

## Cultural practices and risk of shellfish pathogen exchanges: the oyster aquaculture in France



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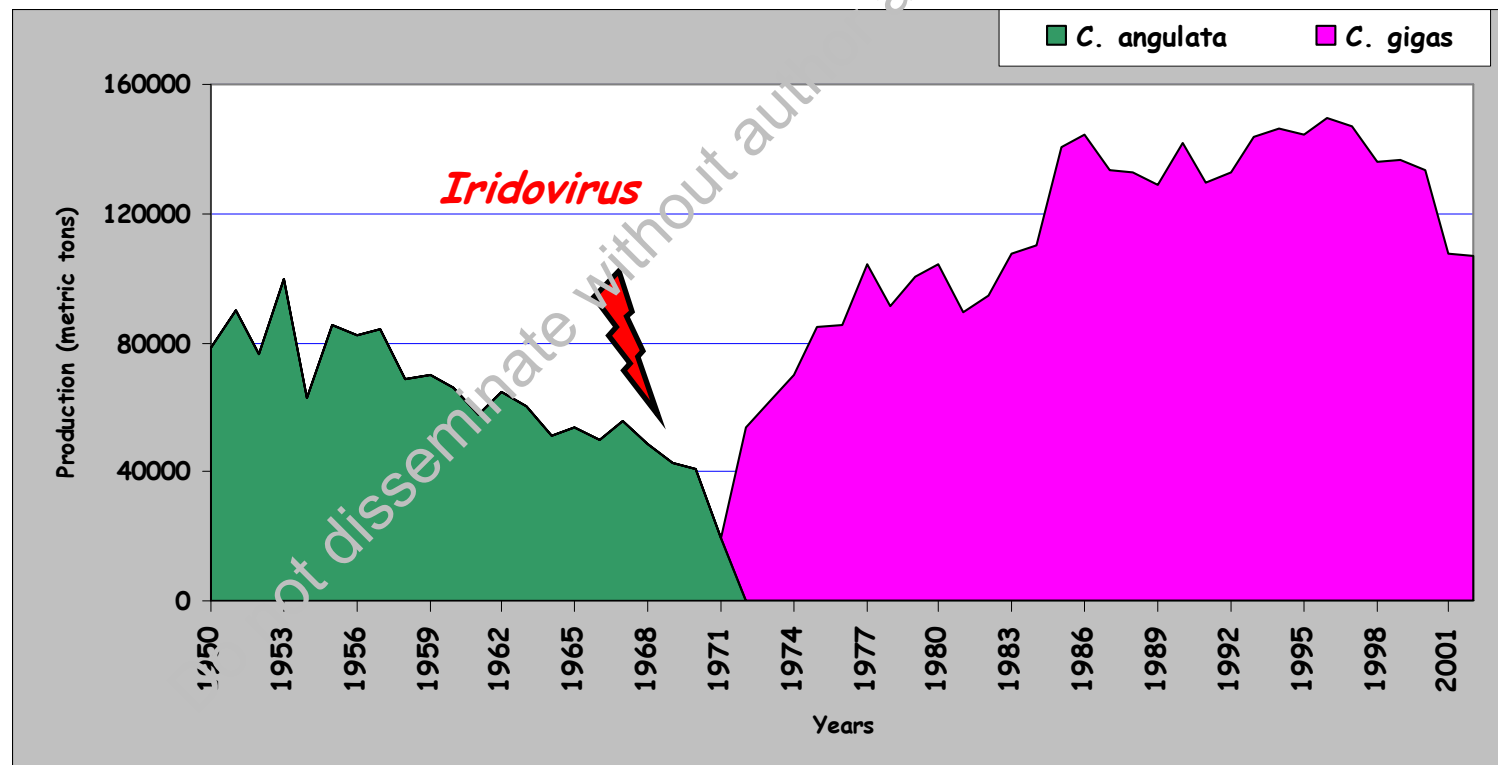
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## Introduction (1)

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- *Crassostrea gigas* the main species of oysters in France and Europe
- Introduction of *C. gigas* at the beginning of the seventies



Trends of the cupped oyster production in France (FAO, 2002)



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A national census concerning shellfish culture in France was carried out in 2002

The purposes were:

- to provide accurate information on the economical structure of the companies
- to analyse the cultural practices up to the market level
- to quantify the bivalve sales dedicated to consumption
- to measure the livestock transfers among rearing shellfish production areas



## Objectives of this talk

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- To present the results regarding *Crassostrea gigas*
- To discuss the potential consequences of these cultural practices (i.e. transfers) towards the introduction of exotic species including pathogens
- To highlight the necessity of these types of data  
In epidemiology;



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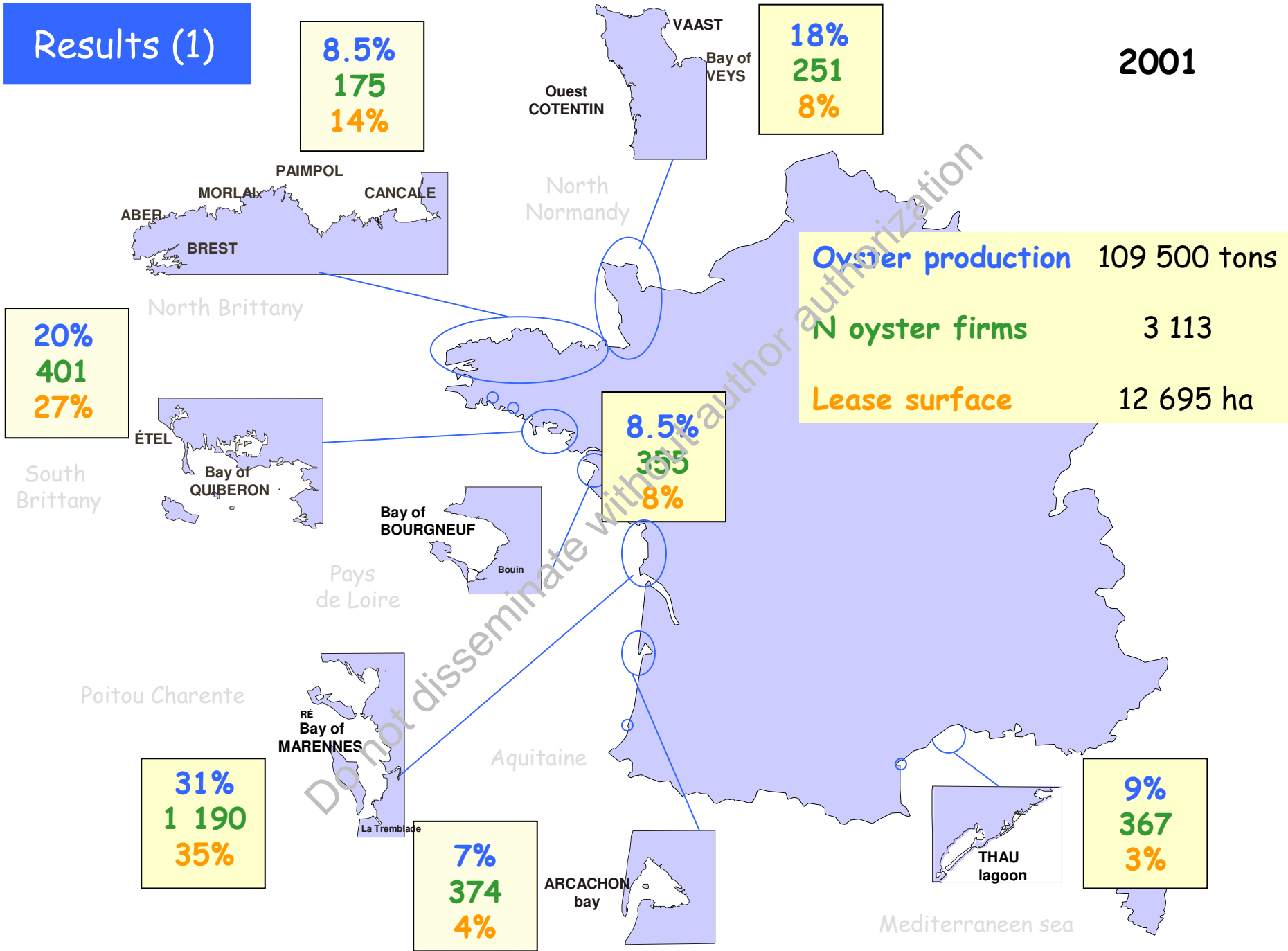
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- Census realised by the statistics service of the French Ministry of Agriculture with collaboration of Ifremer and the National Shellfish-farming Committee
  - Data collected between April and June 2002
  - Standardized questionnaire filled by trained investigators
  - Data concerning shellfish farm activities in 2000 (spat production) and 2001 (other life stages - economical data)
  - All the French shellfish farms\* investigated
- \* All farms rearing shellfish, including hatcheries and nurseries



