

Lagunes côtières :Thèse Mariam Maki Sy (services écosystémiques) et l'étude sur régimes de propriétés

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Conception thèse Mariam Maki Sy

- Etude perception et évaluation (non-monétaire) des services écosystémiques par les parties prenantes (Palavas –GAM et Biguglia¹⁾). Méthode Q et interview face-à-face
- Etude perception et évaluation (non-monétaire) des services écosystémiques par les citoyens familiers avec les lagunes (Palavas). Ateliers citoyens et méthode Q.
- Etude perception et évaluation (non-monétaire) des services écosystémiques par les citoyens (niveau national). Questionnaire (sous-traitance pour mise en-ligne et garantie nombre de réponses)
- 1) Merci à Carole Haerty (stagiaire M2)

Conception thèse Mariam Maki Sy

- Etude perception et évaluation (non-monétaire) des services écosystémiques par les parties prenantes (Palavas –GAM et Biguglia). Méthode Q et interview face-à-face (article soumis en cours de correction)
- Etude perception et évaluation (non-monétaire) des services écosystémiques par les citoyens familiers avec les lagunes (Palavas). Ateliers citoyens et méthode Q. (en cours – ateliers 2017 et 2018)
- Etude perception et évaluation (non-monétaire) des services écosystémiques par les citoyens (niveau national). Questionnaire (sous-traitance pour mise en-ligne et garantie nombre de réponses). Conception questionnaire presque bouclée, mise en-ligne 2018)

	Palavas site ⁽¹⁾	Biguglia site
Total lagoon surface	3,880 ha	1,460 ha
Geographic coordinates	43.51°N – 3.88 °E	42.60 °N – 9.48 °E
Average depth	0.4 m ⁽²⁾ to 1.2 m ⁽³⁾	1.5 m
Fringing wetland surface	2,120 ha	518 ha
Main urban center (population size)	Montpellier (260,000)	Bastia (40,000)
Watershed surface	60,000 ha	18,000 ha
Total population in watershed	420,000 inhabitants	26,663 inhabitants
Trophic status before management implementation	mesotrophic ⁽⁴⁾ to hypertrophic ⁽⁵⁾	eutrophic to hypertrophic
Years of major management implementation	2005	2007
Nature Reserve		Since 1994
Natura 2000	SCI ⁽⁶⁾ - 6,600 ha (FR9101410); SAC ⁽⁷⁾ - 6,600 ha (FR9110042)	SCI - 1,808 ha (FR9410101); SAC – 1,978 ha (FR9400571)
Ramsar	since 2008	since 1991

Nature Conservation measures implemented earlier (since 1991, cf 2007 in Palavas) in Biguglia after acquisition by Department Haute Corse

Water quality management implementation comparable (cf WFD – major measures 2005-2007)

ES categories	ES subcategories	S#	Statement	General definition	
Provisioning services	Food provision	15	Shellfish resources	The provision of biomass for human consumption and the conditions to grow it. It mostly relates to cropping, animal husbandry and fisheries.	
		19	Biomass for grazing		
		21	Crops		
		22	Shellfish farming		
		23	Fish resources		
		30	Fish farming		
		29*	Commercial inland navigation or Hydrological regulation		The provision of water for human consumption and for other uses.
Regulation and maintenance services	Water purification	14	Purification capacity	Biochemical and physicochemical processes involved in the removal of wastes and pollutants from the aquatic environment.	
		20	Wastes decomposition		
Regulation and maintenance services	Coastal protection	5	Flooding and other extreme events regulation and protection	Protection against floods, droughts, hurricanes and other extreme events. Also, erosion prevention in the coast.	
		13	Banks reinforcement		
	Climate regulation	25	Microclimate regulation	Regulation of greenhouse and climate active gases. The most common proxies are the uptake, storage and sequestration of carbon dioxide.	
Cultural services	Symbolic and aesthetic values	3	Nursery and biodiversity maintenance	Biological and physical support to facilitate the healthy and diverse reproduction of species.	
		2	Aesthetic value of landscapes		
		7	Local identity		
		9	Aesthetic value of habitats or species		
	Recreation and tourism	Recreation and tourism	11	Historical sites	Opportunities that the natural environment provide for relaxation and amusement.
			4	Recreational boat navigation	
			8	Non-motorized water sports	
			12	Bird watching	
			16	Cycling	
			17	Horse riding	
			18	Water based hunting	
24			Sentiment of relaxation		
26	Camping				
Cognitive effects	Cognitive effects	27	Recreational hiking and walking	Trigger of mental processes like knowing, developing, perceiving, or being aware resulting from natural landscapes or living organisms.	
		28	Recreational fishing		
		1	Artistic inspiration		
		6	Research opportunity		
		10	Environmental education		

