



TOUR DU VALAT

30 years of evolution of land-cover in Ramsar sites of metropolitan France as seen from LandSat images (1975- 2005)

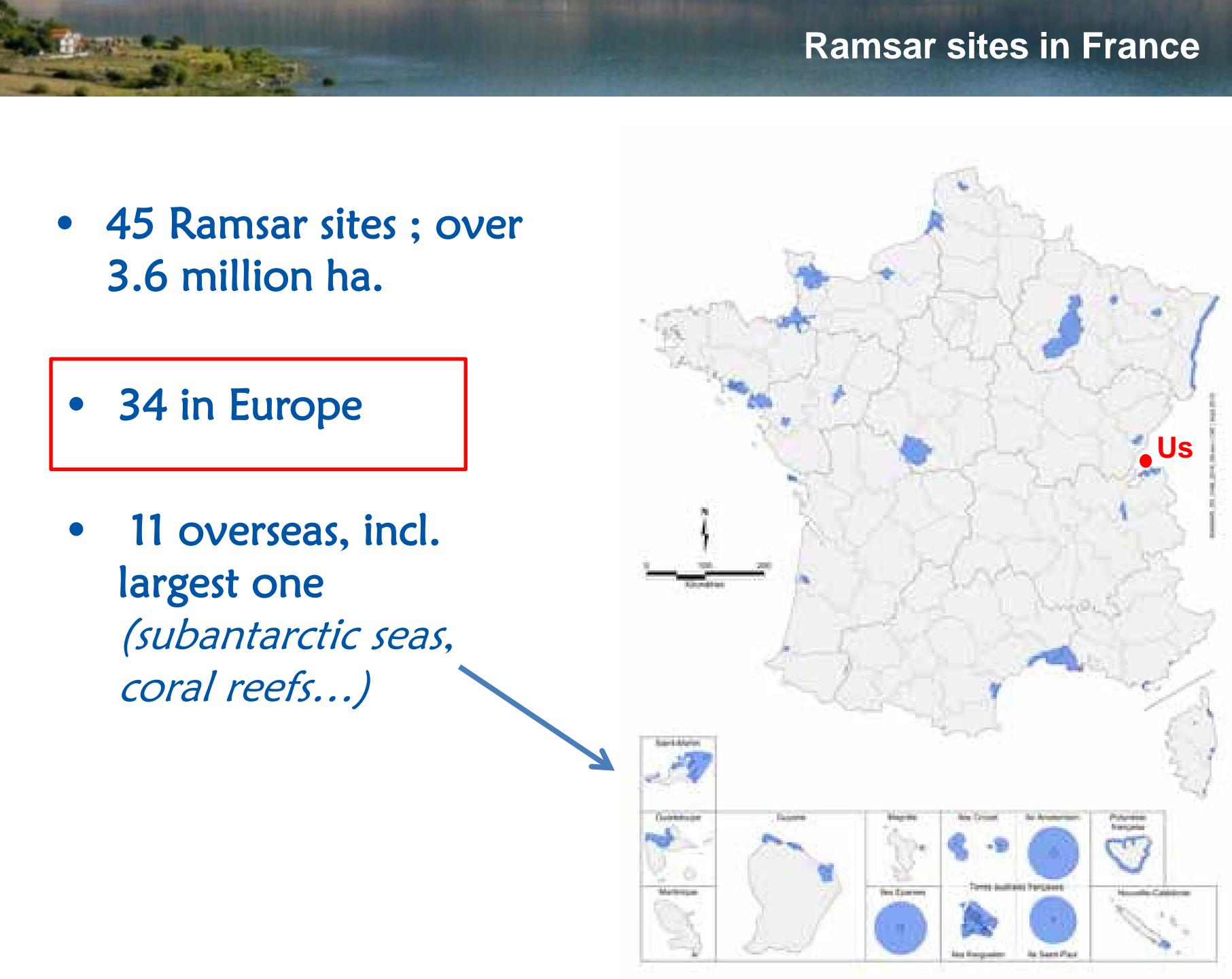
Ramsar STRP20

Gland, CH, February 2017



C.Perennou, A.Guelmami A. & E.Gaget

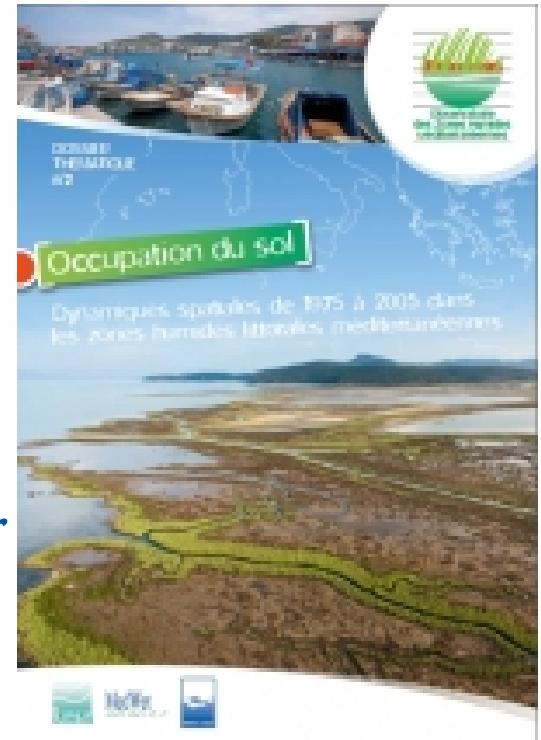


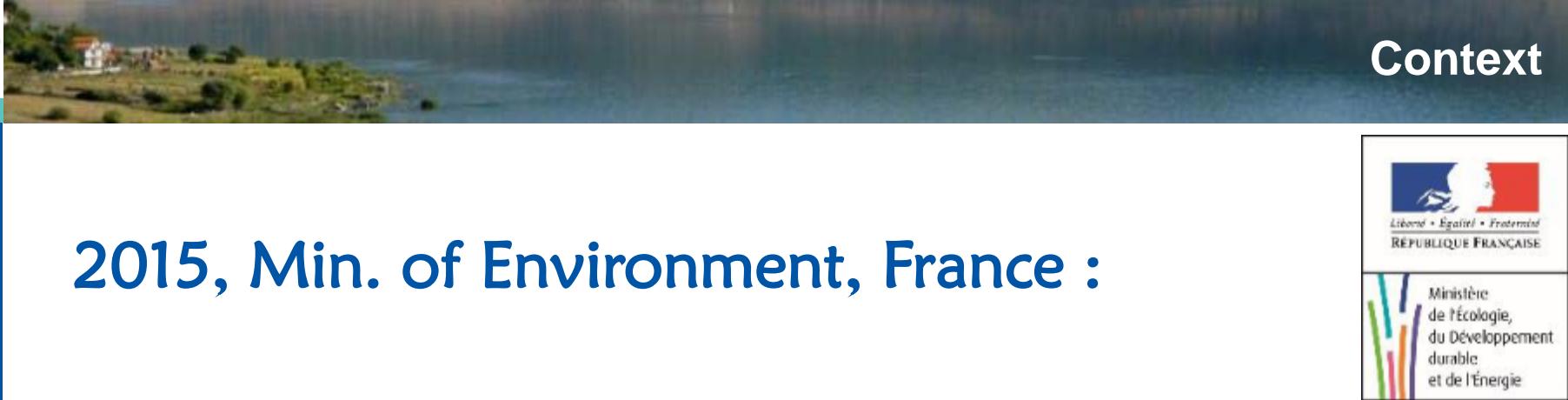




2009-2014, GlobWetland2 & Mediterranean Wetland Observatory :

- Evolution of land-cover in 214 coastal mediterranean wetland sites (*Ramsar sites , IBAs, etc.*),
- From LandSat images ; Toolbox
- Support from European Space Agency





2015, Min. of Environment, France :