# Results (1)

2001



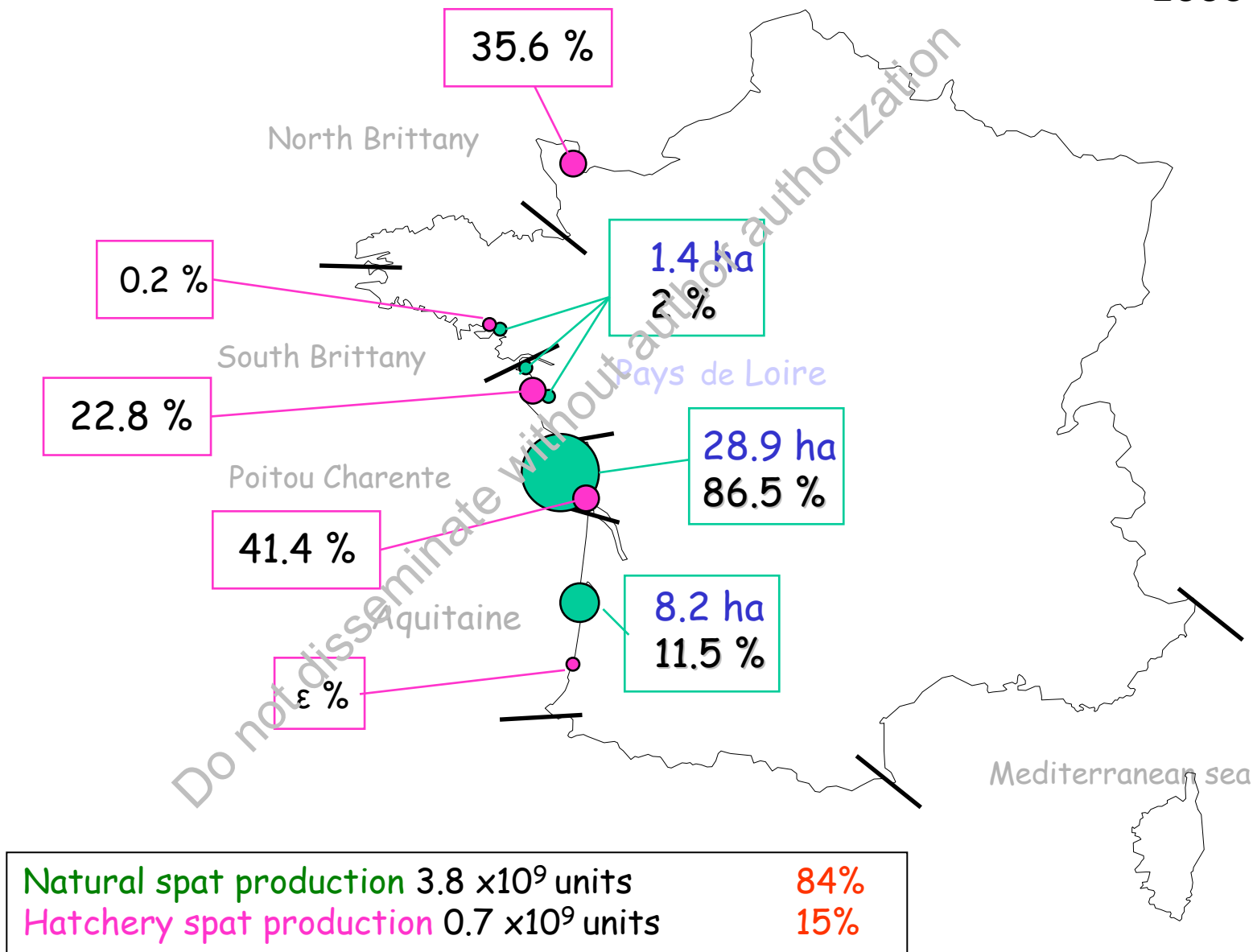
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## Results (2)