Sélection de 31 services écosystémiques en partenariat avec les parties prenantes,

mais suivant la classification de Liqueste et al (2013) = adaptation CICES à des ES marins et côtiers

8

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		19	Biomass for grazing	
		21	Crops	
		22	Shellfish farming	
		23	Fish resources	
	30	Fish farming		
	Water provision	29*	Commercial inland navigation or Hydrological regulation	The provision of water for human consumption and for other uses.
Biotic materials and biofuels	31	Non-food products	The provision of biomass or biotic elements for non-food purposes.	

6

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Regulation and maintenance services	Water purification	14	Purification capacity	Biochemical and physicochemical processes involved in the removal of wastes and pollutants from the aquatic environment.
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	Coastal protection	5	Flooding and other extreme events regulation and protection	Protection against floods, droughts, hurricanes and other extreme events. Also, erosion prevention in the coast.
		13	Banks reinforcement	
	Climate regulation	25	Microclimate regulation	Regulation of greenhouse and climate active gases. The most common proxies are the uptake, storage and sequestration of carbon dioxide.
Life cycle maintenance	3	Nursery and biodiversity maintenance	Biological and physical support to facilitate the healthy and diverse reproduction of species.	

ES categories	ES subcategories	S#	Statement	General definition	
Cultural services	Symbolic and aesthetic values	2	Aesthetic value of landscapes	Exaltation of senses and emotions by landscapes, habitats or species.	
		7	Local identity		
		9	Aesthetic value of habitats or species		
		11	Historical sites		
	Recreation and tourism	4	Recreational boat navigation		Opportunities that the natural environment provide for relaxation and amusement.
		8	Non-motorized water sports		
		12	Bird watching		
		16	Cycling		
		17	Horse riding		
		18	Water based hunting		
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		27	Recreational hiking and walking		
		28	Recreational fishing		
	Cognitive effects	1	Artistic inspiration	Trigger of mental processes like knowing, developing, perceiving, or being aware resulting from natural landscapes or living organisms.	
		6	Research opportunity		
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17