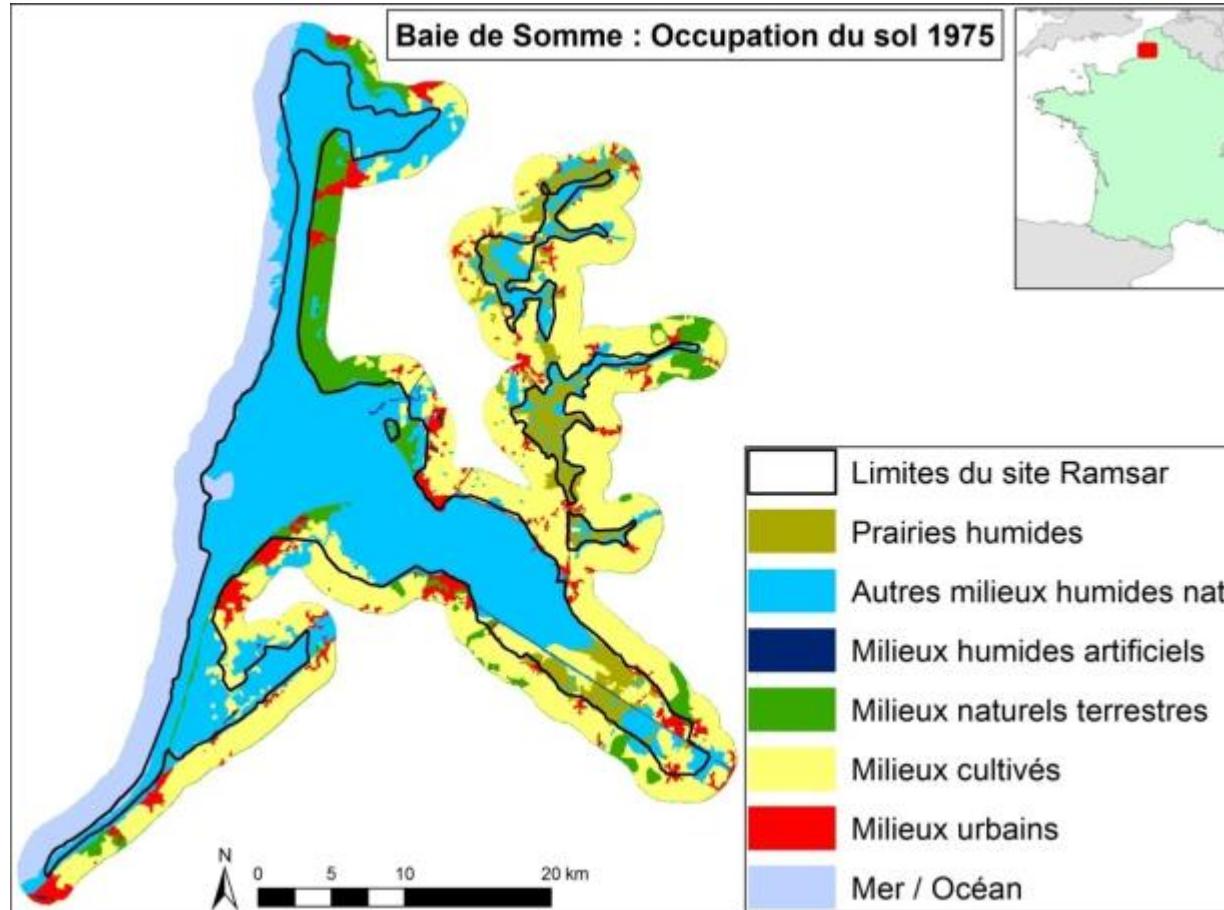
- Apply GW2 method to the then 32 Ramsar sites in metropolitan France (8,045 km²), as part of national Wetlands Observatory (*Overseas → too challenging habitats*)
- Final report 2016 (+Summary 4-page brochure)
http://www.naturefrance.fr/sites/default/files/fichiers/ressources/pdf/161003_brochure_ramsar_occ-sol_tome_1_complet.pdf
- Partner : Ramsar-France Association





Semi-automatic classification (GW2 Toolbox)

