

# Estimating the social cost of discards: the case of the *Nephrops* trawl fishery in the bay of Biscay

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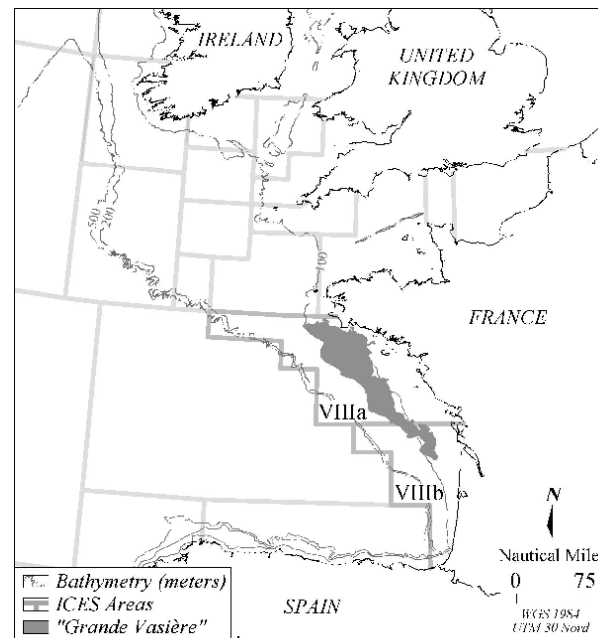
# Plan of the presentation

1. Context
2. Bio-economic modelling and social cost
3. Results of the estimation of social cost
4. Discussion

# 1. Context

*Nephrops* trawl fishery:

- ~ 250 trawlers
- ~ 3800 tonnes of *Nephrops* per year (30 million euros)
- ~ 80 million euros total gross revenue



High levels of by-catches and discards of many species

- *Nephrops* discards = 60% of the *Nephrops* caught in number and 30% in weight [ICES, 2006] (*Nephrops* <9cm)
- Hake discards = 97% of the hake caught in number (hake <27cm)

Main reasons for discarding younger age groups :

Low selectivity of bottom trawlers combined with Minimum Landing Size (MLS)

High discards mortality rates → discarding practices = waste

- For the stocks that endure unprofitable fishing mortality
- For the fleets targeting or by-catching these species (gillnetters, trawlers and longliners)
- For the consumer through the price-quantity relationship
- For the state through the landing taxes

→ High social cost

Objective:

To estimate the social cost generated by the *Nephrops* trawler fleet through *Nephrops* and hake discards under the minimum landing size

## 2. Bio-economic modelling and social cost

Social cost: Difference of net benefit between the status quo and the best technically feasible alternative (Coase, 1960)

Scenario studied: a selective device such that there is no catch of :  
Nephrops <MLS (age group <3)  
Hake < MLS (age group <2)

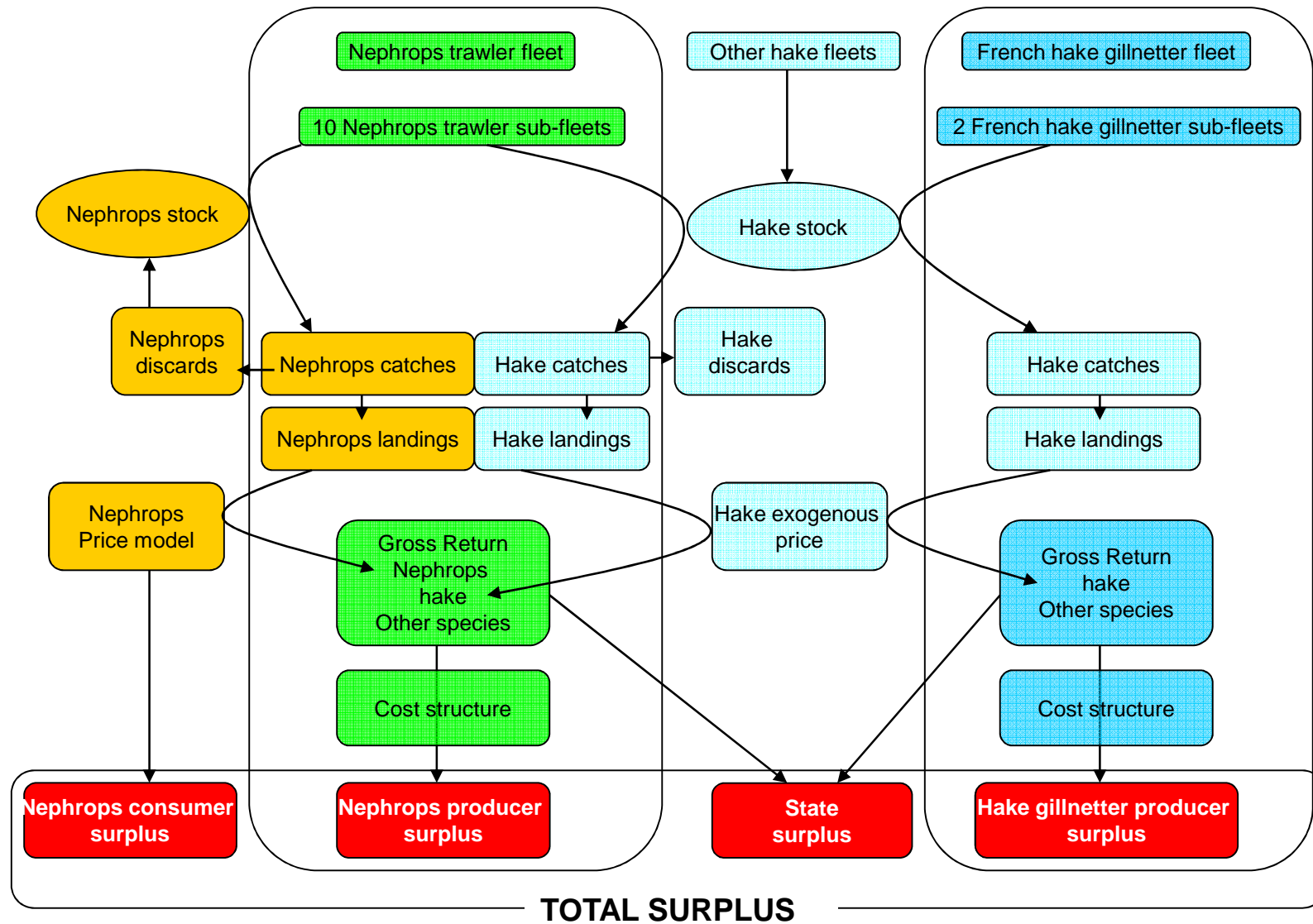
Assumptions:

