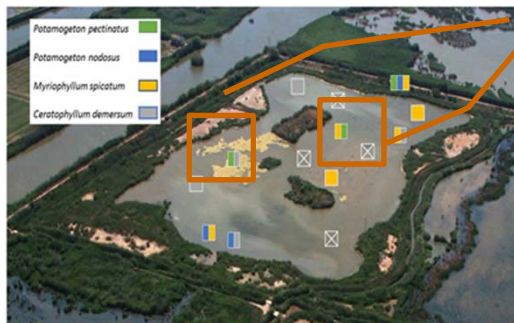
EXPANDING CAGES (*Ceratophyllum demersum*)

Detection spontaneous natural growth MR

*Potamogeton pectinatus*

*Zannichelia peltata*

TRANSLOCATION CAGE 2X2-EXPANDING CAGES



Ampliación y nuevos cercados 18m<sup>2</sup>

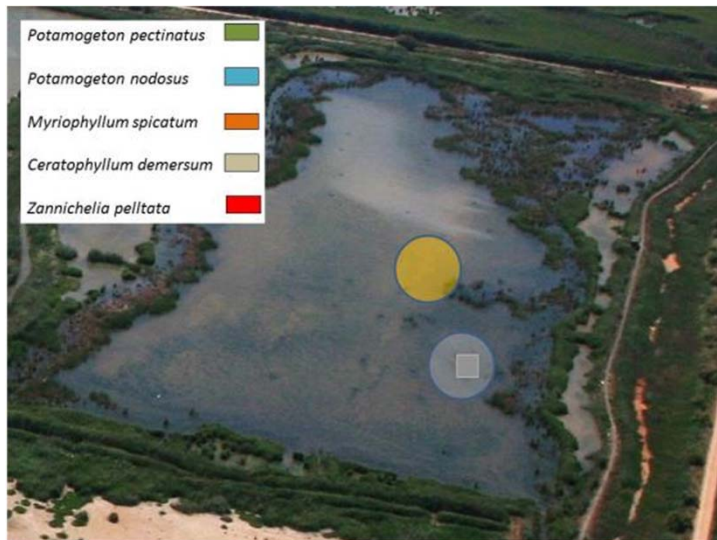
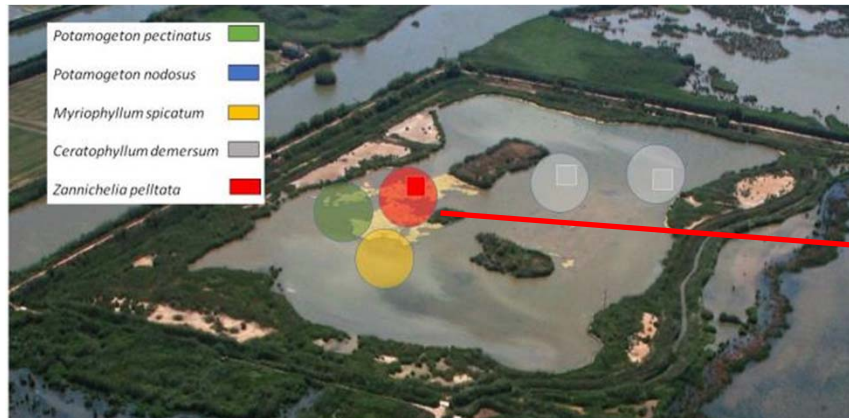


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## Submerged vegetation

2014-**2015**-2016

### MONITORING HATP



Laguna	Cercado	Especie	Cobertura						
			Mayo	Junio	Julio	Agosto	Septiembre	Noviembre	Enero
MR	13B	CD	Colocación	30%	20%	50%	70%	70%	100%
MR	11B	CD		Colocación	70%	85%	60%	65%	80%
MR	2B	ZP		Colocación	40%	60%	60%	70%	80%
MR	14B	MS			Colocación	5%	7%	-	-
MR	4B	PP				Colocación	40%	10%	-
ME	7B	CD		Colocación	60%	70%	Rota		
ME	10B	MS			Colocación	10% (carófitos)	Rota		

## B2. Vegetation management

### Submerged vegetation

2014-**2015**-2016

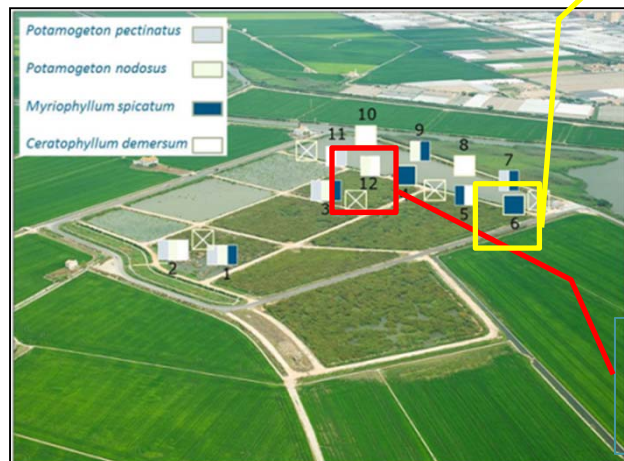
#### MONITORING HATI

MARCH

Down level and removal of fish  
 Detection and monitoring spontaneous  
 natural growth in Sector C

JUNE

Enlarge cage (*Myriophyllum spicatum*)



New Cage  
18m<sup>2</sup>

Expanding  
cage 18m<sup>2</sup>



## B2. Vegetation management

Submerged vegetation

2014-2015-**2016**

HATI

Expanding cage



## B2. Vegetation management

Submerged vegetation

2014-2015-**2016**

HATP

Expanding cage





#### CONCLUSIONS

- More time is need to obtain more accurate conclusions
- Water quality is not the only factor that affects the developement of a submerged vegetation praire at the Artificial Wetlands in LIFE+Albufera, it is very important the fish and birds predation pressure.
- During the LIFE+Albufera project the main species for each artificial wetland has been selected, and high survival rate has been achived in cages, increasing the surface, promoting colonisation and seed bank enrichment.
- In HATI a spontaneus praire of *Myriophyllum spicatum* has been installed. This is the place were fish have been removed twice.
- Due to the lack of this habitat at Albufera's wetland, pressure is high, and intense management has to be done (fish removal and substrate treatment), preserving the protection cages as dispersal sites.

**THANKS A LOT FOR YOUR ATENTION!!!**