→ 3 Land-cover
maps per site :
1975, 1990, 2005

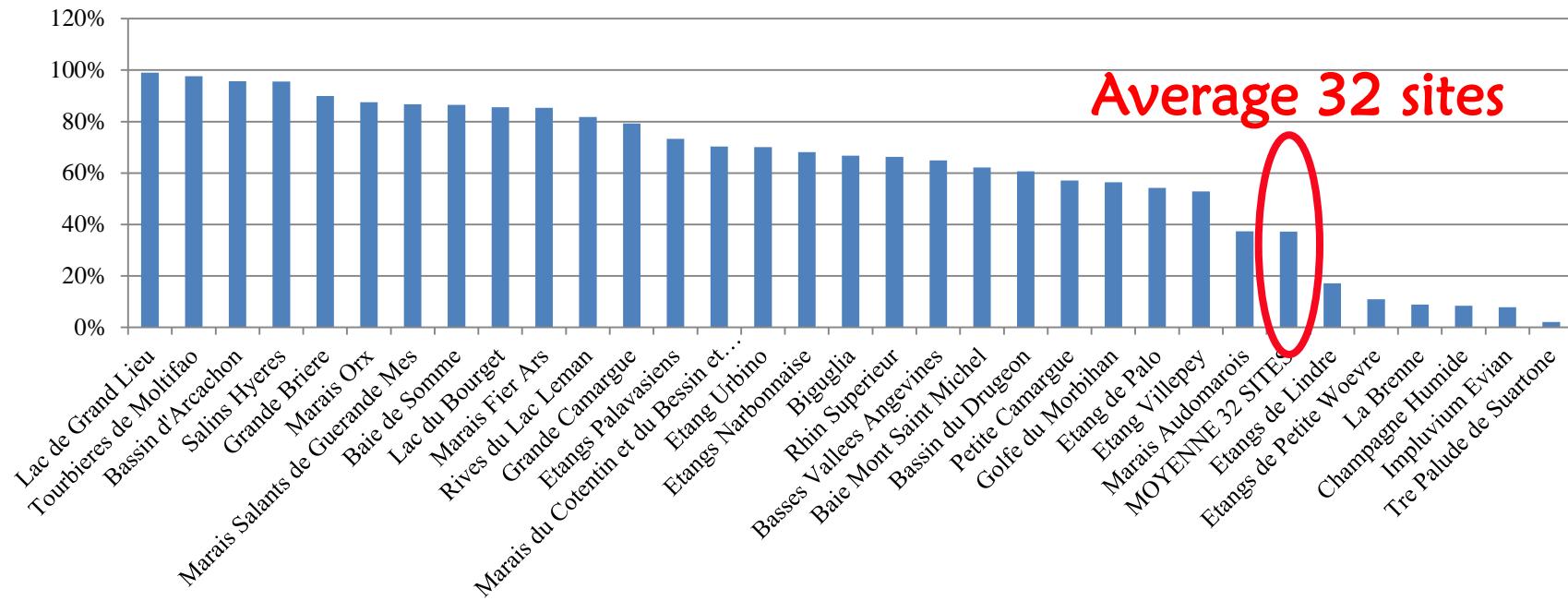




I. HOW MUCH WETLAND HABITAT IN RAMSAR SITES ?



% wetland habitats in Ramsar sites

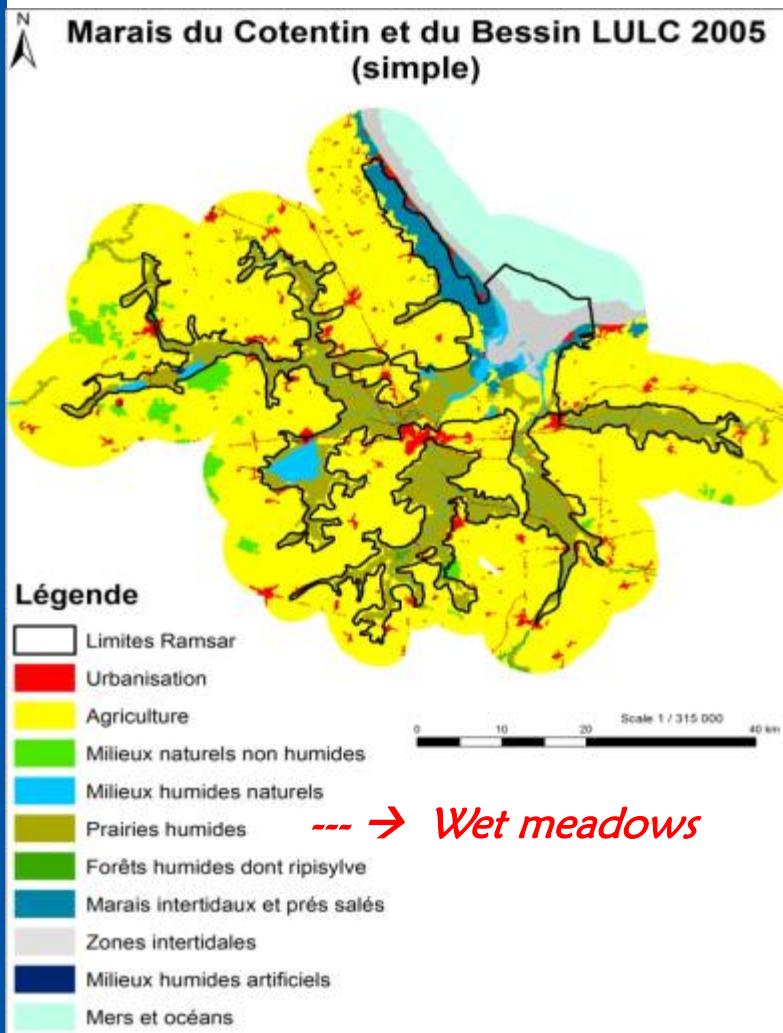


- Overall, wetland habitats cover just **39%** of the 32 Ramsar sites
- 3 out of 4 sites : $> \frac{1}{2}$ area in wetland habitat
- Proportion of wetlands depends on designation option :

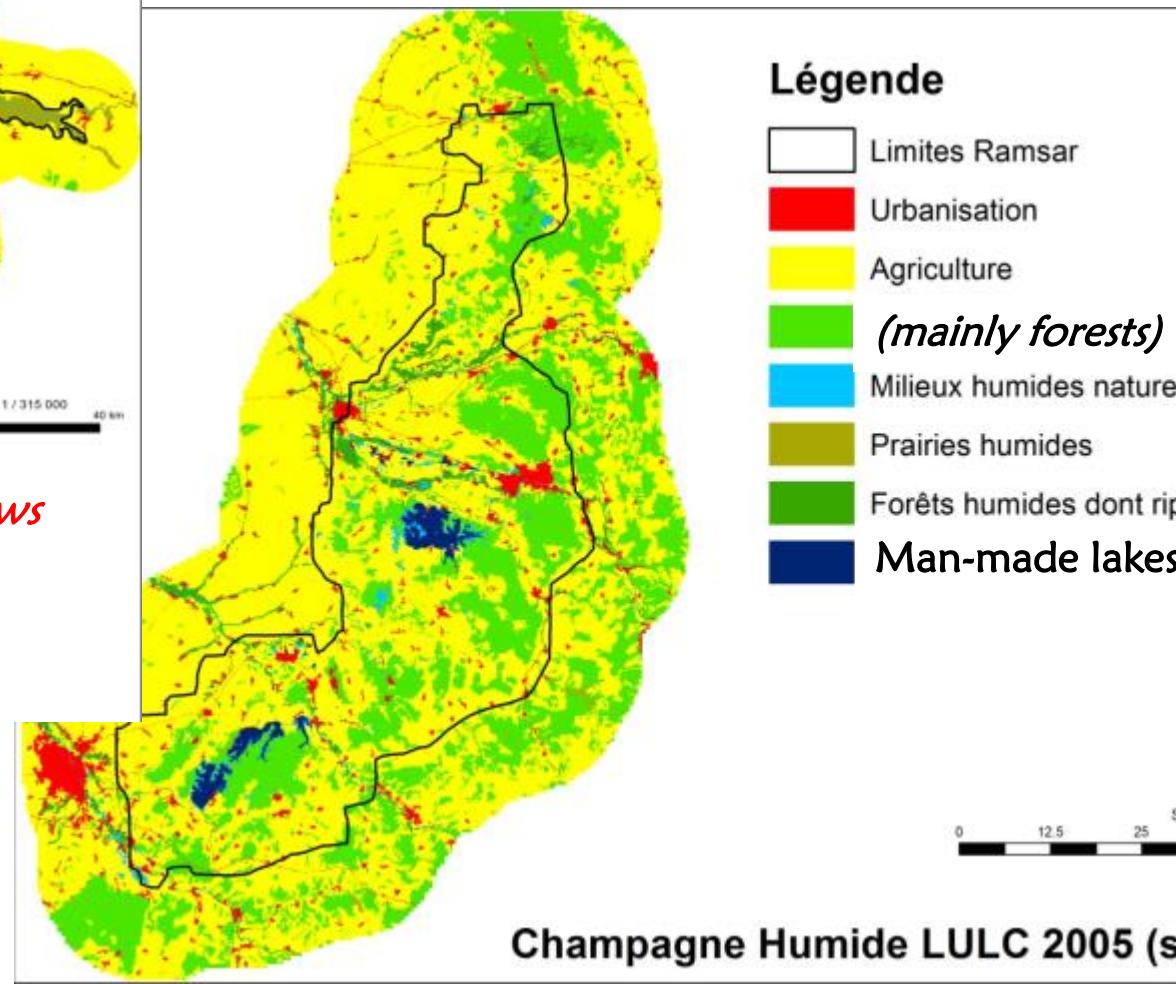




Variable Ramsar site boundaries



← Over 70% wetland habitats



8% wetland hab. →



“ Ramsar sites are wetlands that ... ”

“ Ramsar sites contain wetlands that ... ”