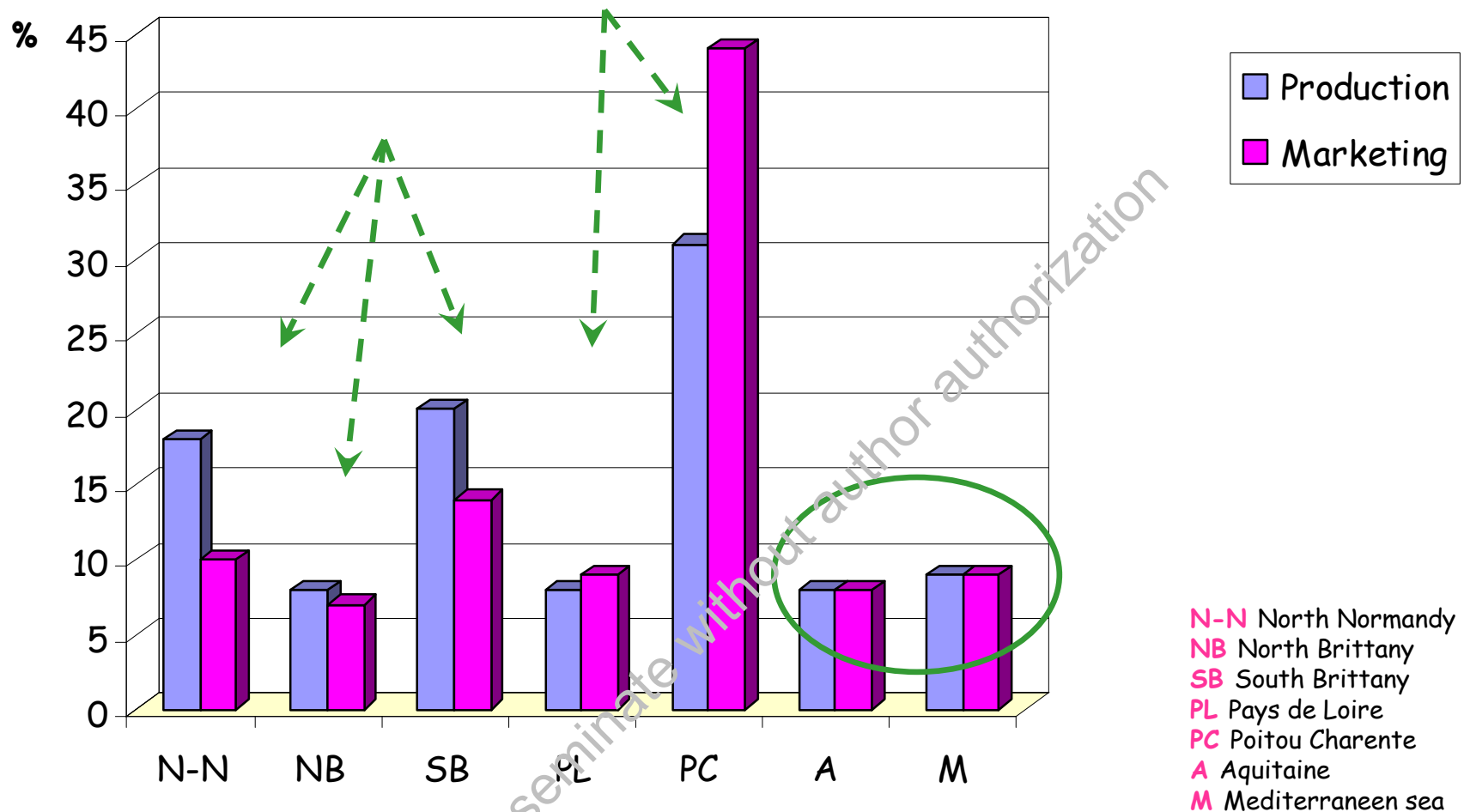
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North-Normandy