Multi-fleet, multi-metier, multi-species  
constant effort

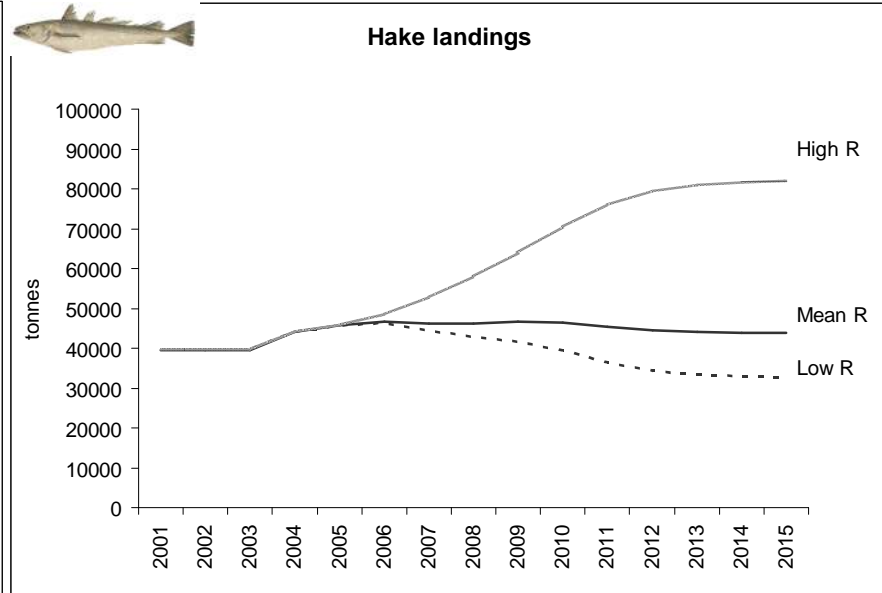
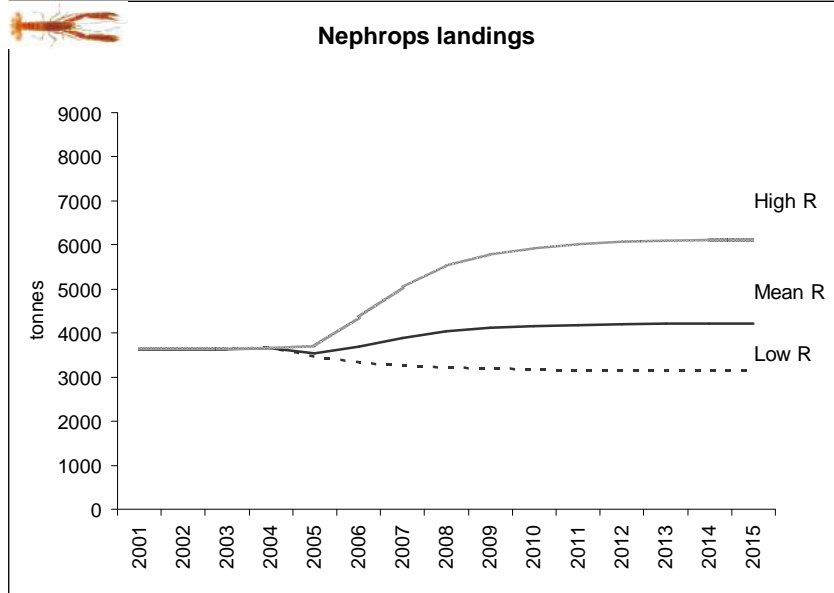
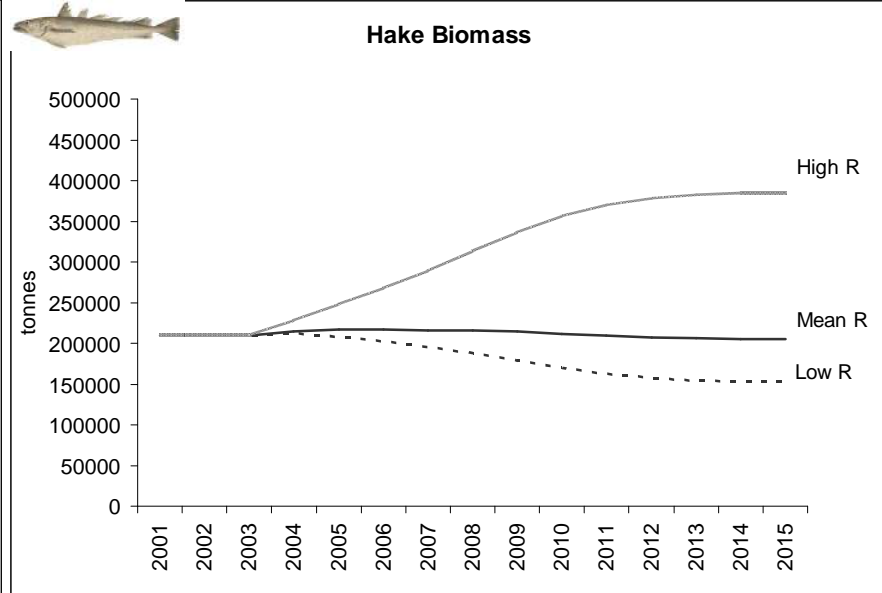
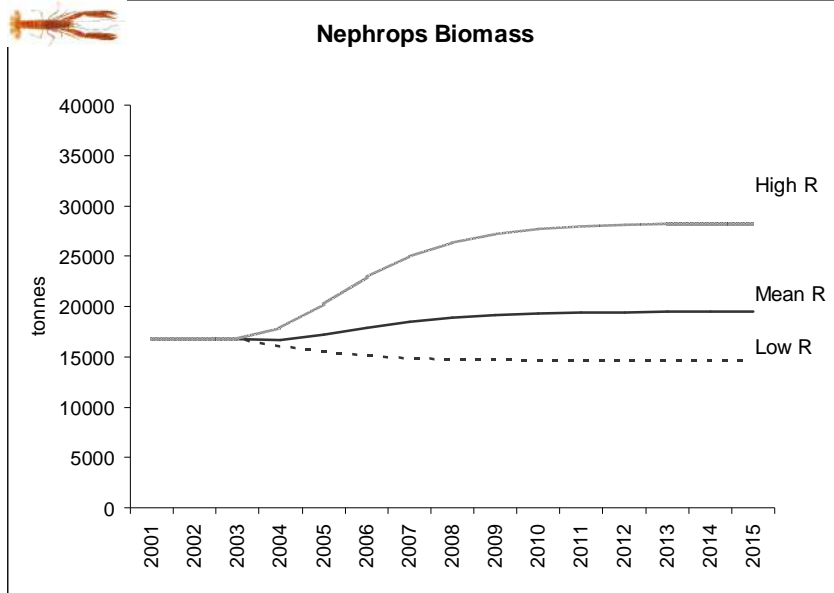
constant recruitment (Low and high assumptions tested)