cf. also Algeria : wetland habitats c. 35%

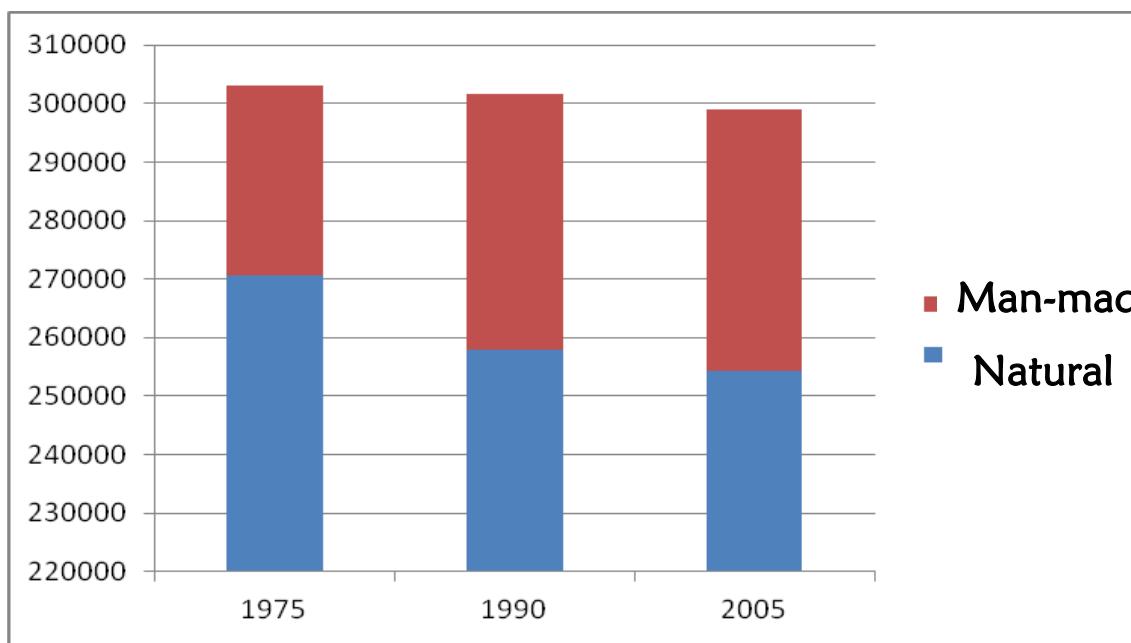




II. HOW MUCH WETLAND LOSS / GAINS ?



1975 - 2005 : Changing area of wetland habitats

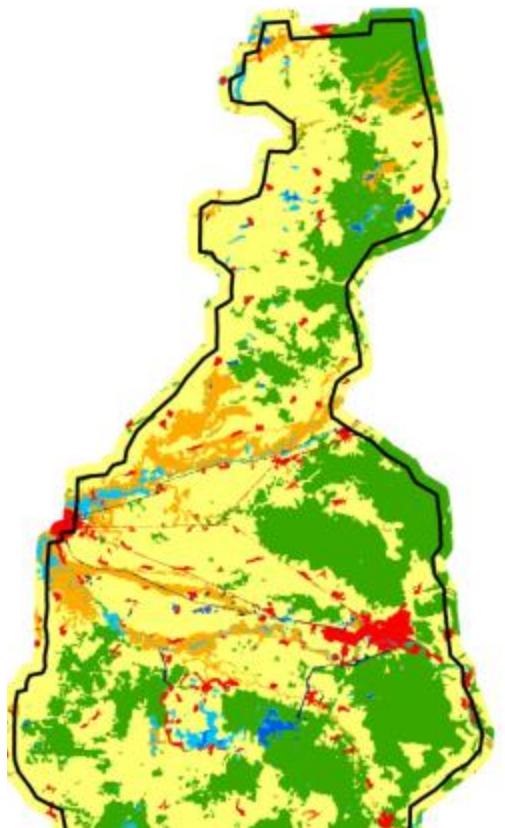


- Slight loss of wetland habitats overall , 1975-2005 ($-1,3\%$, i.e. -3300 ha).
- Double dynamics :
 - Loss of natural wetlands : $-16\,400$ ha ($-6,1\%$)
 - Large increase, man-made wetlands : $+12\,400$ ha ($+38,1\%$)
- Changes mainly concentrated in 1975-90
- In some better-known sites (e.g. Camargue), main wetland losses occurred before study period)

Champagne Humide : Occupation du sol 1975

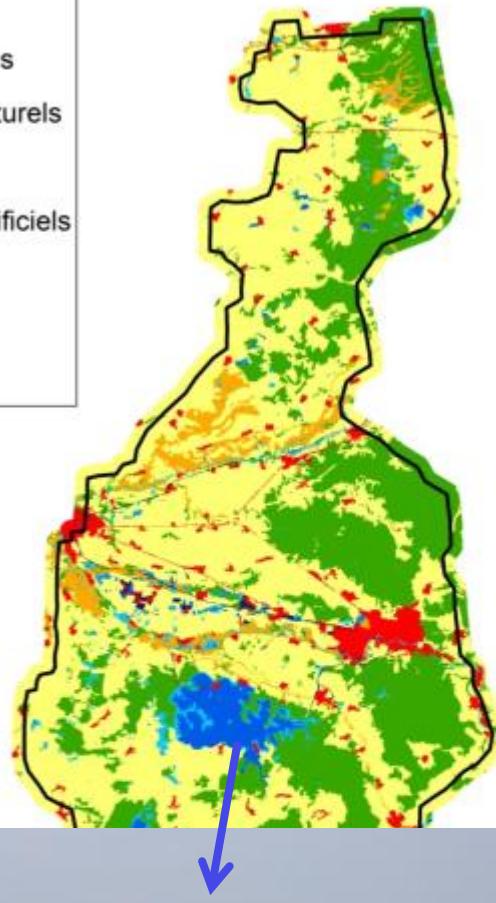
Develop. of
man-made
wetlands

(+5,600 ha)



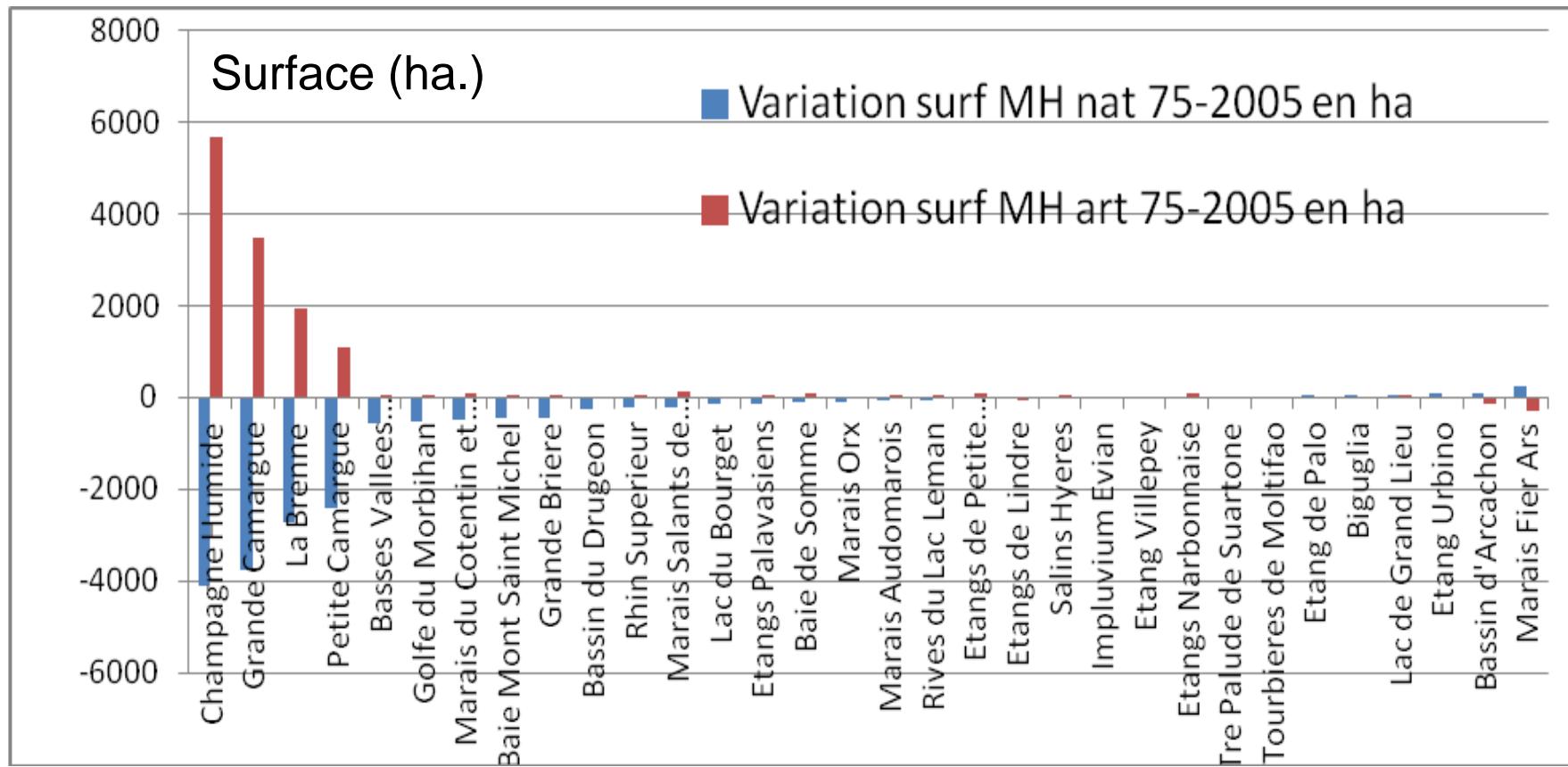
Champagne Humide : Occupation du sol 2005