2000



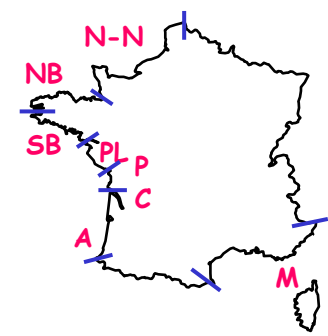
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**Oyster production and marketing in the different French growing areas in 2001**

Oyster production: **109 500 tons**

Oyster marketing: **107 400 tons**





## Results (5) The transfers of oysters for marketing

Fattening : a "speciality" of Poitou Charente adding value to the final product

	Poitou Charente	% national
Number of oyster farms (including non specialized)	1190	38%
Exploited oyster surfaces in public maritime grounds (ha)	3067	22%
Exploited oyster surfaces in wetland ponds called "claires" (ha)	2080	<b>91%</b>
Oyster production (tonnes)	33718	31%
Oyster sales dedicated to consumption (tonnes)	46783	44%
including fattened oysters	38822	<b>88%</b>

## Other reasons for oyster transfers

### Regional specialisation

- The purchase (or supplying) of natural spat from enterprises located in non spat producing areas

### Productivity differential between rearing areas

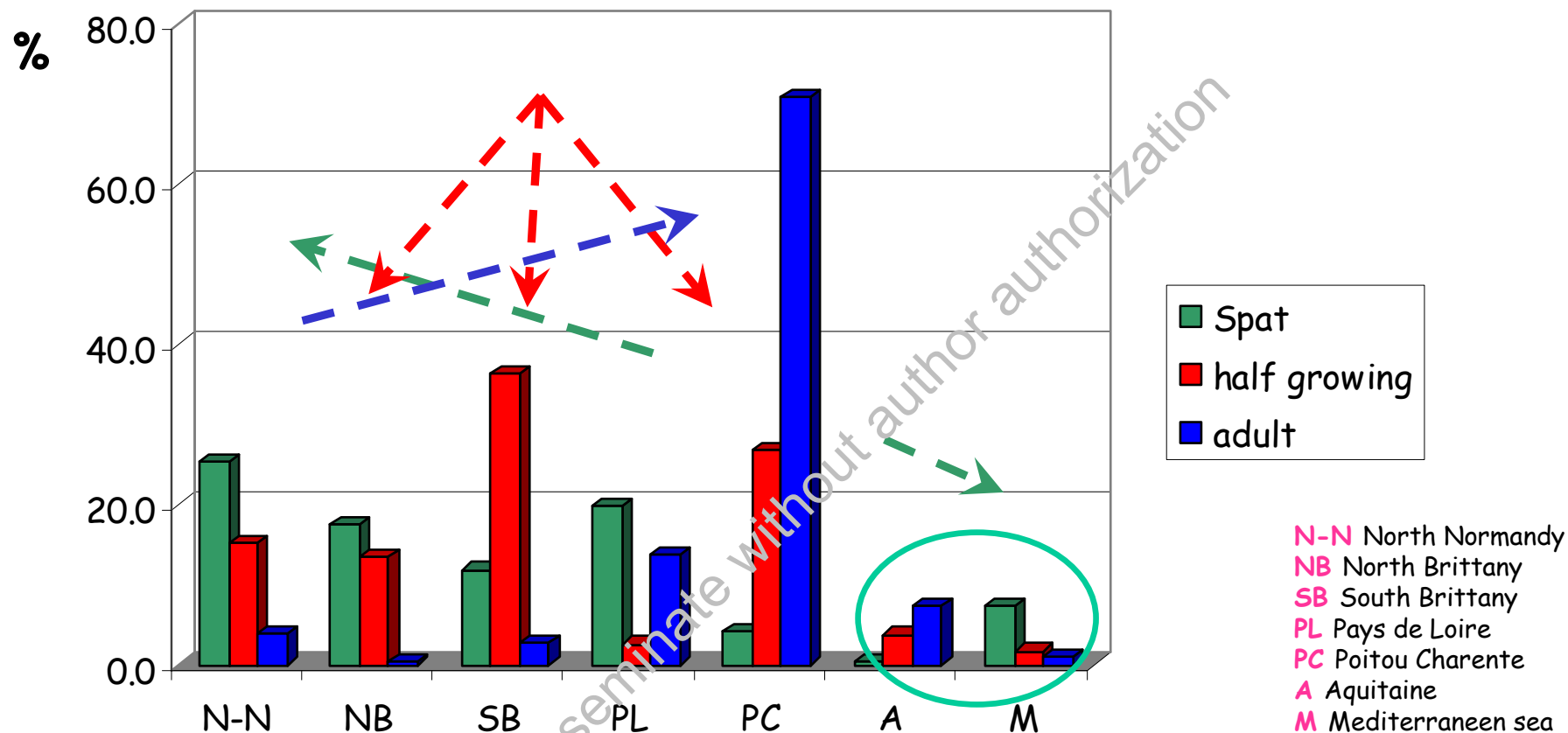
- The purchase (or supplying) of half-grown oysters from enterprises seeking to optimize factors allocation (time-saving, cost-reducing...)