3 Nephrops price models

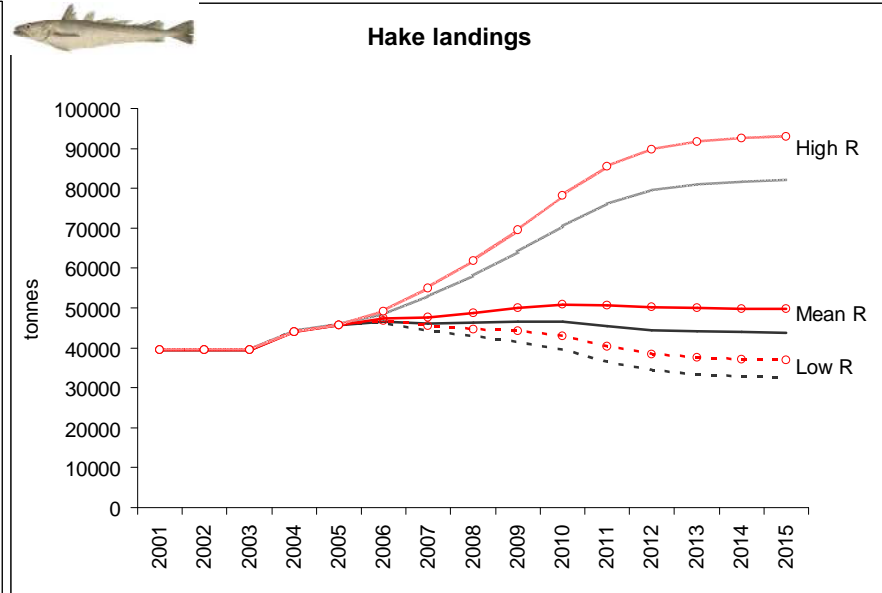
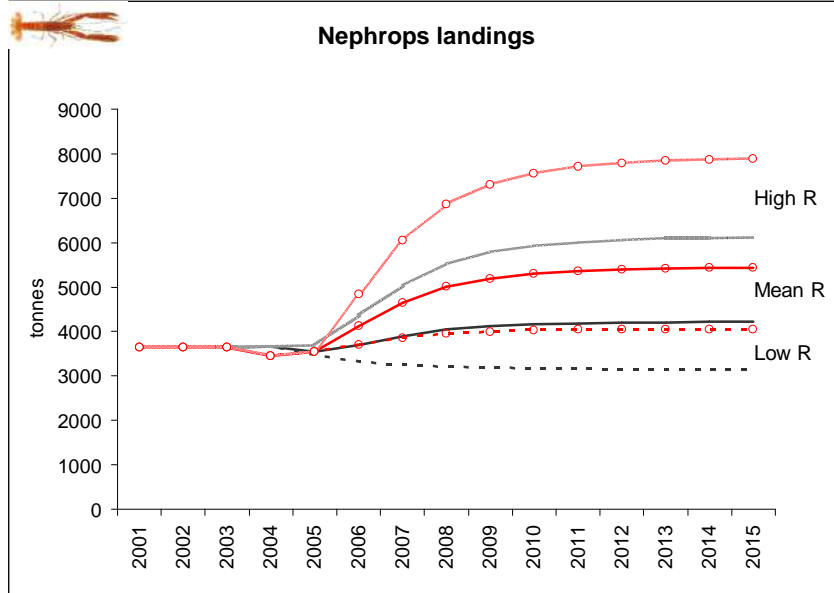
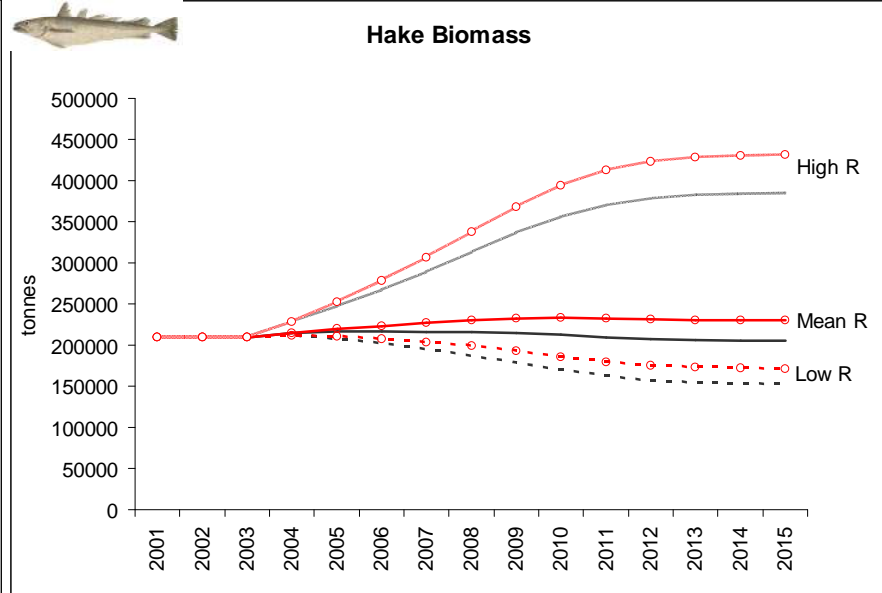
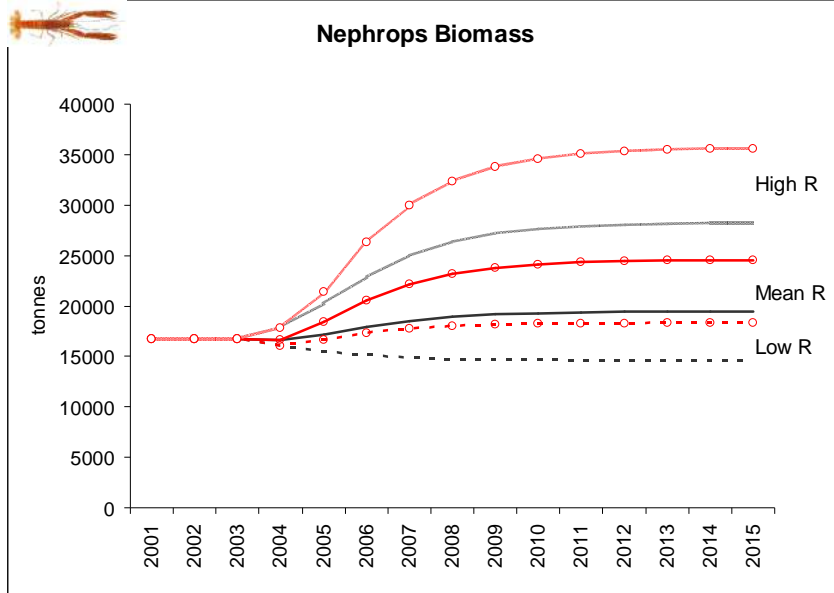
exogeneous hake price



# 3. Results

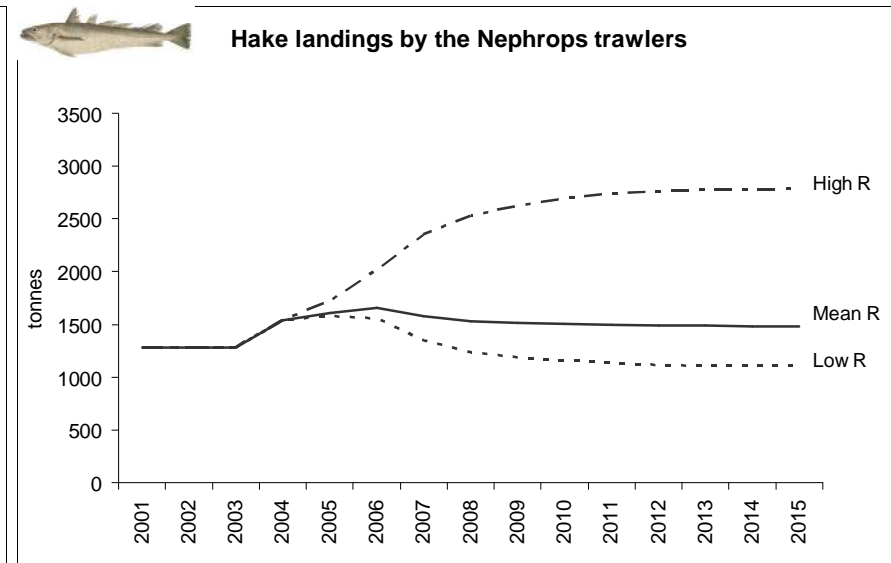
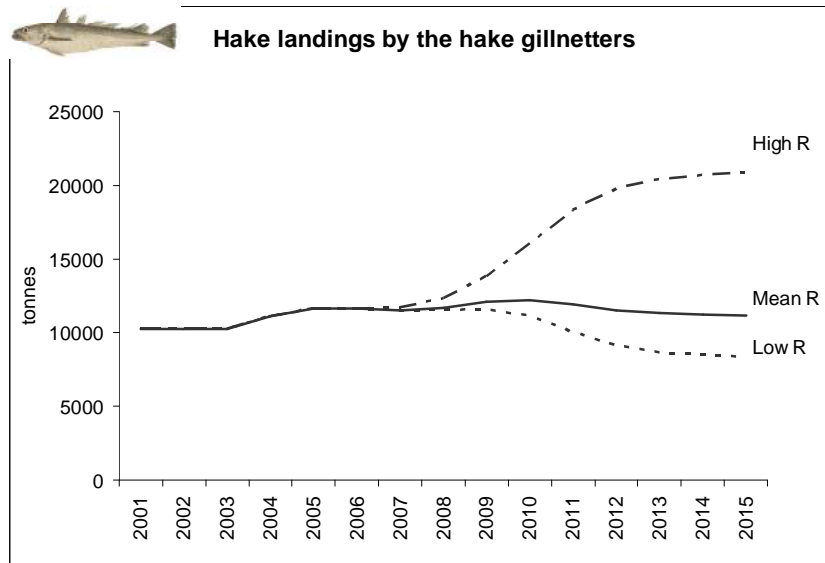


