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Distributional effects of quota self-governance by French producer organizations: the case of the Bay of Biscay sole fishery

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Outline

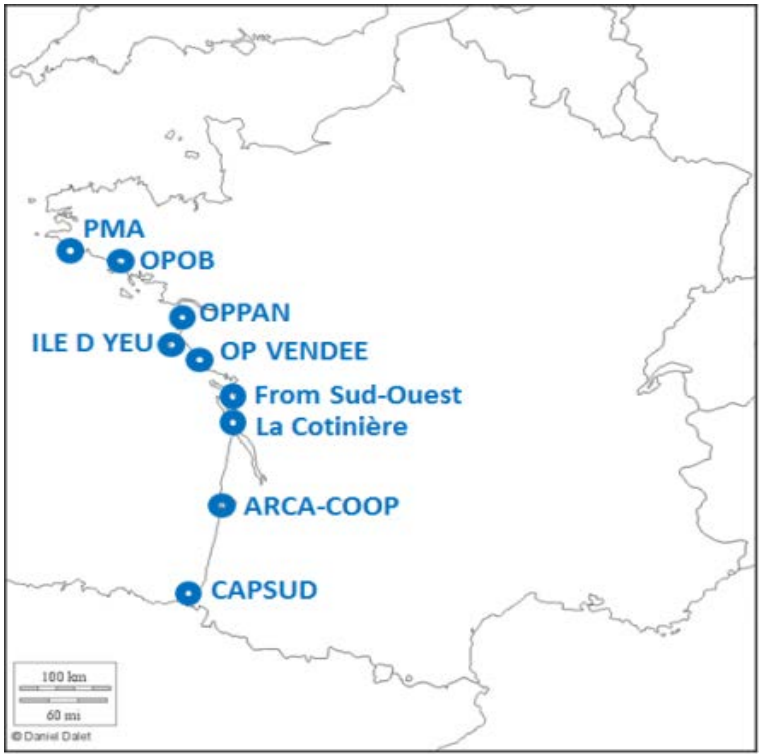
- Introduction
- Governance system of Bay of Biscay sole quota
- Material & methods
- Inequality metrics for the study of distributional effects
- Results
- Conclusions / perspectives

Introduction

- EU Common Fisheries Policy reform
  - Reinforcement of local institutions
  - Discussions on ITQs
- In France:
  - Fishing rights are not transferable
  - Official consensus against ITQs amongst stakeholders arguing ITQs would result in capital concentration and destabilization of local fishing communities
  - Gradual transfer of competence (including quota management) to Producer Organizations (POs) – *comanagement* governance system
  - Evolution of quota management in response to constraining quotas => IQ systems

Introduction

- What's a PO?
  - A group of harvesters that manage collectively assigned fishing rights.
  - Similar to the self-organized harvest cooperatives called "Sectors" in the New England groundfish fishery (US)
- How big are they?
  - 35 - 500 vessels
- How many are there?
  - 9 POs in the Bay of Biscay
- Caracterization:
  - Geographically-relevant
  - 1 PO ≠ 1 fishery



Map of Bay of Biscay POs (France)

Introduction

- **Issues addressed**: the distributional effects of the French fishery governance system

  - Has quota management by POs led to limit inequalities and concentration?