### Land use rights management

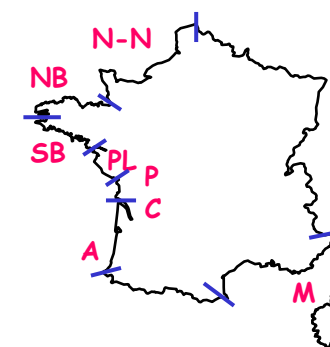
- When economic growth strategy relies on multi-localisation, transfers can occur several times



## Results (4)



Oyster transfers among oyster rearing areas at different developmental stages (receiving areas) in 2001

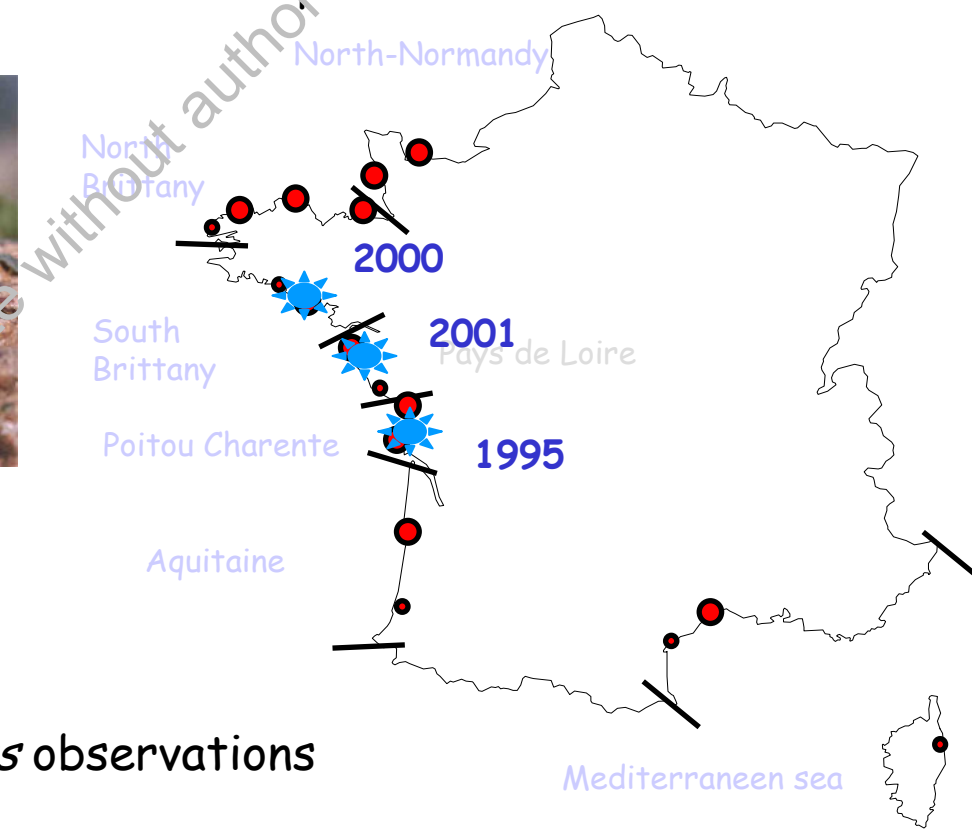


- ✓ This census is the first exhaustive overview of the French oyster activity, showing some geographical specificities
- ✓ Movements between rearing areas are frequent and important along the rearing period (spat, half growing oyster and adult oyster)
- ✓ Main risk associated with shellfish movements inside a country from one shellfish areas to others:
  - ↔ Introduction of **exotic species** and/or **exotic pathogens**