- Limites du site Ramsar
- Ripisylves et forêts humides
- Autres milieux humides naturels
- Lacs artificiels
- Autres milieux humides artificiels
- Milieux naturels terrestres
- Milieux cultivés
- Milieux urbains





Natural vs. man-made wetlands



Sites with highest loss of **natural wetland habitats**

= same as those that gained most **man-made habitats**



Habitat types (**CAUTION !!!**)



Greatest losses 1975-2005:

- Marshes & lagoons,
- Wet forests
- Wet meadows

Increased most :

- Man-made lakes & ponds

CAUTION :

***Mapping at this habitat
level may not be
sufficiently reliable...***





III. URBAN & AGRICULTURE PRESSURES



% of total area of 32
Ramsar sites (2005) Trend
1975-2005

- Agriculture (excl.
Wet meadows) 40 - 41% + 3,9%
- Urban/
infrastructure 2 – 2,7% +39%



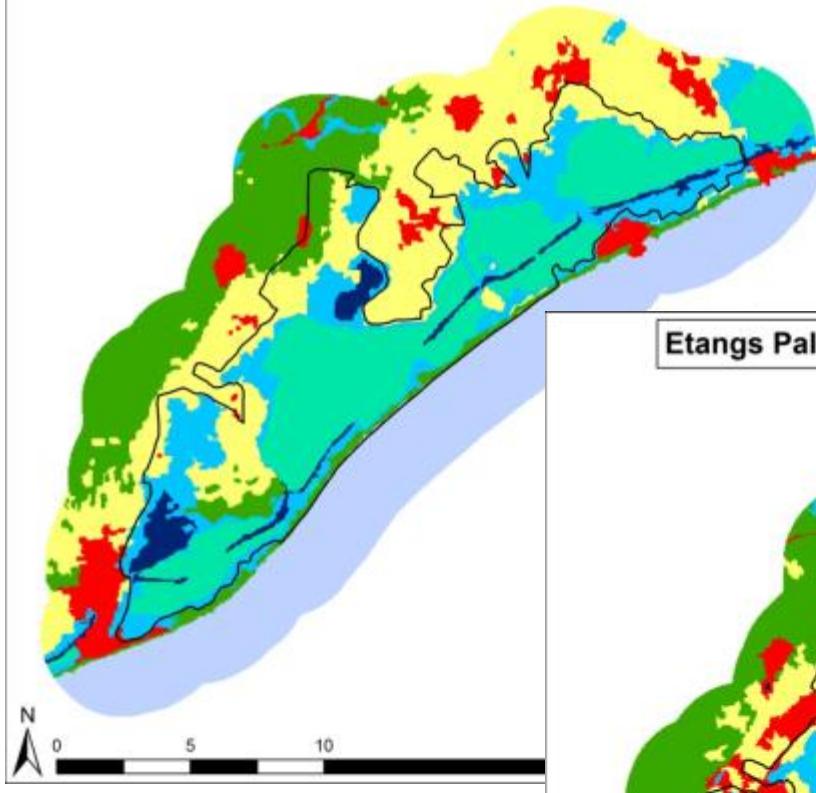


- Urban sprawl rate identical (+39%)
- ... but net increase of Urban higher around (+14,000 ha) than inside (+6,000 ha) Ramsar sites
(periphery = 44% of Ramsar sites area)

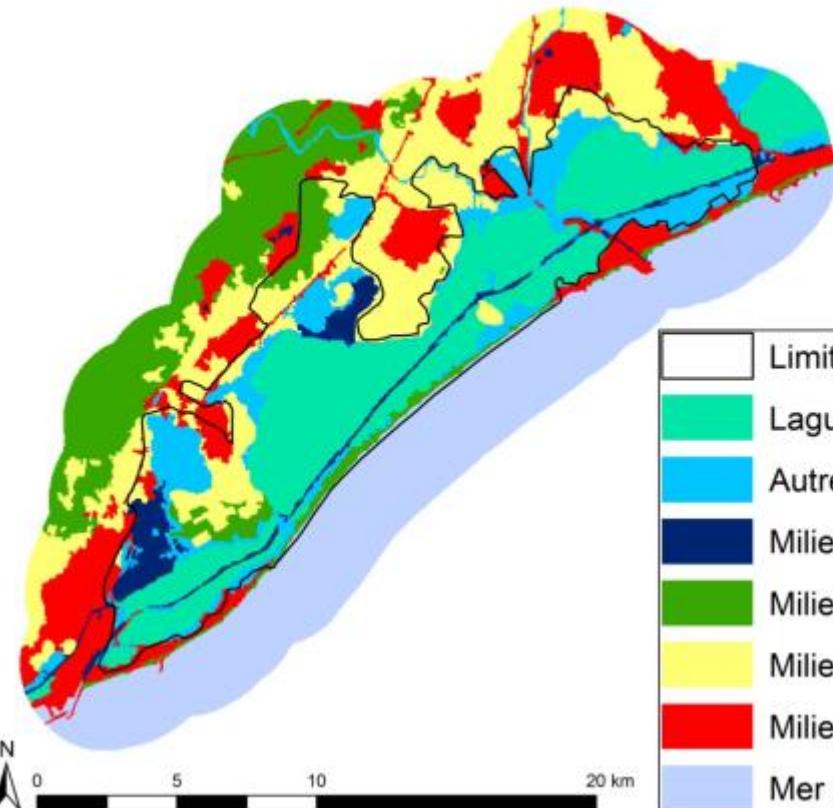


Urban sprawl

Etangs Palavasiens : Occupation du sol 1975



Etangs Palavasiens : Occupation du sol 2005



...often more prominent
immediately around Ramsar
sites than inside



	Limites du site Ramsar
	Lagunes
	Autres milieux humides naturels
	Milieux humides artificiels
	Milieux naturels terrestres
	Milieux cultivés
	Milieux urbains
	Mer / Océan



- Conversion (*Agriculture → Urban*) : 3-4 times higher around than inside Ramsar sites
- Conversion (*Nat. Wetlands → Farmland*): twice higher around than inside (*4 times higher for Wet meadows – main wetland type in France*)



So...

- A positive effect of Ramsar designation ?
- ... or Ramsar designation focussing on nationally protected areas/ prestigious sites, with a sense of local « ownership » ?
- 2 Ramsar site managers → “*Surrounding land is higher, drier, so easier to convert*”