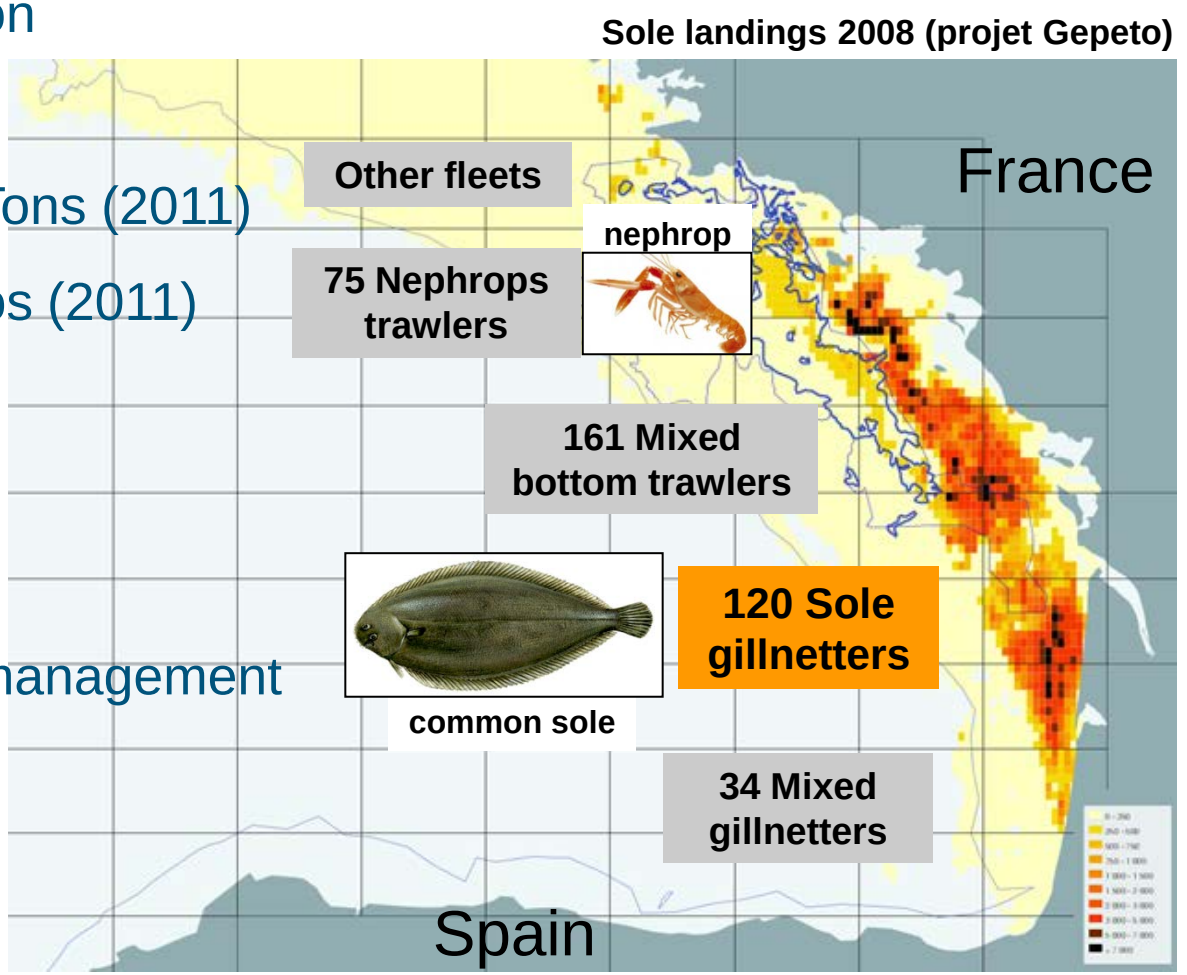
  - Are distributional effects quantifiable?

Introduction

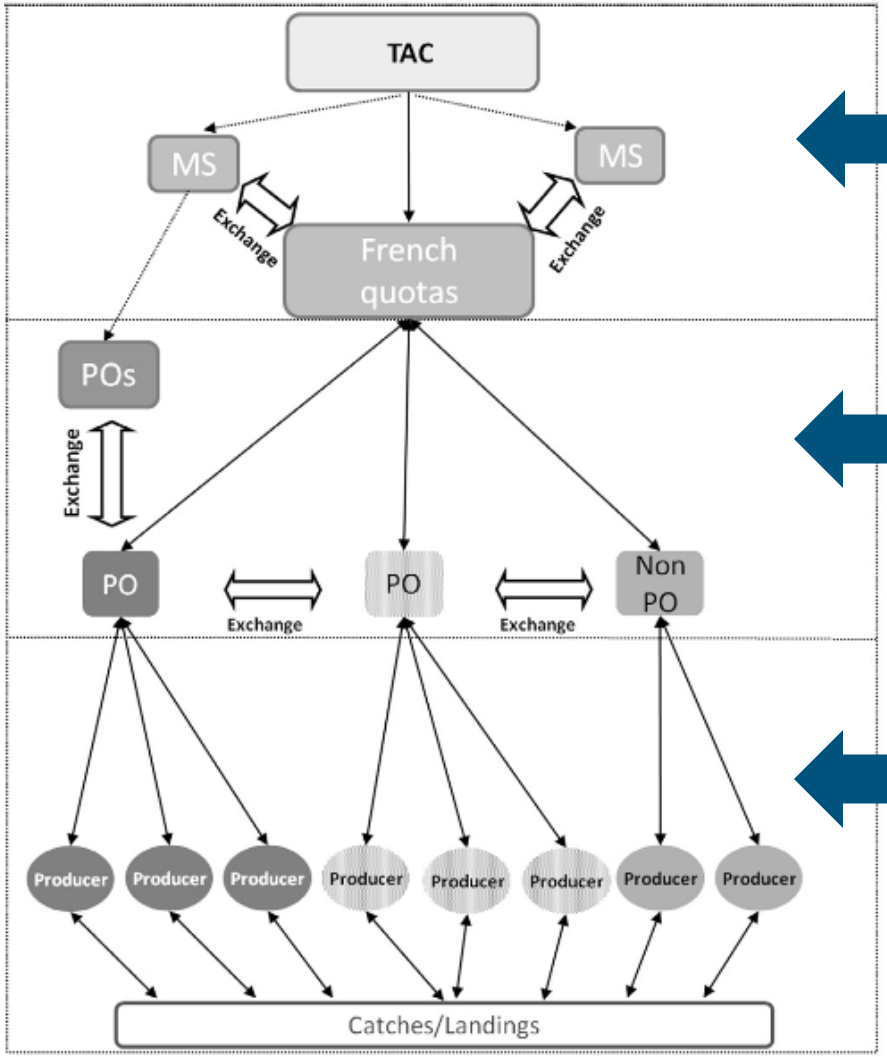
- Case study: the Bay of Biscay common sole fishery