*Ocenebrellus inornatus* first detection in 1995

Recent results demonstrated the major role of oyster importation as vectors of the exotic species *Ocenebrellus inornatus* (Martel et al, 2004) from USA to France then its expansion along the French Atlantic coast due to cultural practices

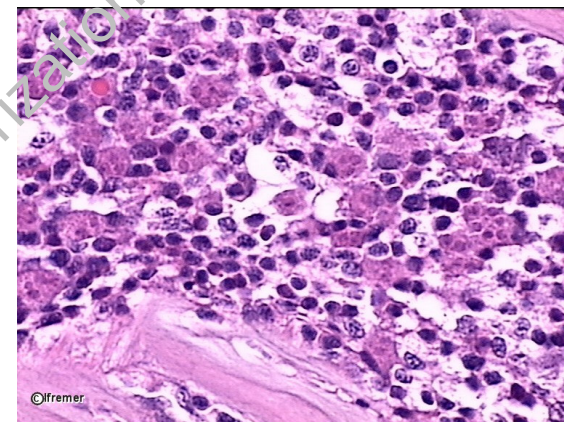
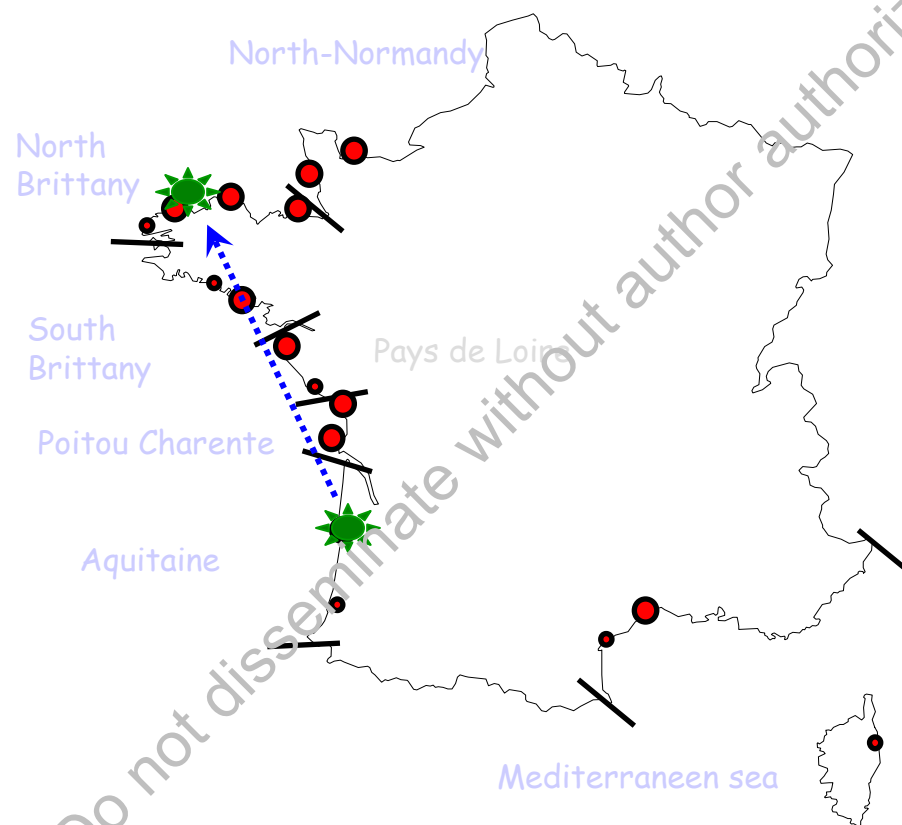


★ *Ocenebrellus inornatus* observations

## Discussion (3)

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**1993:** 2 *C. gigas* infected by *Haplosporidium nelsoni* from 791 oysters analysed (from Renault et al., 2000)



 *Haplosporidium nelsoni* detection

## Conclusion

Data on shellfish cultural practices are necessary

- to investigate epidemiological situation
- to discuss time series data on pathogen presence and disease status
- to define the zoning and the strategy when implementing a surveillance programme



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Thank you for your attention



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