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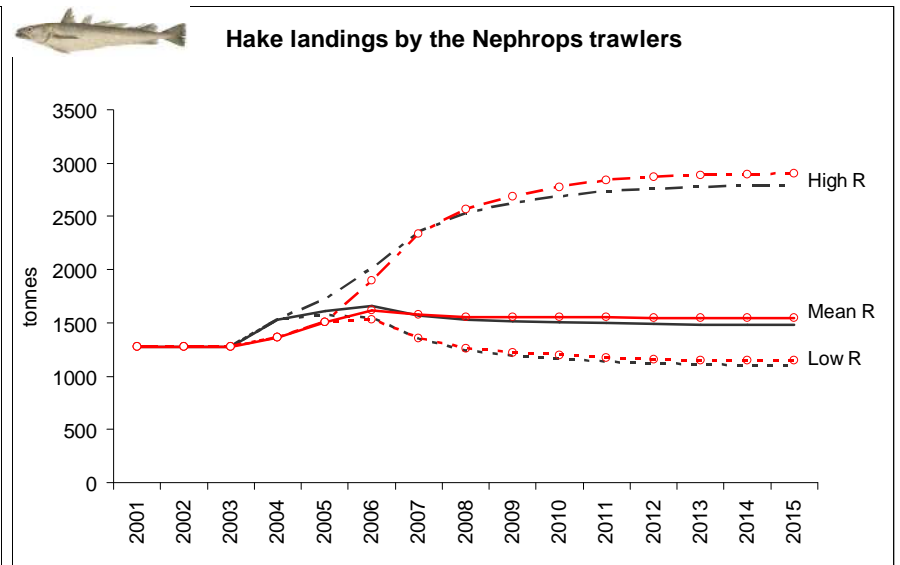
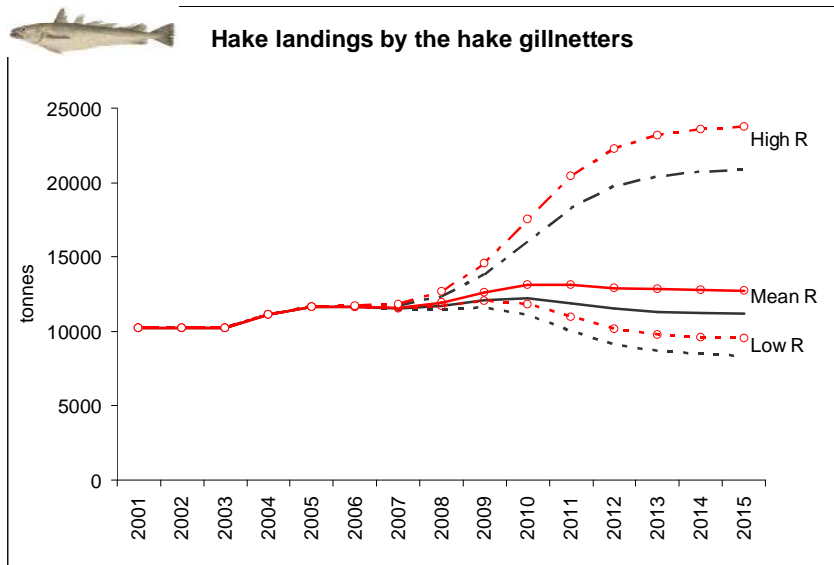