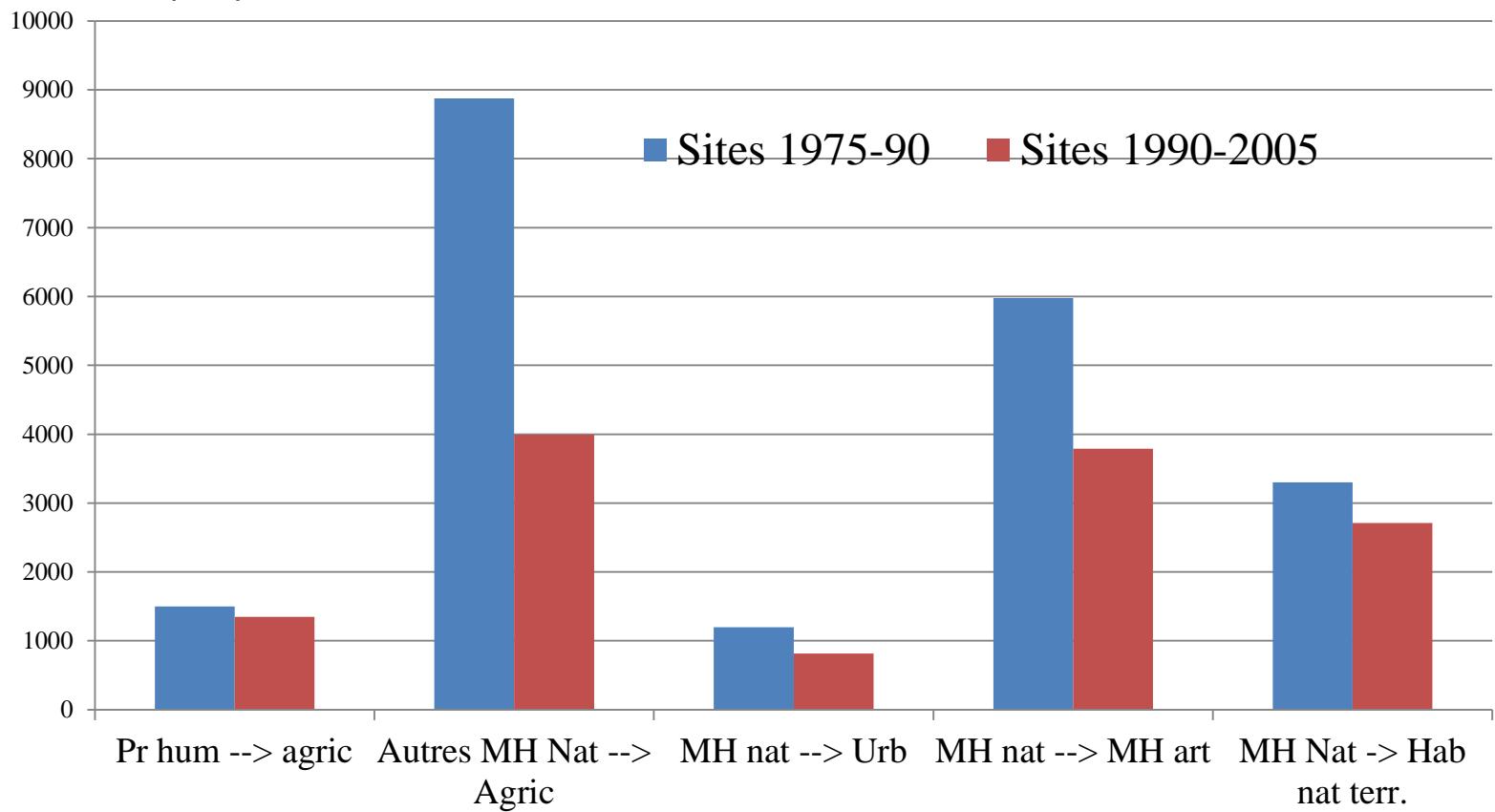
→ debate still open



IV. RECENT SHIFTS ?



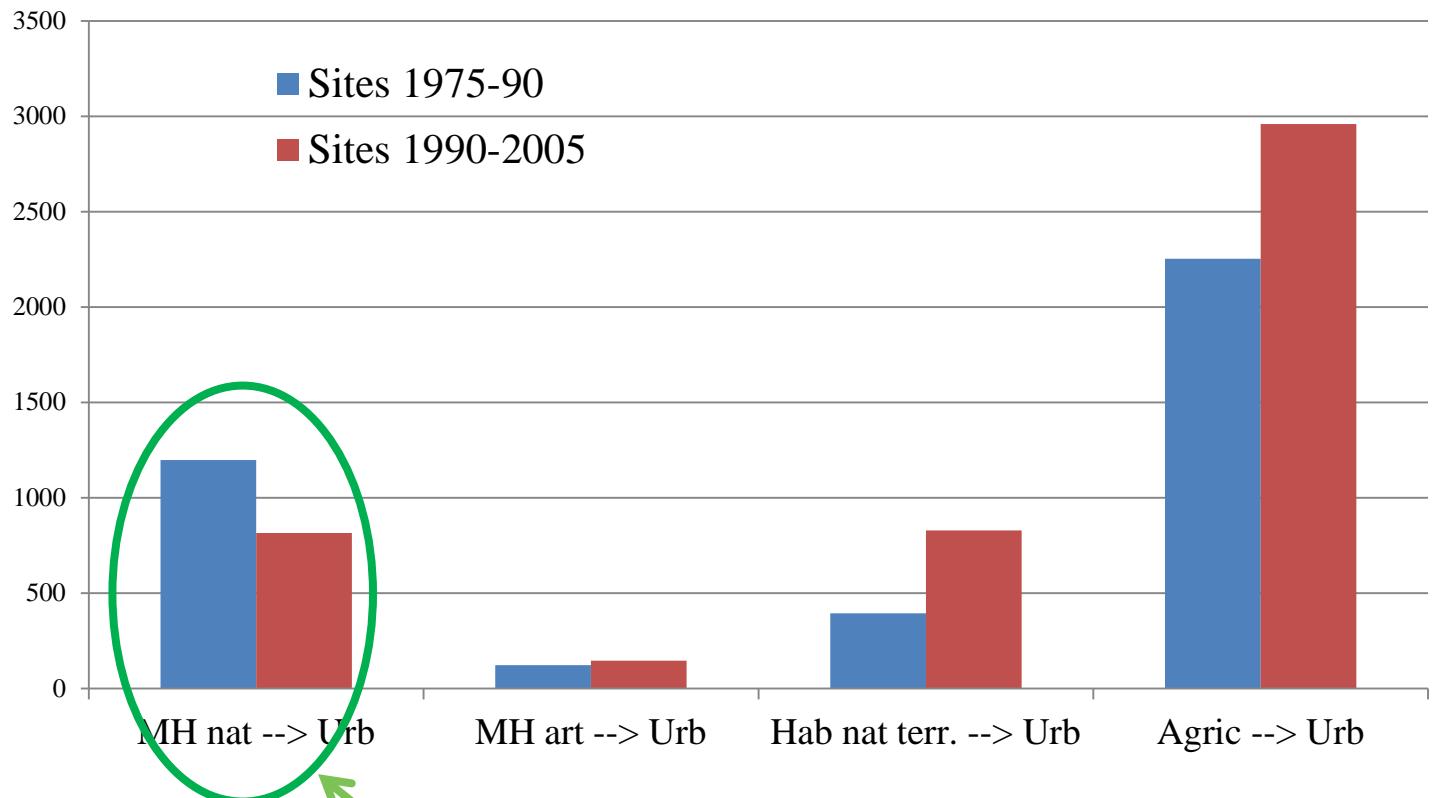
Surfaces (ha)



Slow-down of natural wetland habitat conversion ?
(since 1990)



Surfaces (ha)



... but an accelerating urban sprawl inside Ramsar sites ?

(slowing down on natural wetland habitats ?)



Landsat images appropriate for assessing trends in wetland sites, overall

...but not necessarily for each site individually (*esp. the smallest ones*)

Advantages = retrospective & homogeneous vision over all sites (*contrary to local managers' maps : usually more precise/ detailed, but too heterogeneous for national assessments*)

Trends of Ramsar sites : not necessarily representative of wetlands in France in general (fare better?)

TOUR DU VALAT

*THANKS FOR
YOUR
ATTENTION !!*

www.tourduvalat.org



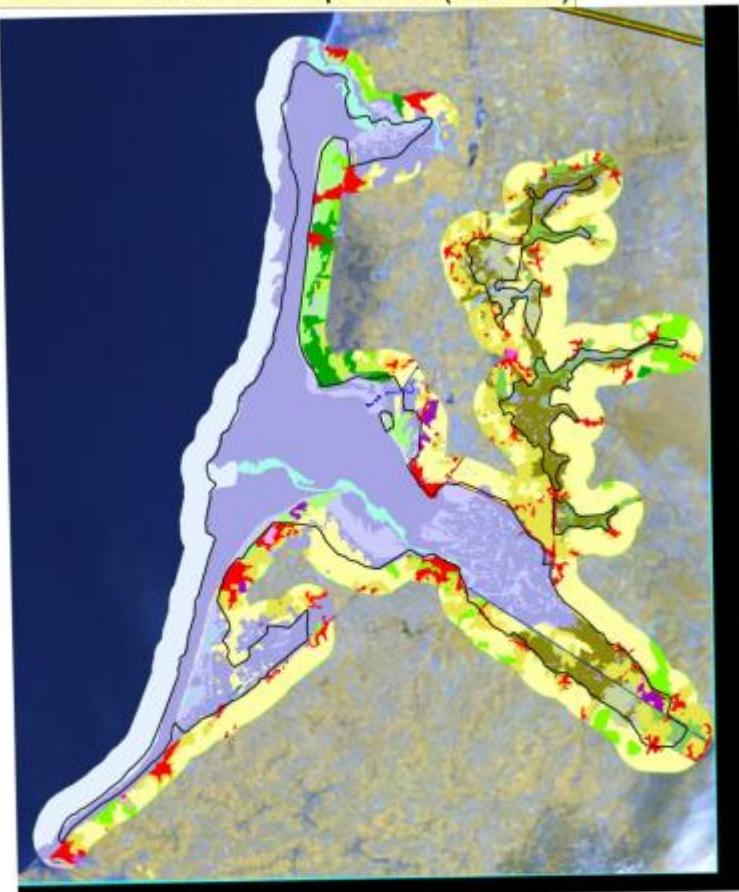
Centre de recherche pour la
conservation
des zones humides
méditerranéennes





Semi-automatic classification (GW2 algorithm)

Baie de Somme LULC map 1975 (France)



From detailed maps (upto 42 wetland classes ; mixed Ramsar-CORINE LC nomenclature)...