$$8 + 6 + 17 = 31$$

Q-method

(William Stephenson, 1935

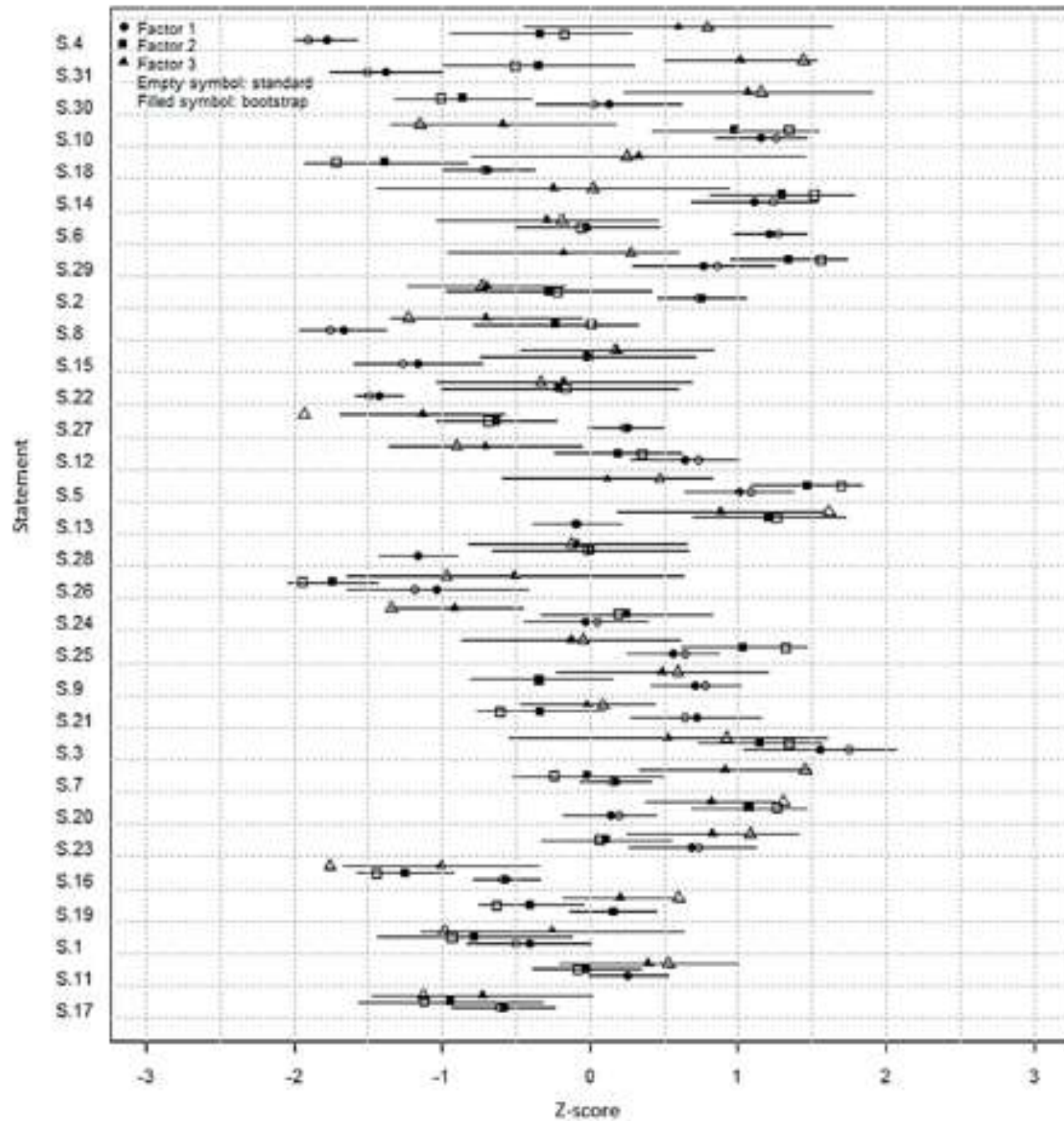
first application in ES studies Armatas et al., 2014)

(- 4) Ask for reasons

Most unimportant				Most important				
-4	-3	-2	-1	0	+1	+2	+3	+4

(+ 4) Ask for reasons



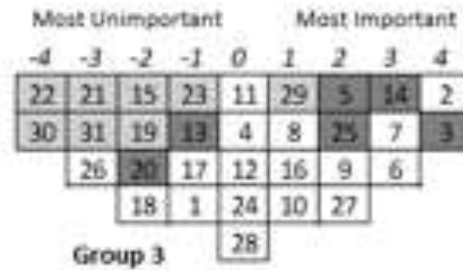
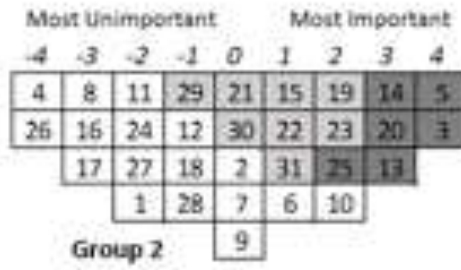
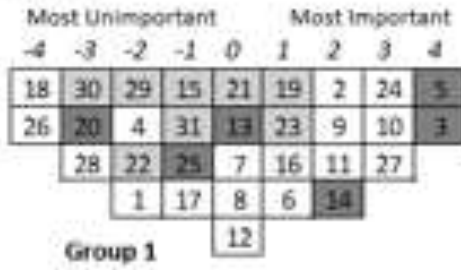


First step: Extraction of three axes by PCA and clustering

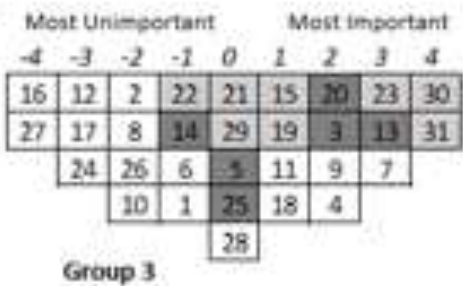
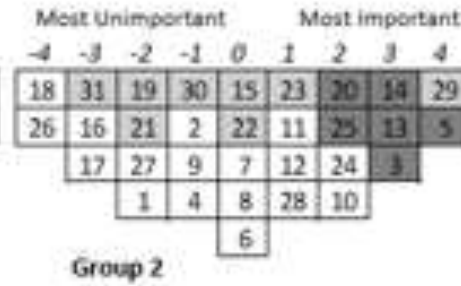
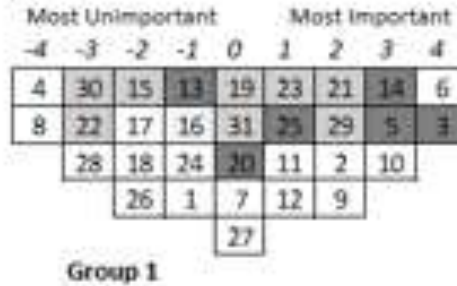
Estimation of variance based on Bootstrapping (Zabala & Pascal, 2016) using 500 iterations.