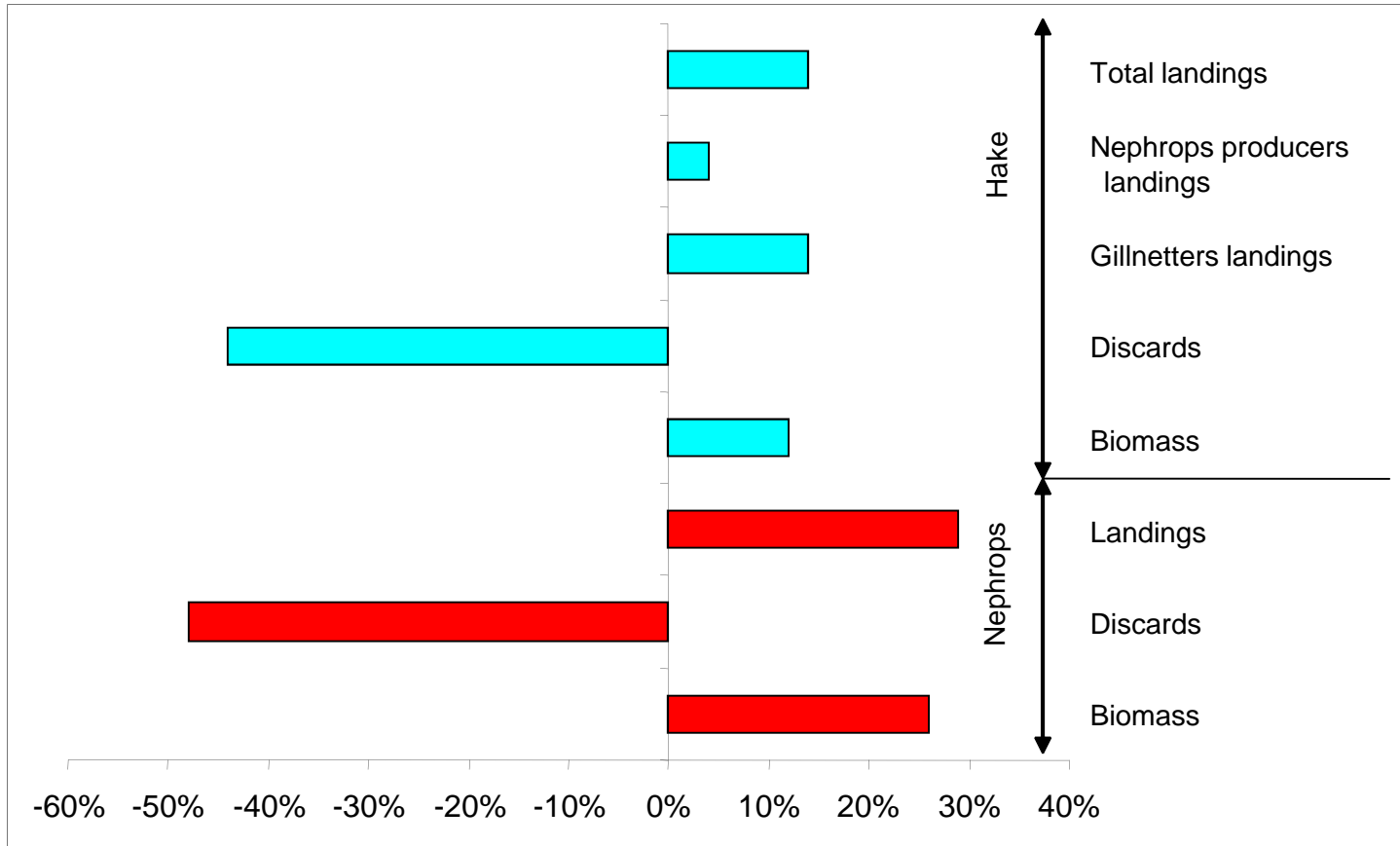
# 3. Results



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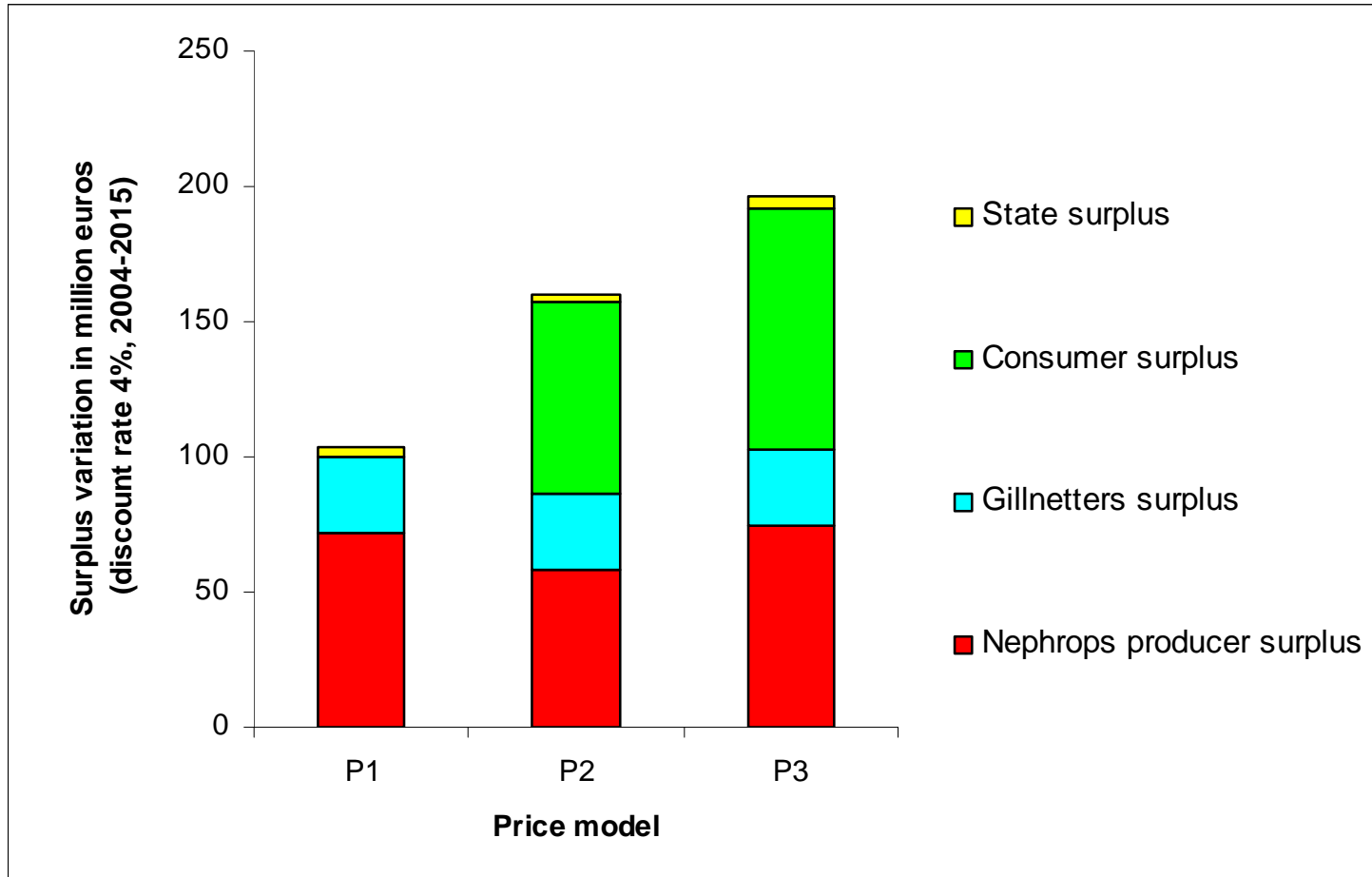
# 3. Results



Discards ↘

Biomass and Landings ↗

### 3. Results



→ Social cost ~ 50 keuros per Nephrops trawler per year (internal cost and external cost for consumers, state and other producers)