CLC 112: Discontinuous urban fabric	CLC 321: Natural grassland
CLC 121: Industrial or commercial units	CLC 322: Mires and heathland
CLC 122: Road and rail networks and associated land	CLC 3241: Shrub-dominated wetlands; shrub swamp, shrub- scrub, scrub forest
CLC 123: Port areas	CLC 331: Beaches, dunes, and sand plains
CLC 131: Mineral extraction sites	CLC 411: Intertidal marshes
CLC 133: Excavations; gravel/brick/dry pits, borrow pits, mining pools	CLC 421: Salt marshes
CLC 141: Construction sites	CLC 431: Intertidal flats
CLC 143: Green urban areas	CLC 4311: Intertidal mud, sand or salt flats
CLC 211: Non-irrigated arable land	CLC 5112: Permanent rivers/meanders/crevices; includes waterfalls
CLC 221: Pastures	CLC 5111: Canals and drainage channels, ditches
CLC 231: Wet pastures	CLC 5212: Intertidal water bodies
CLC 242: Complex cultivation	CLC 530: Ponds; includes farm ponds, work ponds, small lakes
CLC 311: Broad-leaved forest	CLC 532: Estuaries
CLC 312: Wet forests including riparian	CLC 533: Rias and inlets
CLC 212: Coniferous forest	



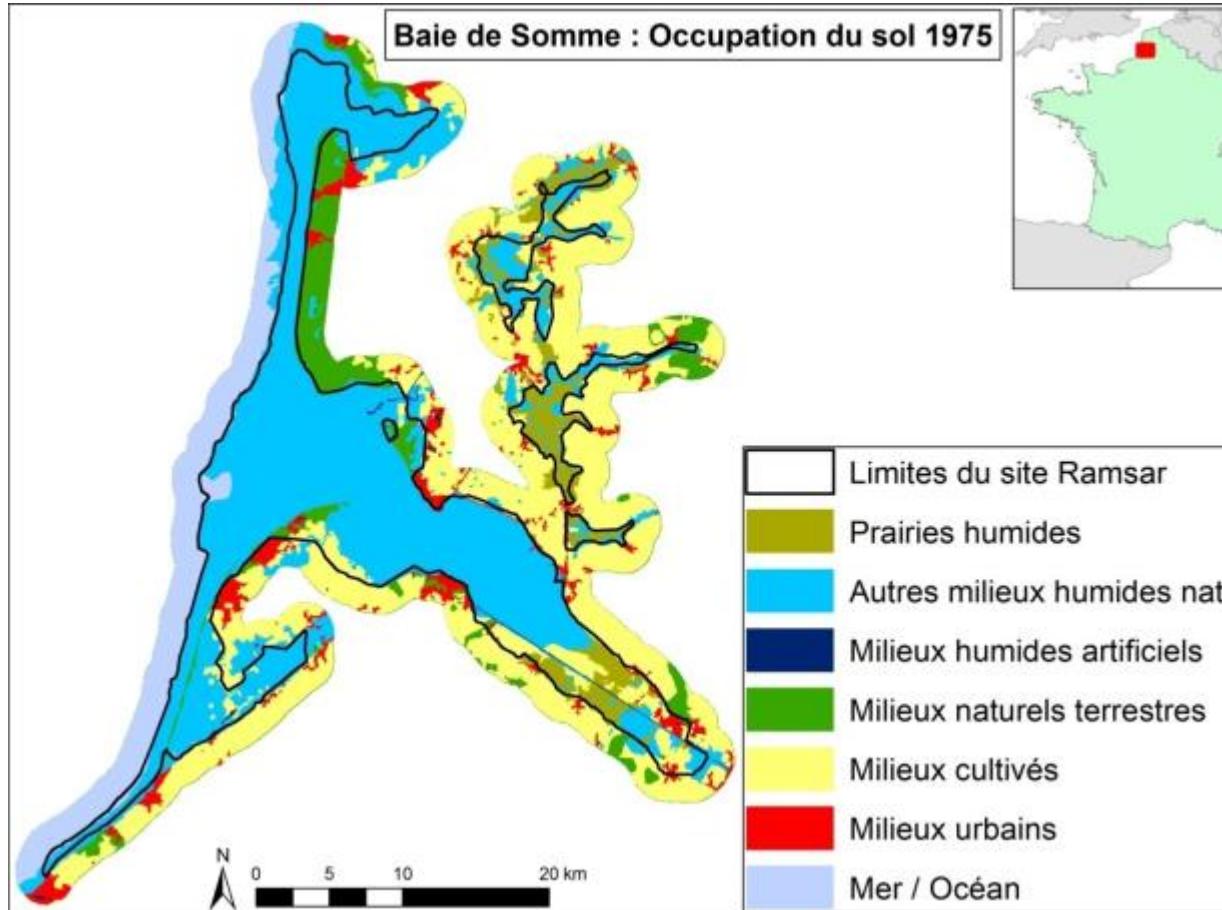


Semi-automatic classification (GW2 algorithm)

...to simplified,
more robust maps

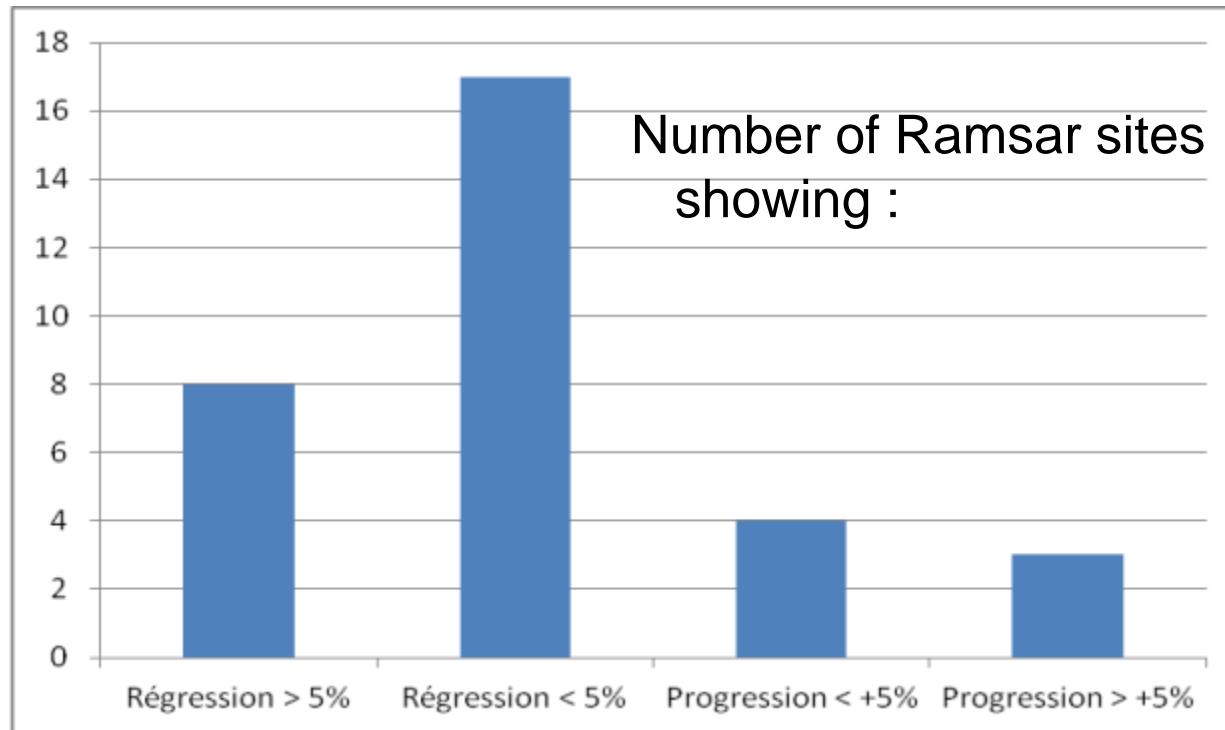
(6-8 broad land-
cover classes)