  - 470 vessels > 1 Ton
  - 1400 fishermen
  - Landings = 4600 Tons (2011)
  - GR 54 million euros (2011)

  - Innovative quota management (IQ since 2006)



Governance system of Bay of Biscay sole quota



Member State share is based on a relative stability key

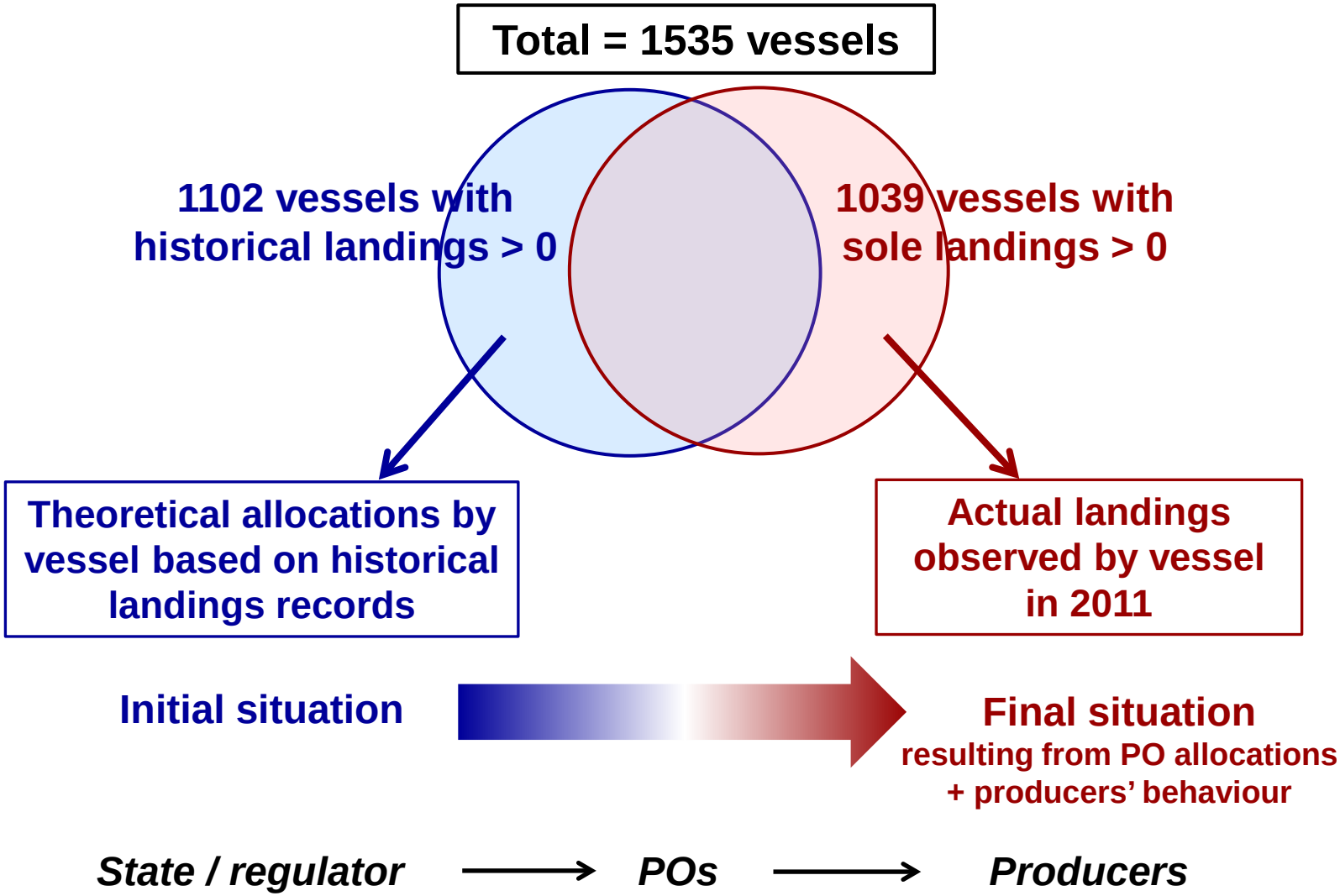
Quota share by PO is based on historical landings (2001-2003) of their members.