## 4. Discussion and perspectives

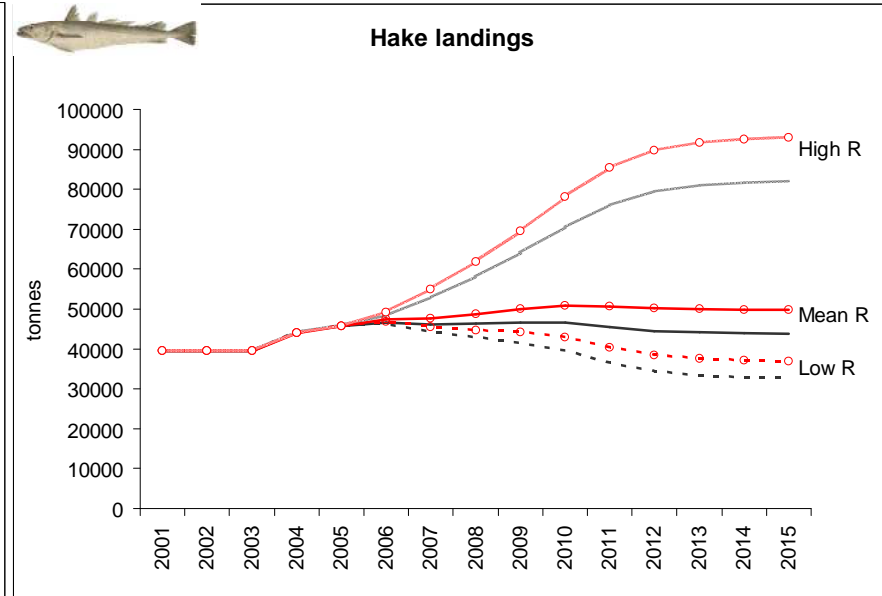
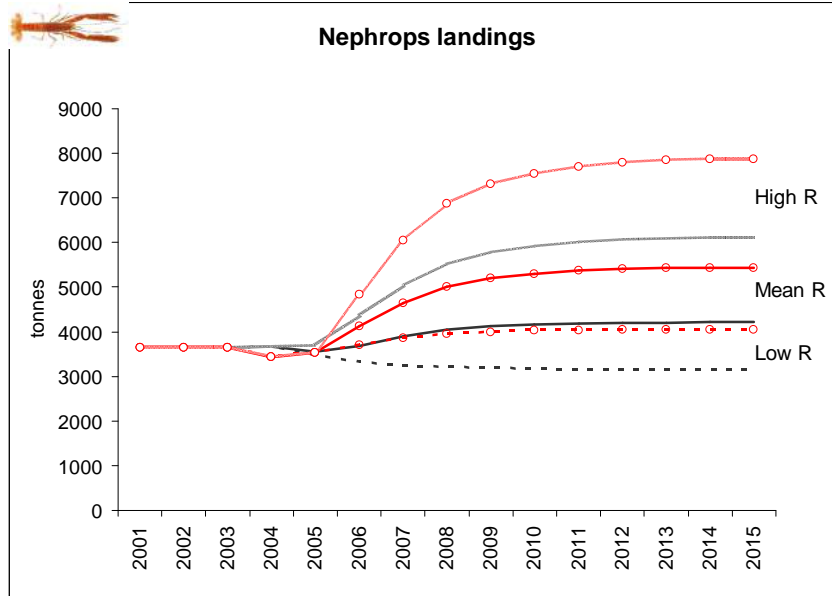
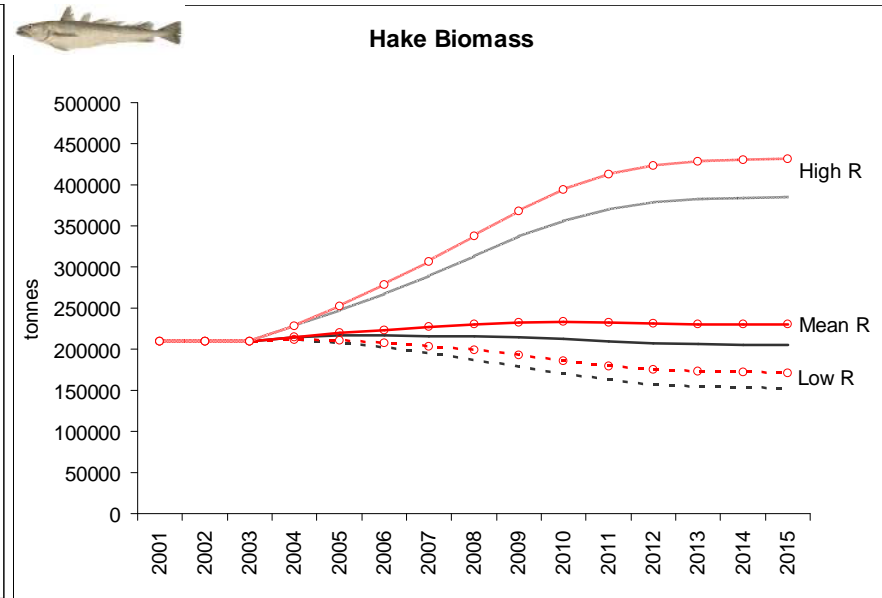
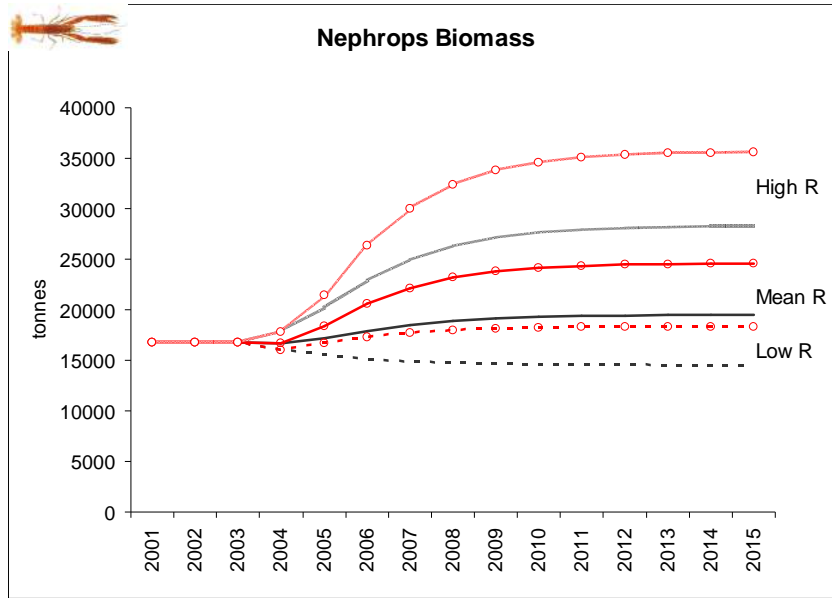
- Nephrops trawlers do not bear all their production costs
- Improving selectivity → social benefit for Nephrops producers, other producers, consumer and state
- Does not resolve the access regulation problem : taking account of investment dynamic through increasing catchability → rent drains
- Right based management difficult to implement in a mixed fishery
- → combine selectivity improvement and access regulation
- ! Selectivity improvement generally non observable+ strong incentives to circumvent selective improvement !

