Plant Invasions In Spanish Wetlands: A Recognised Problem?

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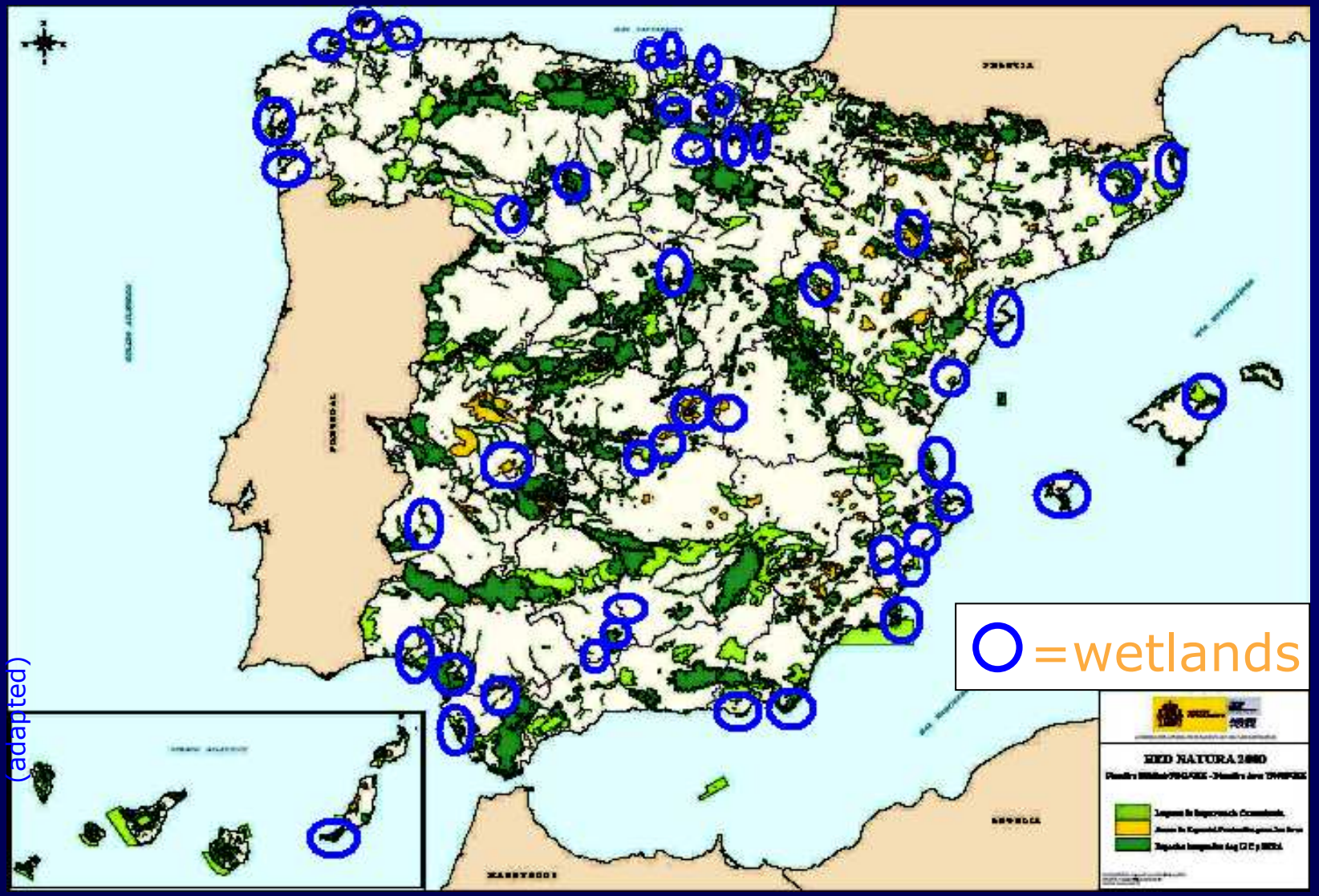
Presentation Structure

- Importance of Wetlands
- Alien Plants and Factors that Contribute to Invasiveness in Wetlands
- Disturbance by Plant Invasions On Wetland Functions
- Values Of Wetlands and Socioeconomic Impact of Plant Invasions
- Conclusions: The Spanish Situation

Importance of Wetlands

- 49 wetlands (174,000 ha) Protected by several international treaties



Source: MMA Ramsar and Natura 2000 lists (adapted)

Importance of Wetlands

- Unique characteristics: landscape position and biodiversity provide with several services:

Groundwater:

- Supply of 65% of drinking Water in Europe (0.4 ha can storage up to 6000 l.)
- 50% of water used in agriculture in Spain

Filtration of drinking water at Meijendel dunes, The Netherlands (photo: Provincie Zuid Holland)

Importance of Wetlands

Rice fields in the Ebro Delta, Spain

(photo: vueltasenavioneta.com)

- 2/3 of the edible fish depend on wetlands at some stage in their life cycle

Biomass production:

- 50% of the people feed on domestic wetlands worldwide

Local fishery in the Ebro Delta

(photo:aguaparamurcia.blogspot.com)

Importance of Wetlands

Peatland in Gredos Sierra, Spain

Carbon sinks:

Peatlands may store up to 25% of global soils C

Storm & flood control:

Hurrican Katrina costed

1033 lives and

US$125 billion

Flooded New Orleans after Katrina

Alien Plants and Factors that Contribute to Invasiveness in Wetlands

- Naturalised plants capable of forming stable populations away from origin

Opuntia estricta

Cyperus spp.

- Coming in by ship ballast, tourism and trade

Wetland Invasions are favoured by:

- Landscape sinks because geographic position

- Hydrological changes by natural and artificial flooding

Wetland Invasions are favoured by:

- Eutrophication

Eichhornia crassipes
booming in Guadiana river, Spain

- Climate change and desertification

Drought in Castilla-La Mancha, Spain

Disturbance by Plant Invasions On Wetland Functions

Arundo donax:
Alter hydrological regimes and groundwater availability

Carpobrotus edulis:
Mono-specific mats displacing native species in dune systems

Disturbance On Wetland Functions

Spartina alterniflora: Speed wetland shrinking (terrestrialisation)

Cortaderia selloana: Affects recreational use and creates fire hazard

E. crassipes and Azolla filiculoides: Changes in water quality

The Socioeconomic Impact of Plant Invasions

- Accumulation of biomass in infrastructure: ± 26,000 €/ha to control 75 km in Spain

<u>Unknown impacts:</u>

- Surface water quality
- Groundwater water availability
- Fish stocks (juveniles and plankton growth)
- Impacts on human health (mosquitoes, allergies, degradation of leisure areas, fire hazard)

Conclusions

High number of aliens in Spain due to:

- Dams and agriculture
- Ornamental plant industry
- Large tourism industry
- Contaminated ship ballast water in sea ports
- Increasing temperatures (rise of 0.5 ^{o}C per decade)

What to be done?

- At national level, only one decree exits (RD 2071/1993): more regulation is needed in order to influence driving factors
- Change of view to a more scientific-oriented approach
- Substantial increase in control and prevention
- Focussing and boosting on more official actions (A.G.U.A. and InvasIBER programmes)

Thank you for your attention
Any questions?