→ 3 maps / site :
1975, 1990, 2005





Trends in Wetland extent : contrasted situations

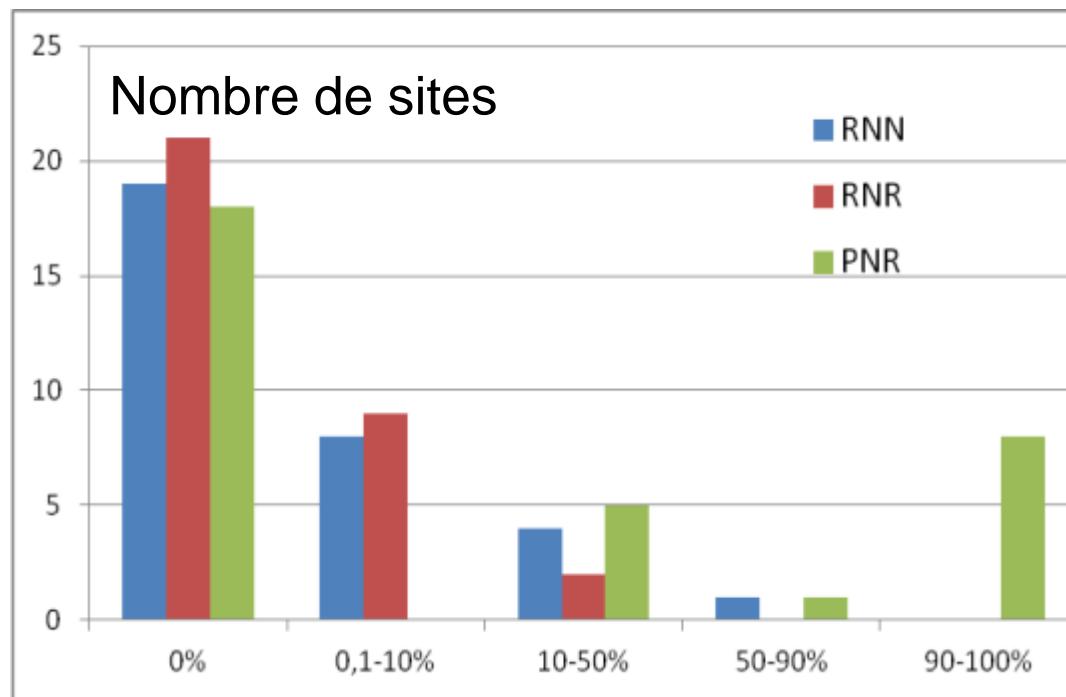


¼ of sites : overall increase in wetland habitats (upto +11%)

¾ of sites : net loss (*maximum = Petite Camargue, -1400 ha*)



Protection level of Ramsar sites



-1% - 5% under each of the « strong » protection status (*Nature Reserve, Coastal Conserv. Trust*)

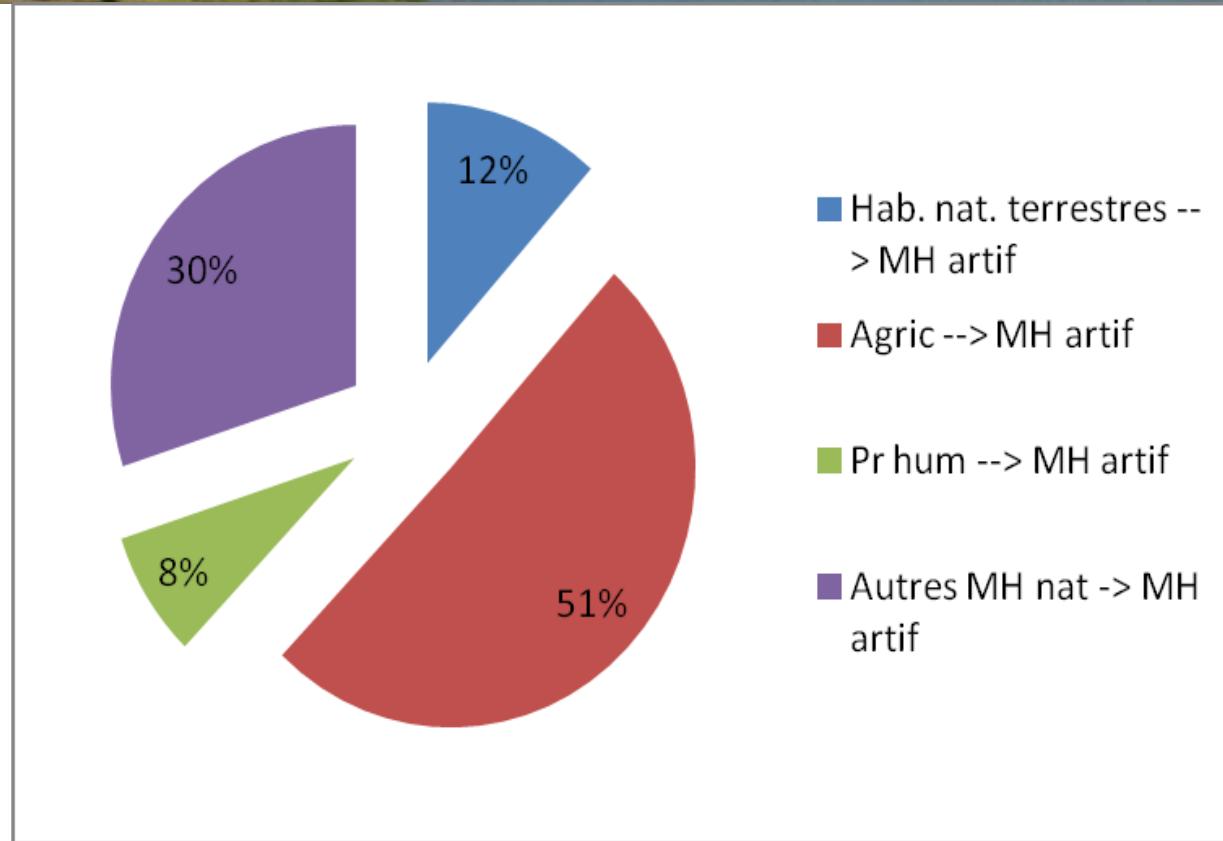
-c. half : Regional nature park (« soft » / landscape protection)

- c. half : Natura 2000

(source : crossing with INPN database)



Origin of man-made wetland habitats



- $\frac{1}{3}$ = natural wetlands
- $\frac{1}{2}$ = farmland, esp. in Camargue (*Dry crops → Ricefields*) and Wet Champagne region (*Farmland → reservoirs & gravel-pits*)



ATTENTION !!!

- Méthode GlobWetland2 → chaque site = un simple échantillon
- Objectif = évolution globale des 32 sites ;
- Pas les changements fins à l'échelle de sites spécifiques
- Cartes par sites = simples illustrations de tendances globales