Compare average boots-trap value with real average score.

Palavas



Biguglia



Palavas

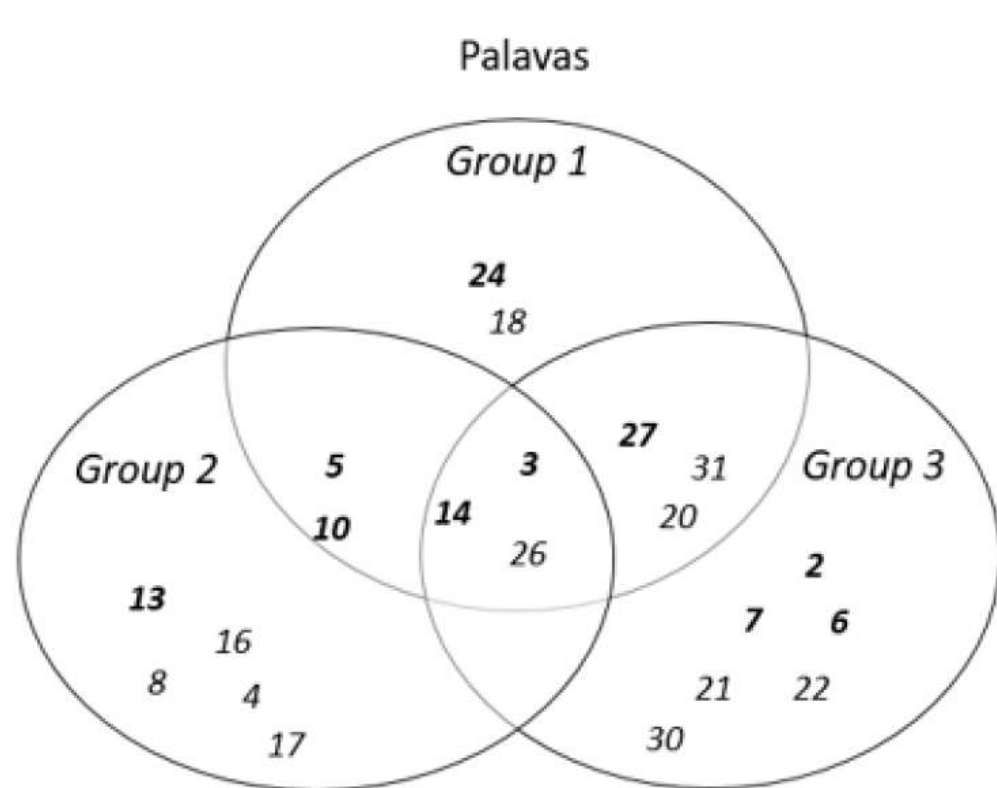
Biguglia

Total

	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	
	<i>Environmental and hedonic vision</i>	<i>Environmental and territorial approach</i>	<i>Environmental and heritage sensitivity</i>	<i>Environmental and long term conservation vision</i>	<i>Environmental and territorial approach</i>	<i>Economic and tradition</i>	