### Perspectives of this work

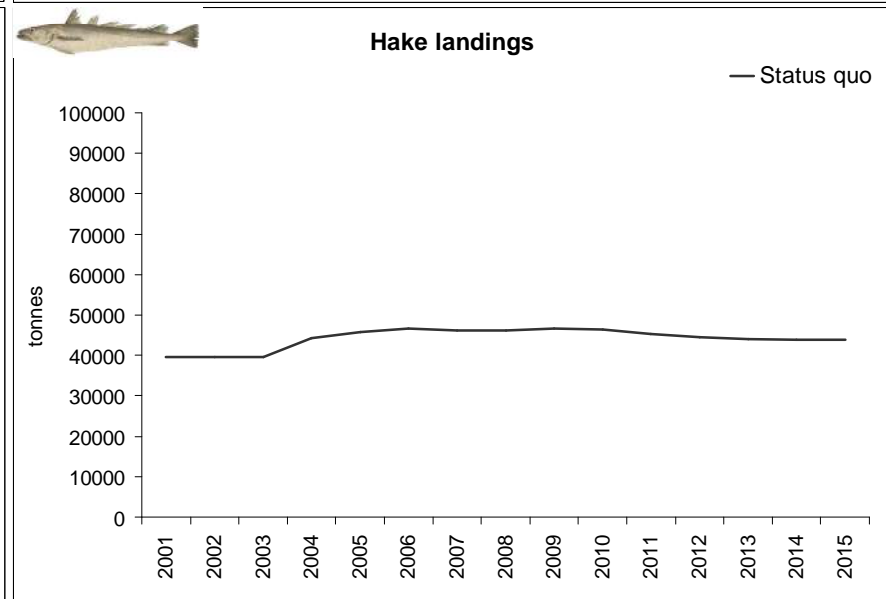
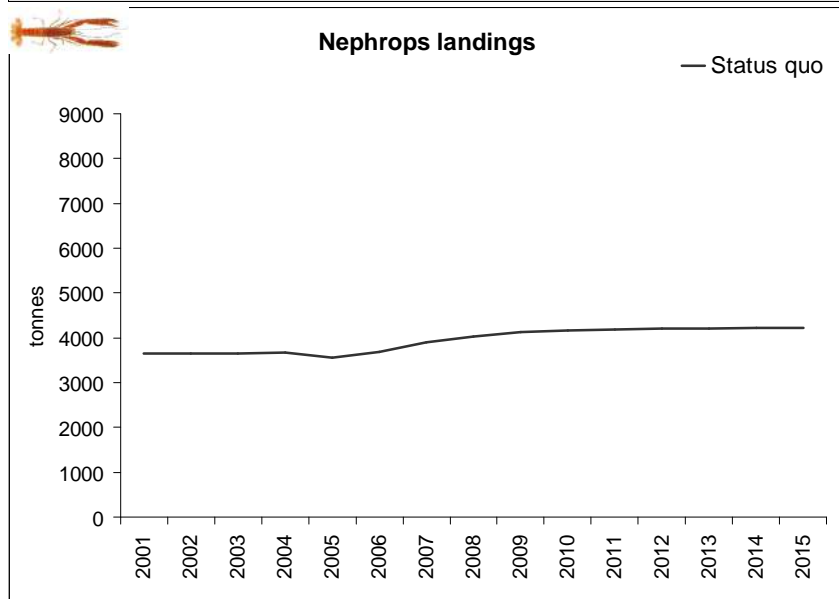
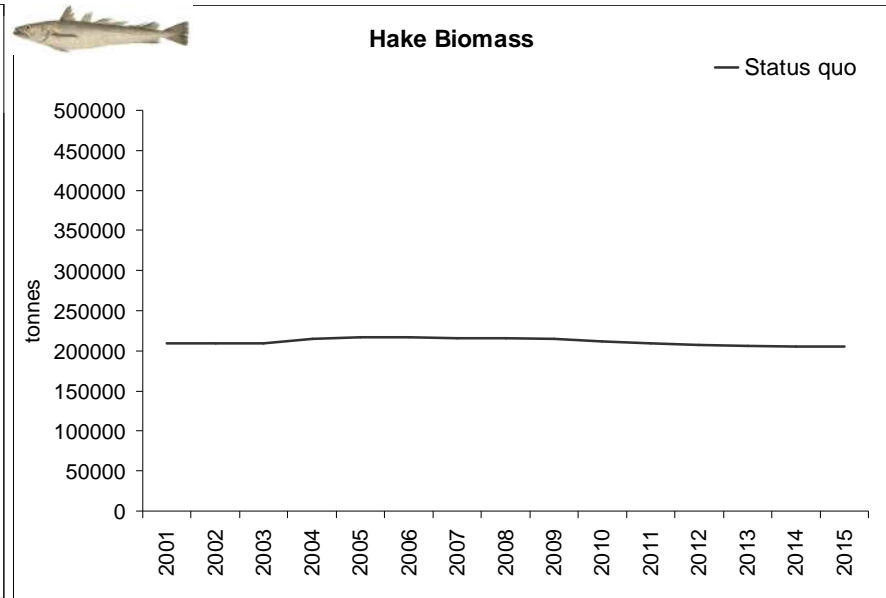
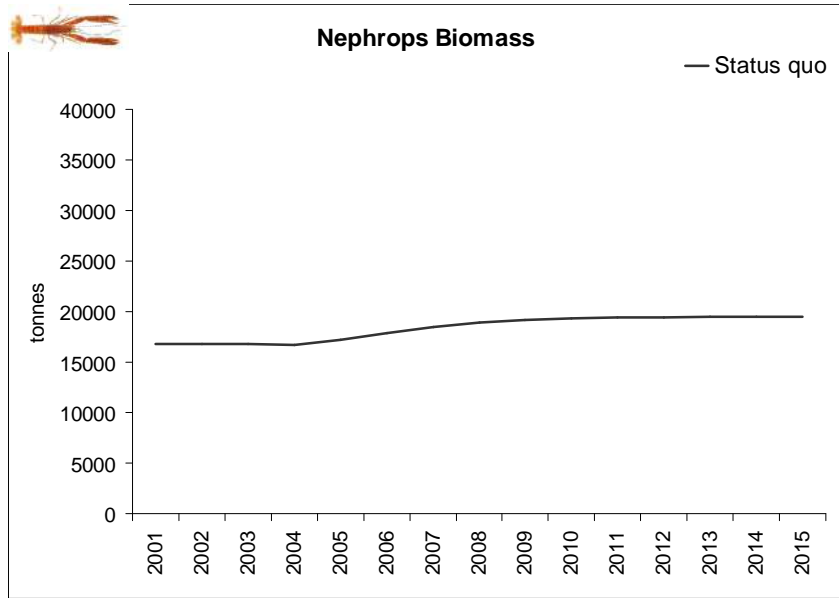
- uncertainties
- Other fleets and other commercial and non commercial species
- Market
- Microeconomic Behaviors

THANK YOU!