Management by POs: collective or individual quota allocation based on a collective-pooling management system specific for each PO

Larabi et al. 2013

Material & methods

- Study population:



Inequality metrics

	Formula	Pros	Cons
Gini index	$G = \frac{\sum_{i=1}^{N}\sum_{j=1}^{N}\lvert x_i - x_j\rvert}{2N^2\bar{x}}$	▪ Intuitive	▪ Not easily decomposable
Hoover index	$H = \frac{1}{2}\sum_{i=1}^{N}\left\lvert\frac{E_i}{E_{total}} - \frac{A_i}{A_{total}}\right\rvert$	▪ Intuitive	▪ Non decomposable
Theil index	$T = \frac{1}{N}\sum_{i=1}^{N}\left(\frac{x_i}{\bar{x}} \times \ln\frac{x_i}{\bar{x}}\right)$	▪ Decomposable	▪ Non intuitive
Generalized enthopy index	$GE(\alpha) = \frac{1}{N\alpha(\alpha-1)}\sum_{i=1}^{N}\left[\left(\frac{x_i}{\bar{x}}\right)^{\alpha} - 1\right]$	▪ Decomposable	▪ Non intuitive ▪ Parameter to be set
Atkinson index	$A(\varepsilon) = 1 - \frac{1}{\bar{x}}\left(\frac{1}{N}\sum_{i=1}^{N} {x_i}^{1-\varepsilon}\right)^{\frac{1}{1-\varepsilon}}$	▪ Sensitivity to upper/lower end	▪ Parameter to be set
Herfindahl-Hirschman index (HHI)	$HHI = \sum_{i=1}^{N}\left(\frac{x_i}{\sum_{j=1}^{N} x_j}\right)^2$	▪ Applicable in a variety of contexts	▪ Correlated with number of firms

Results

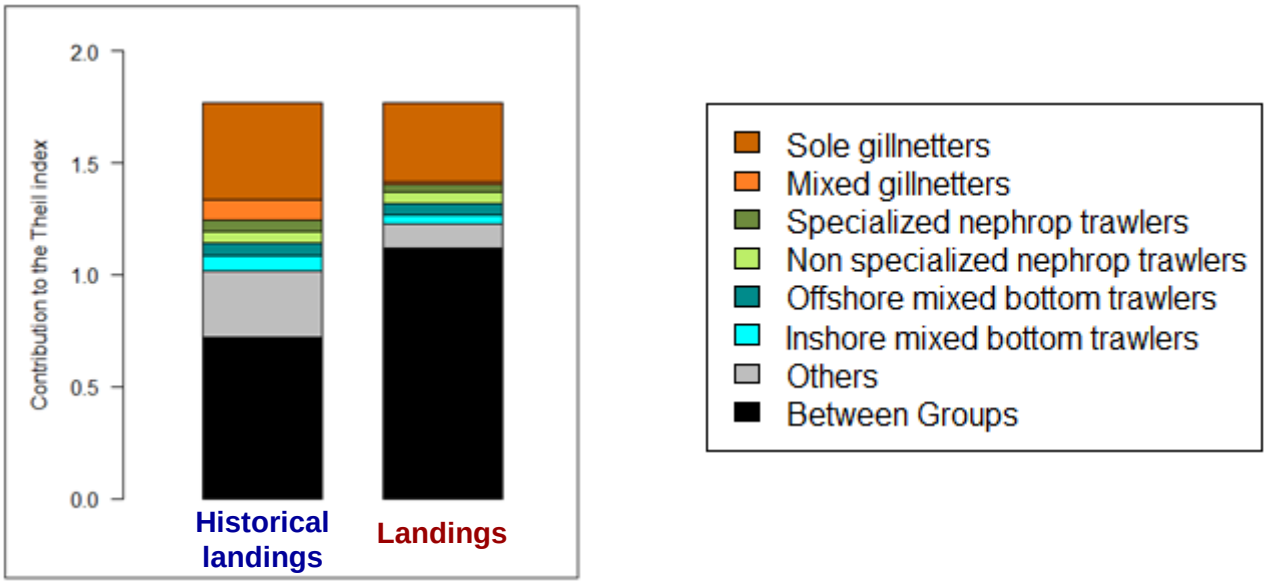
- Application of inequality metrics at the entire population level