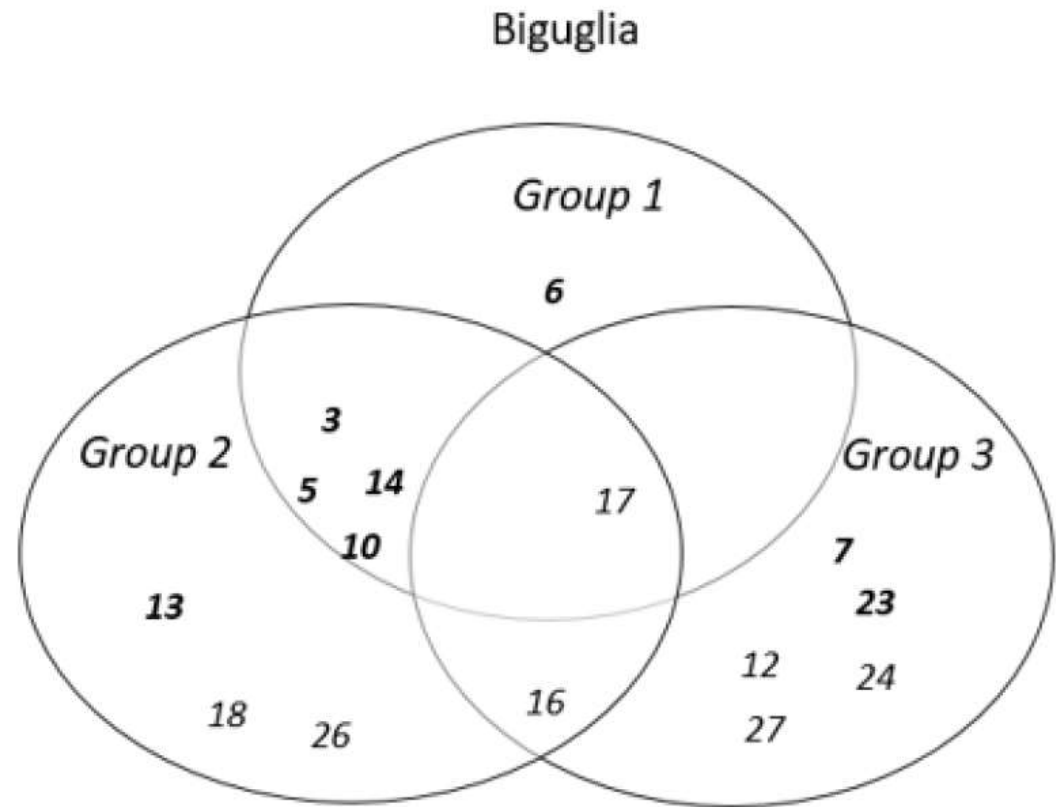
Actor Type

Public and parapublic	4	1		3	1	2	11
Local civic organisation		2	1	3	1		7
Local government	2	3	1				6
Local resident	4						4
Commercial operator	1	1	1	4	2	2	11
Managers	2	2	1	3	1		9
Scientist	1	1	1	2	1		6
Total	14	10	5	15	6	4	54



Shared most important : 3= nursery and biodiversity, 14 = water purification
 negative perception of horse-riding (rejection)

Shared negative perception of 26 camping



Shared negative perception of 17 horse-riding (rejection)

Conclusion Part 1

The use of the Q method :

1. Existence of consensus among stakeholders for the Mediterranean lagoons areas' ESs considered as a priority in terms of protection.
2. This consensus occurs between mobilized stakeholders, regardless of their institutional or demographic characteristics.
3. Strong similarities between the results of the two types of lagoons studied (Biguglia lagoon, with its status as a natural reserve, Palavas)
4. Negative scores can be ambiguous either “low importance” or “clear rejection”.

Ateliers de Citoyens (Citizen workshops)

Lattes juin 2017



Sélection de quelques diapos de la
présentation orale à Eurolag le 23 mars 2018 :



*Property regimes of Coastal Lagoons and their
implications for management*

*Rutger de Wit, Pénélope Chaubron-Couturier &
Florence Galletti*

*UMR MARBEC Centre for Marine Biodiversity Exploitation
and Conservation, Montpellier & Sète, France*



Le **DPM naturel** est inaliénable et constitué :

1- du sol et du sous-sol de la mer, compris entre la limite haute du rivage (c'est-à-dire celle des plus hautes mers), et la limite, côté large, de la mer territoriale ;

2- des étangs salés en communication directe, naturelle et permanente avec la mer ;

3- des lais et relais de la mer ;

In France the natural Maritime Public Domain is inalienable and encompasses:

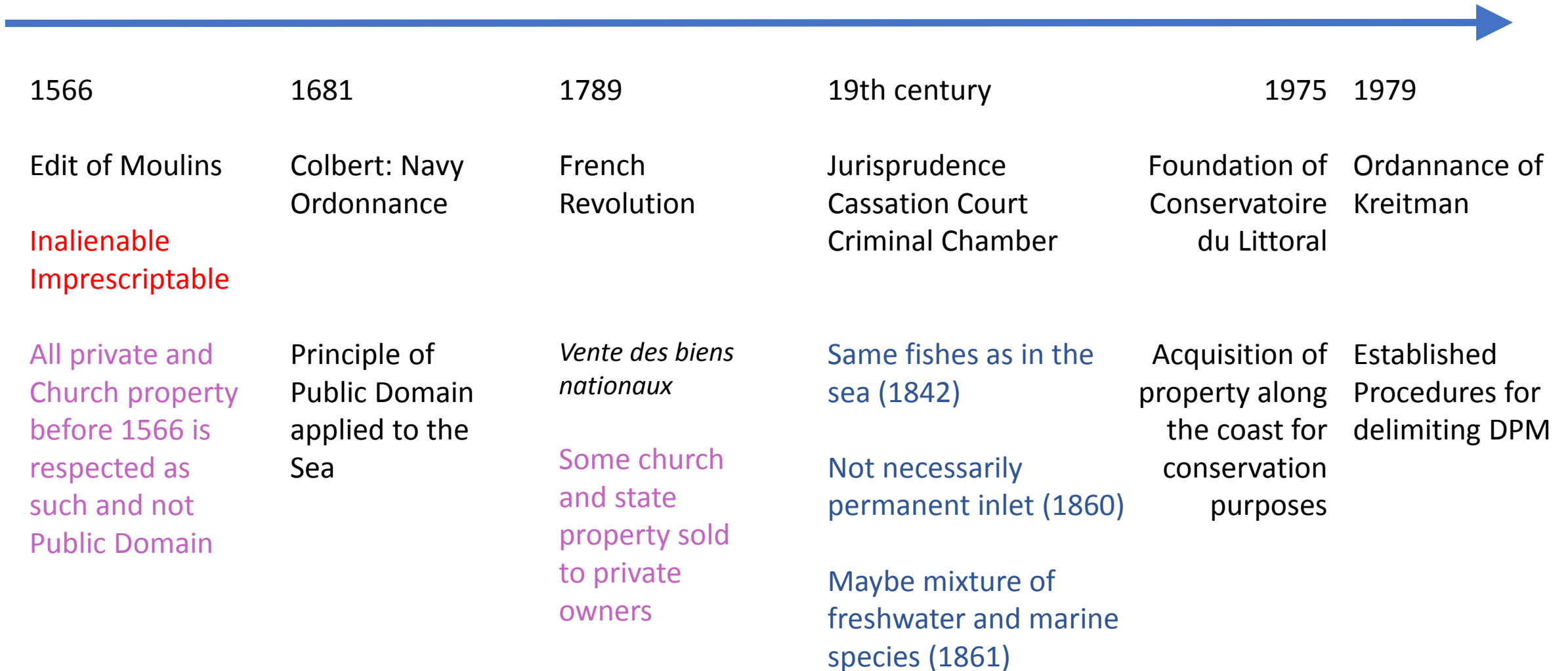
1) the seafloor and its subsurface strata between the upper level of the shoreline (i.e. those of the highest tides), and the limit of the territorial sea) ;

2) the “salty ponds” (étangs salés) = coastal lagoons with a direct, natural and permanent communication with the sea ;

3- sediment deposits of the sea along the coastline

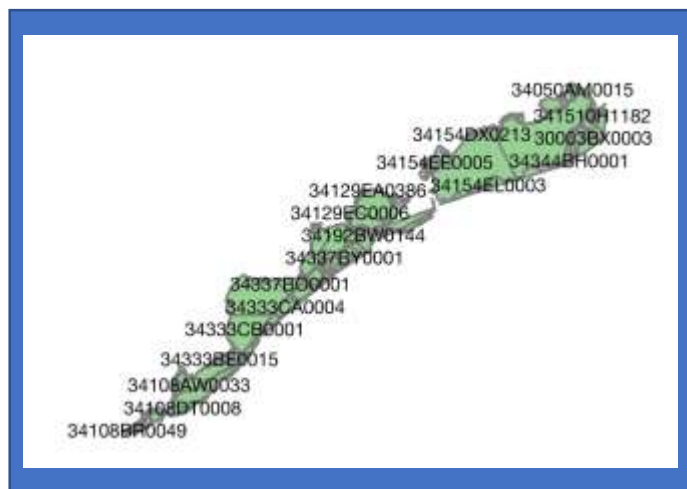
Based on this definition you would expect all coastal lagoons to be common property