# 3. Results

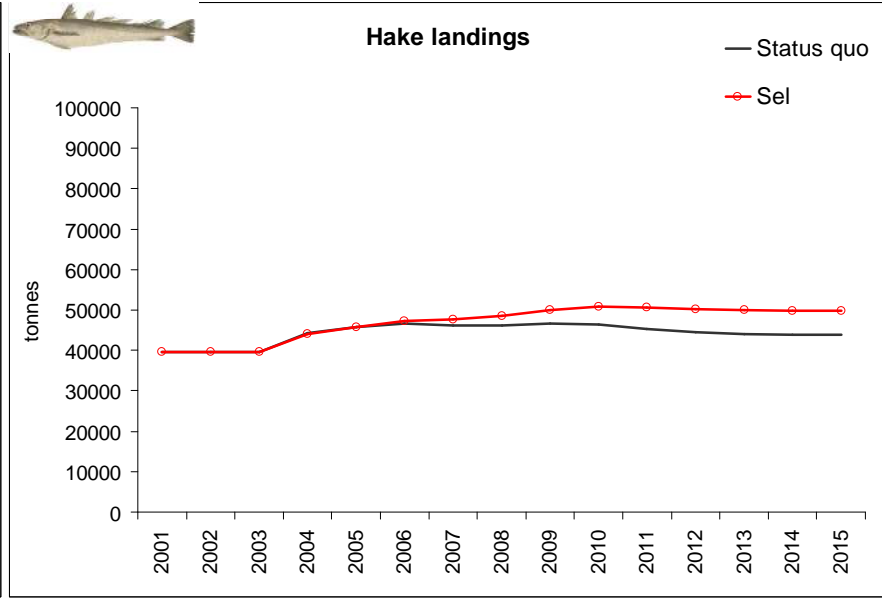
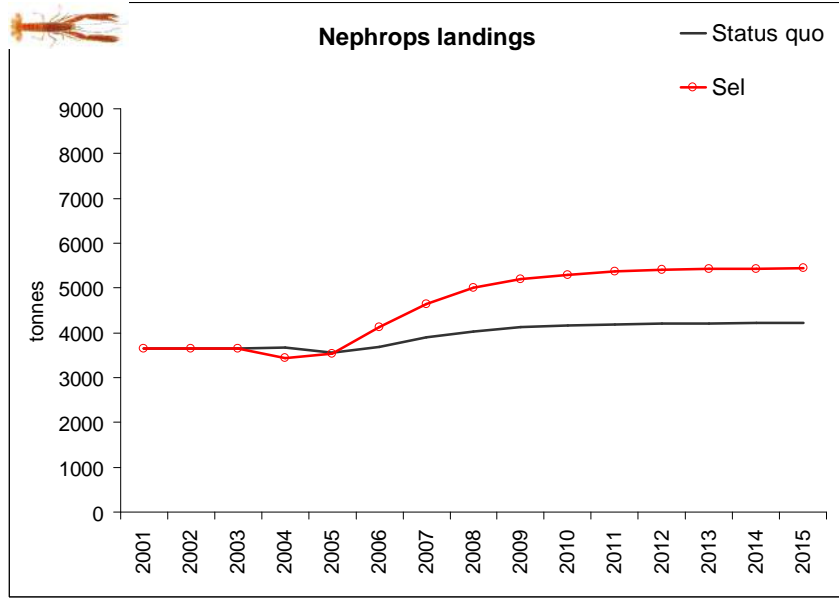
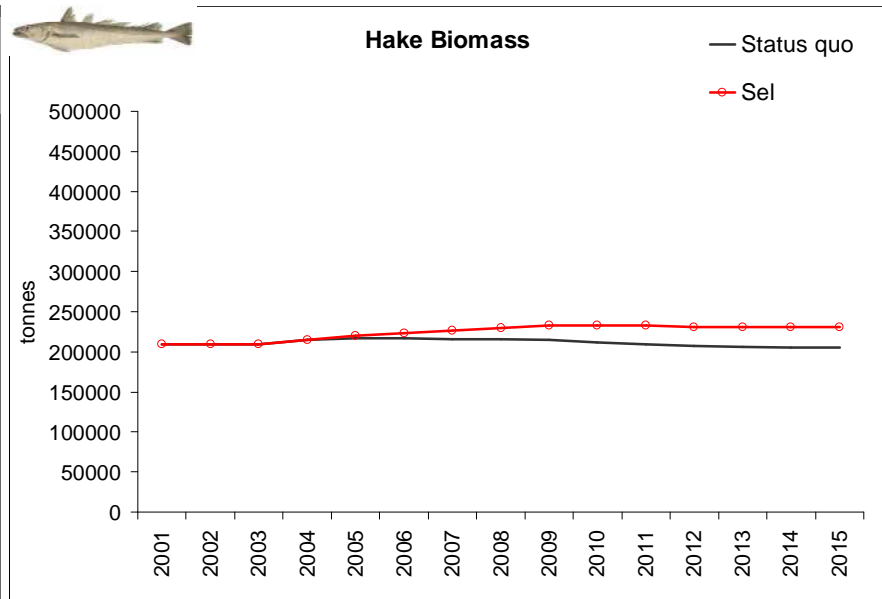
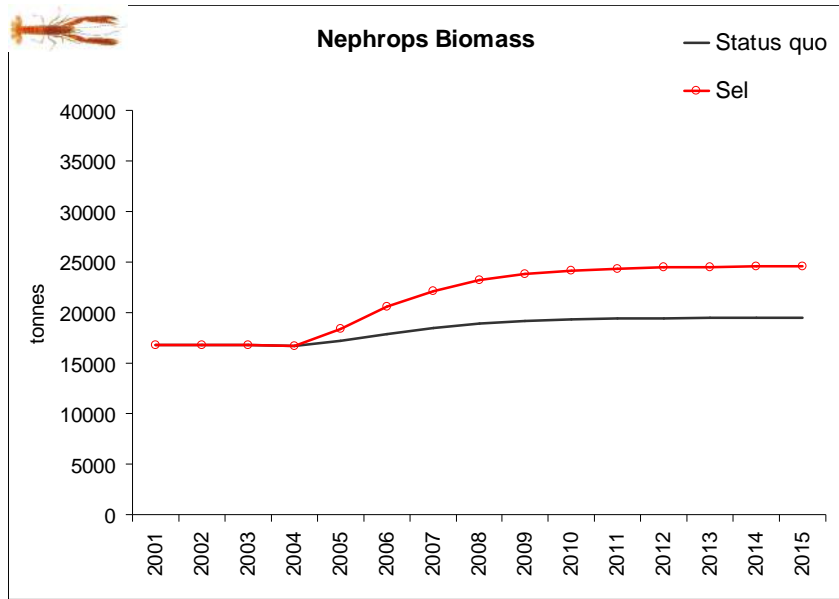


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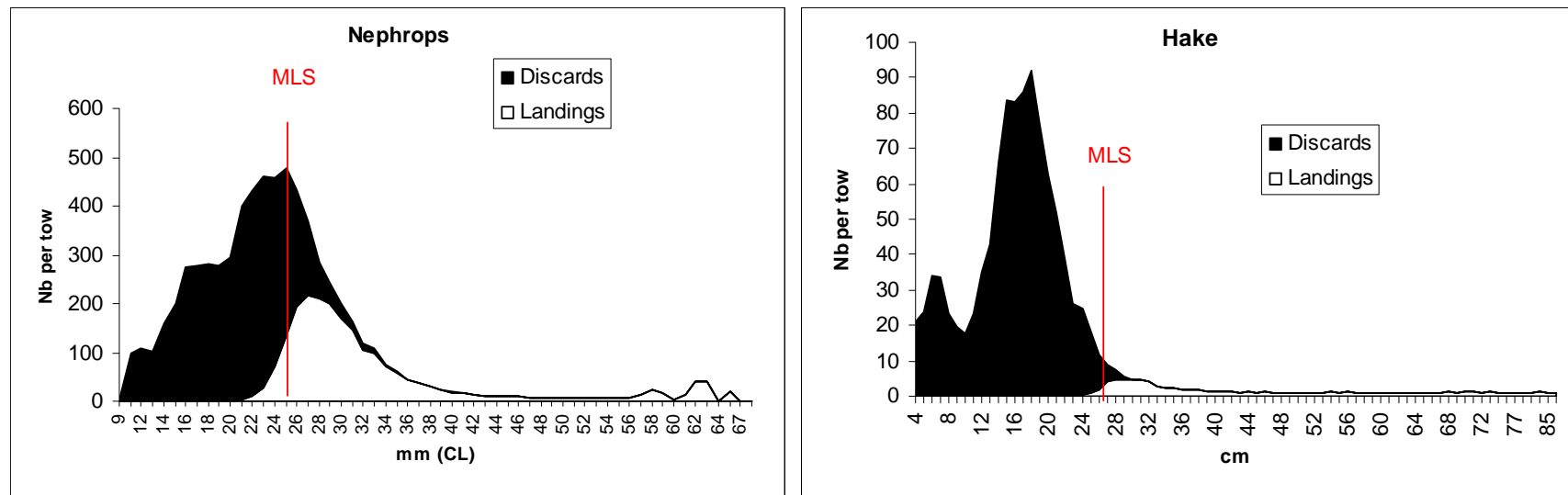




# 3. Results



Distribution of *Nephrops* (a) and hake (b) landings and discards by the *Nephrops* trawler fleet in number per length per mean tow.



Sources : Catches sampled on board, 242 sampled tows 2002-2004.  
(Obsmer/IFREMER/SIH, 2004)