	Theoretical allocations based on historical landings	Landings observed
Gini index	0.87	0.86
Hoover index	0.73	0.72
Theil index	1.77	1.76
Generalized enthopy index ($\alpha = 2$)	4.82	4.72
Atkinson index ($\varepsilon = 0.75$)	0.93	0.93
Herfindahl-Hirschman index (HHI)	0.0069	0.0068

- Same tendency over all metrics: Landings observed are slightly less concentrated than Theoretical allocations based on historical landings
- No clear sign of distributional effects at this scale

Results

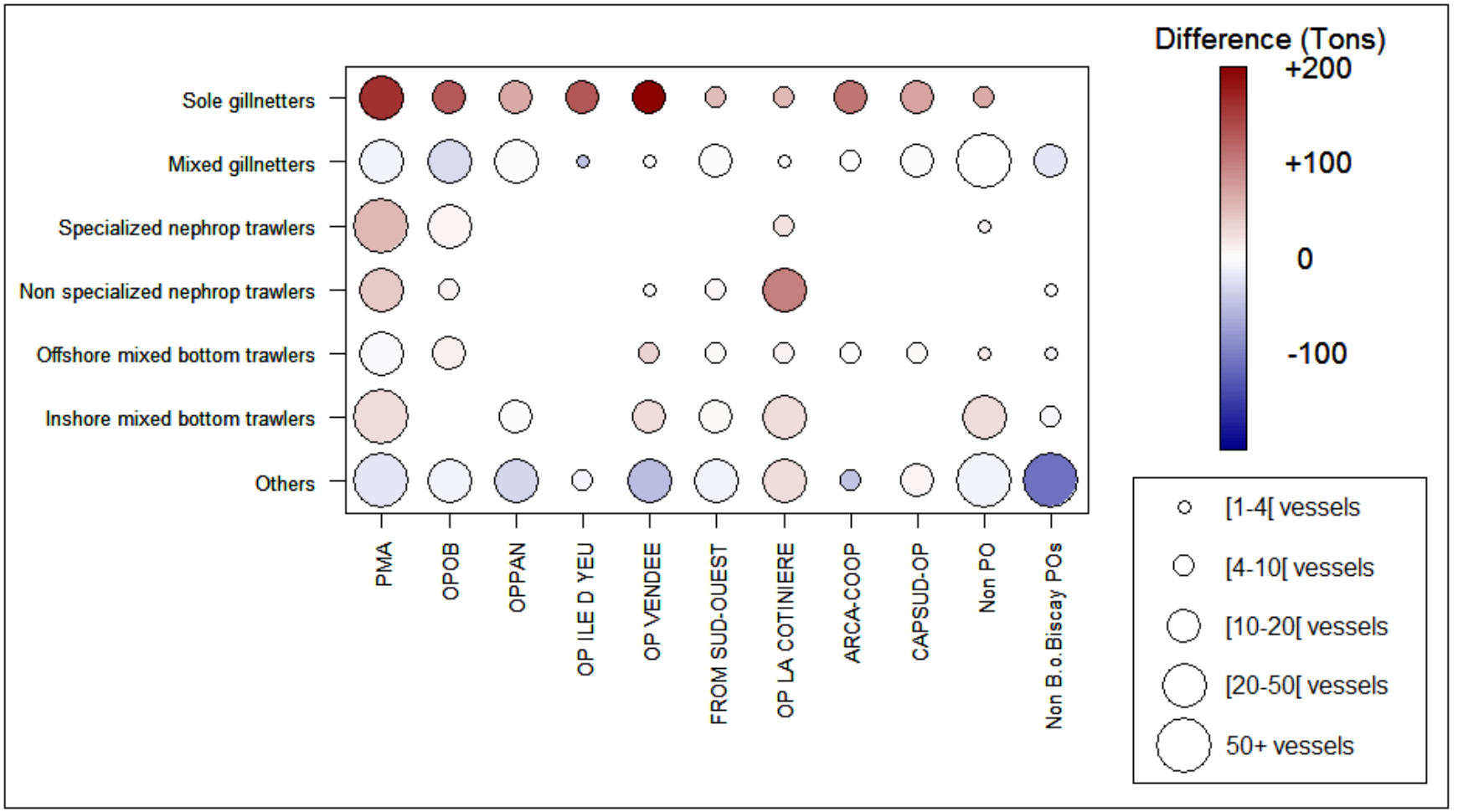
- Decomposition of the **inequality by fleets**: use of the Theil index to determine the within and between components