Timeline

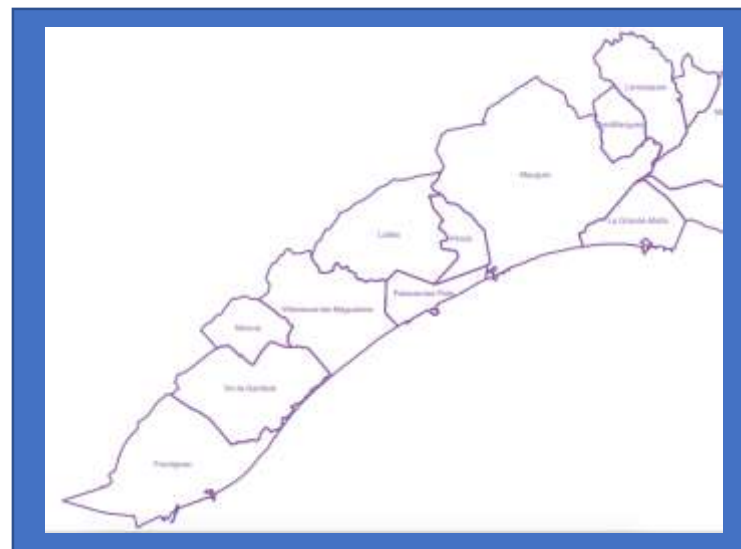


Methodology GIS - Cartography of properties (QGIS)

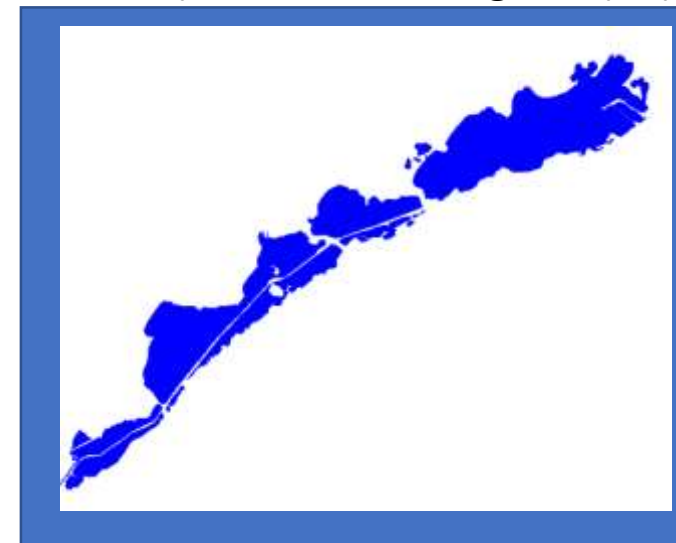
Layer cadastral map (IGN)



Layer municipalities (IGN)



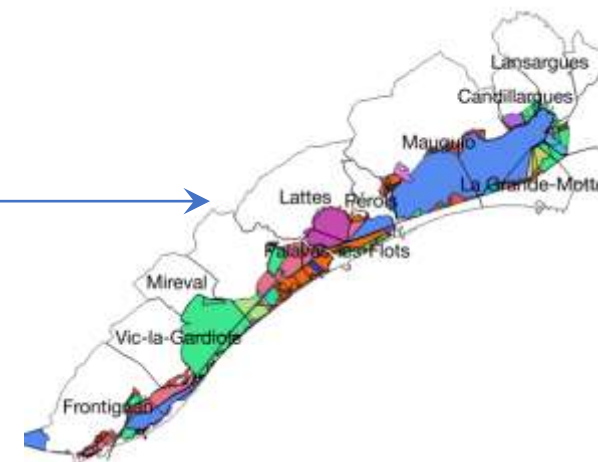
Layer Regionally improved version Corine Landcover (521 = coastal lagoons) - (OpenIG)



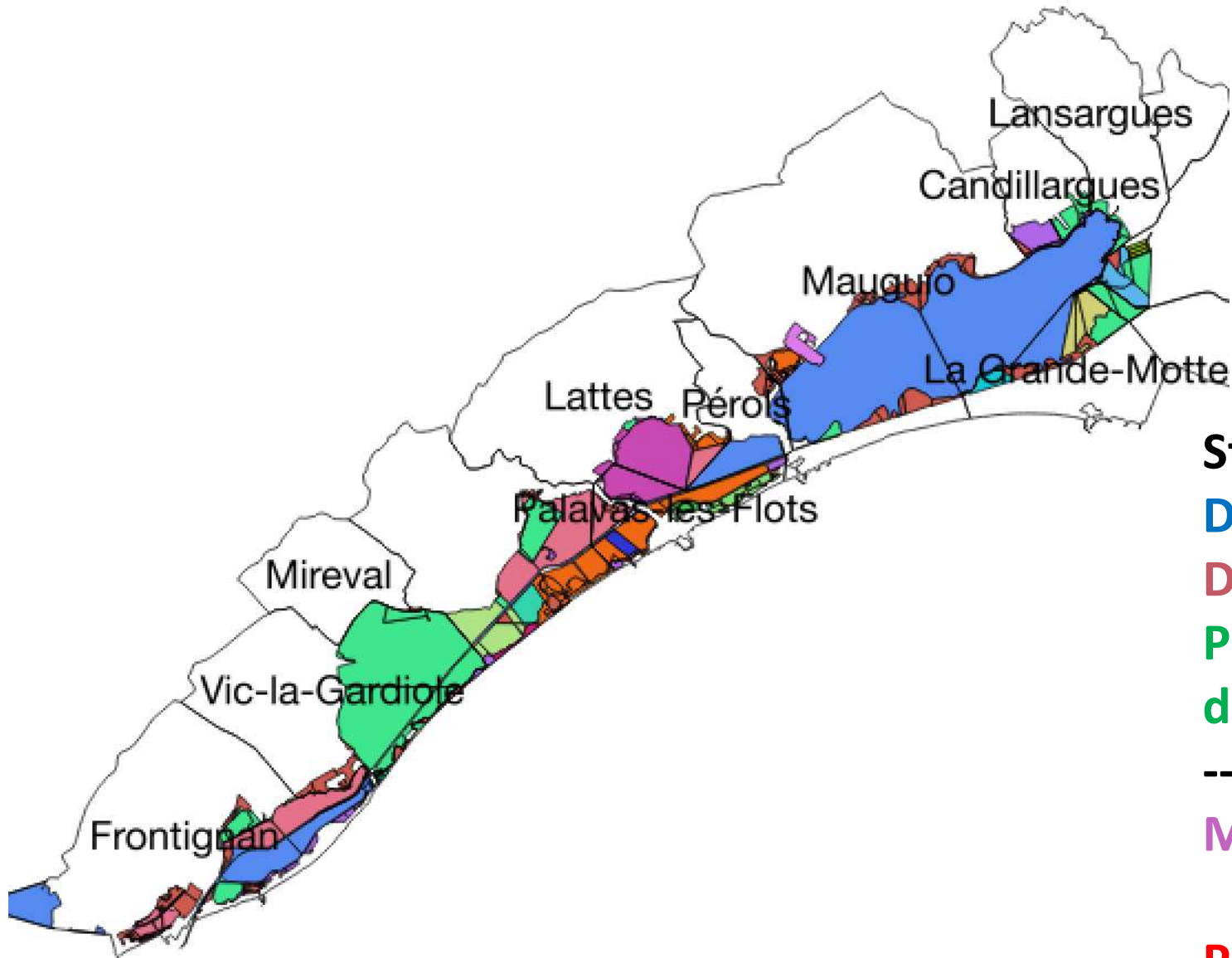
Creation of a Database

Assigning Property-regime (owner)
to each cadastral sector

Visite Rutger à l'UMR Espace (28/02 au 2/03 2018)
– Samuel Robert & Marie-Laure Apers-Tremelo



Coastal lagoons close to Montpellier Palavas complex and Or (fragmented – different property regimes, many municipalities)



State owned:

DPM - Maritime Public Domain

DPE – Private domain of the State

**Public Domain of the Conservatoire
du Littoral**

Municipalities (Lattes)

Private

Conclusions Part 2

- Fragmentation of ownership of coastal lagoons is experienced as highly problematic by coastal lagoon managers.
- Even the different regimes of public property, i.e. private property of the State vs Public Domain with its different types, may create difficulties and confusion.
- The status of Maritime Public Domain (DPM) is satisfactory for conservation purposes, because it is imprescriptible and inalienable.
- Acquisition of property by the Conservatoire du Littoral is often essential for Conservation purposes and to improve coherence.