- Inequality in Landings observed is mainly due to the inequality **between fleets**.
- Distributional effects: Landings observed **within fleets** are more homogeneous than Theoretical allocations based on historical landings

Results

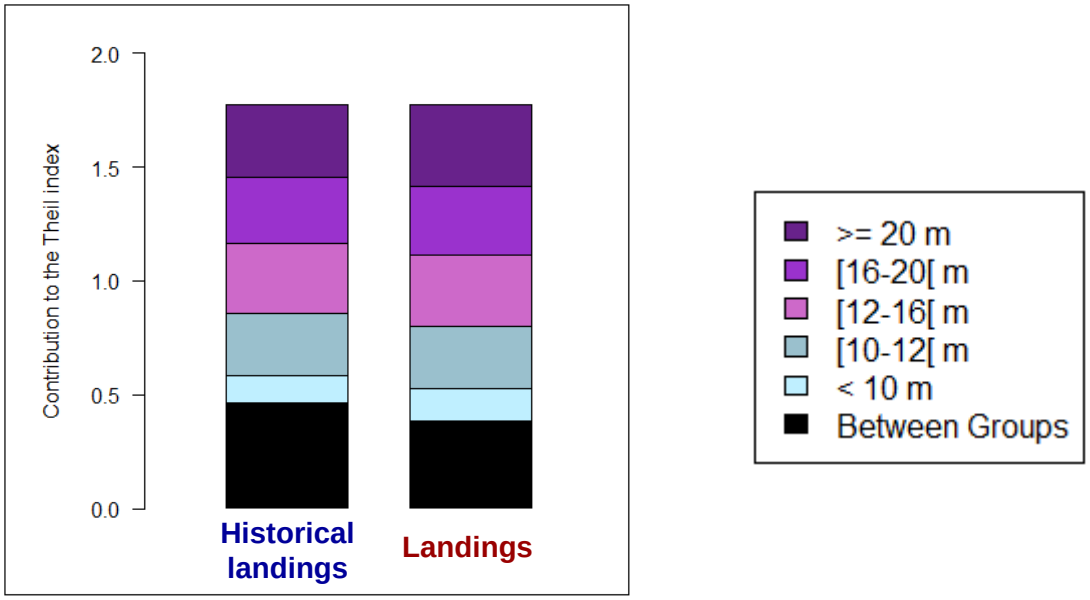
- Cumulative difference **Landings** – **Historical landings** by fleet*PO



- Distributional effects: **Sole gillnetters** are “favored” in all POs

Results

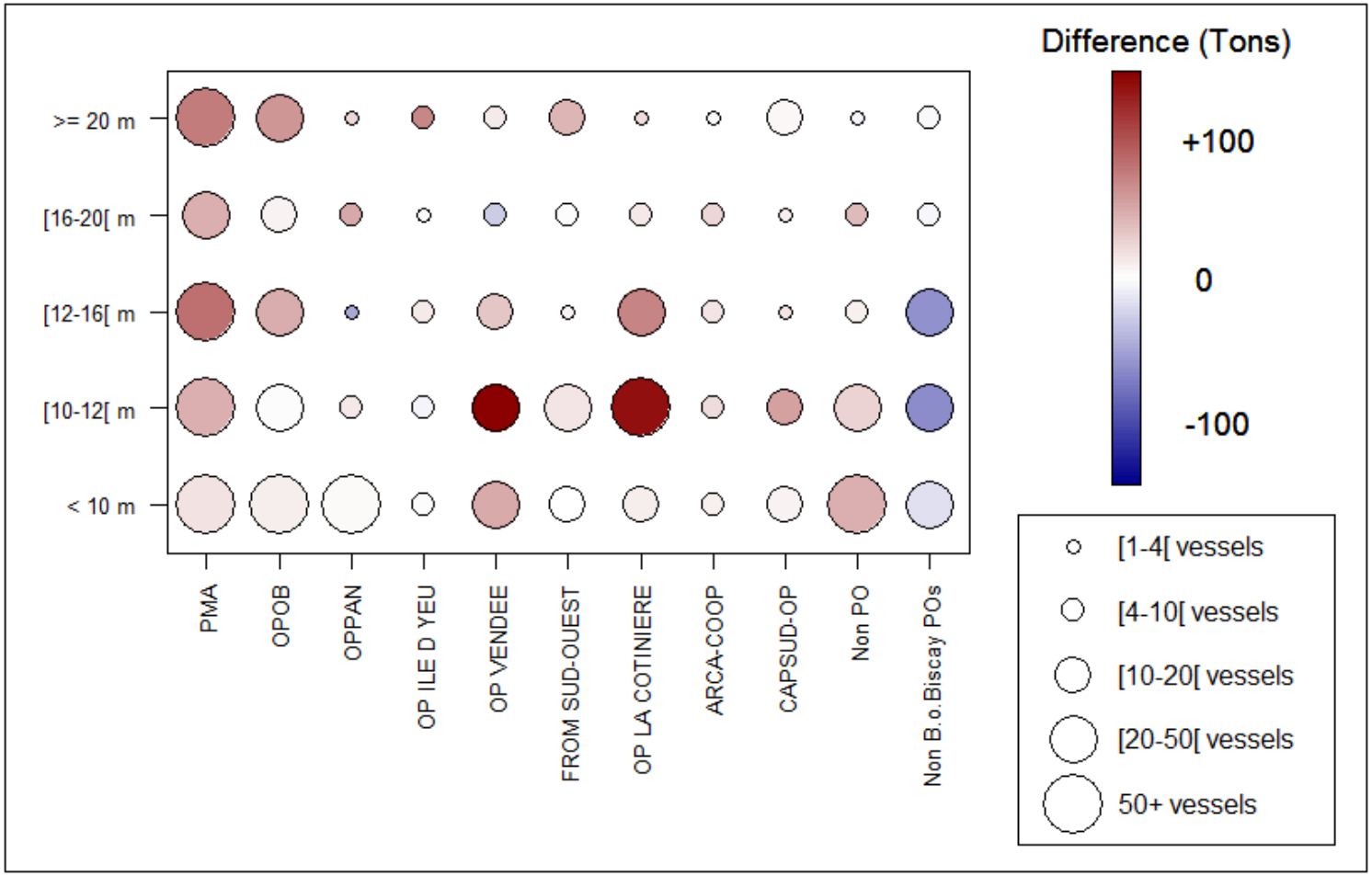
- Decomposition of the **inequality by length class**: use of the Theil index to determine the within and between components



  - Inequality between groups is less important than in the case of decomposition by fleets
  - Inequality is mainly due to the inequality **within length classes**.

Results

- Cumulative difference **Landings** – **Historical landings** by length class*PO



- Distributional effects: **Small-scale** (< 12 m) are “favored” in some POs

Results

Overview

The management of the sole quota by producers organizations had distributive effects:

- the fleets that were the most favored were the fleets that were the most economically dependent on this species; in other words, in a context of non-transferability of fishing rights, POs played the role of quota fine-tuning to adjust for fleets needs
- In certain POs, small scale fisheries (<12m) benefited from quota redistribution; in these cases, management policies were favorable to less profitable artisanal fisheries and local fishing communities

Limits

- Only one species/quota considered
- “1 vessel = 1 firm” hypothesis
- Productions *vs*. revenues

Conclusion

- Inequality metrics at global scale did not show distributional effects
- Decomposition of inequality by subgroups provided more interesting results

Perspectives

- Comparison with theoretical allocations according to PO rules / Individual Quotas

Thank you for your attention

Appendix

Theil decomposition by POs