



# Norwegian use of Reference Fleets

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# The Norwegian Reference Fleet

*“A trustful collaboration between fishers and scientists.”*

Providing IMR with detailed information on fishing activity and catches on a regular basis

*Catch composition*



*Biological sampling*



*Gear development*



*Joint understanding*

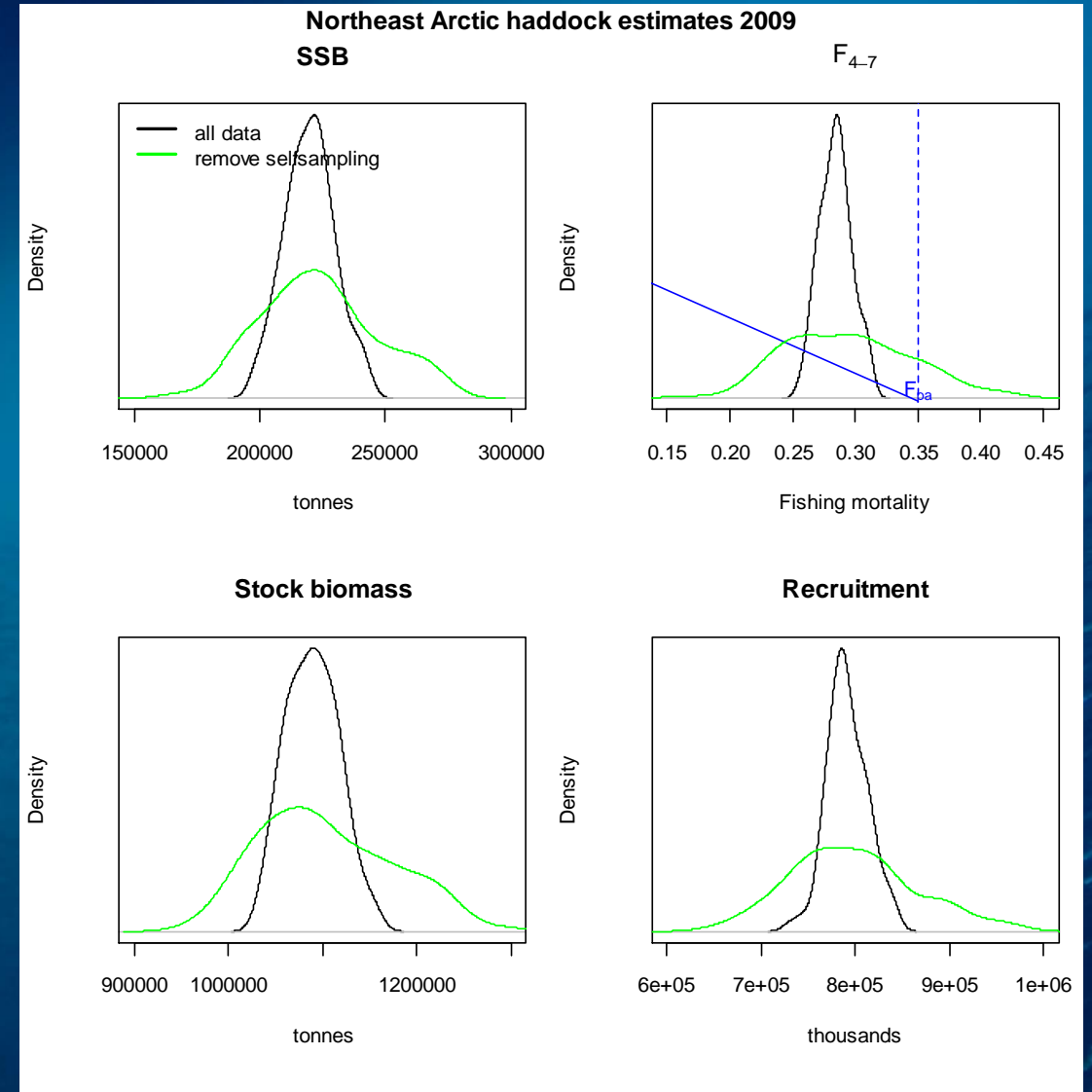


# The Norwegian Reference Fleet

## *Stock assessments*

### Data rich stocks

- Important data source to reduce bias and increase precision in assessments.
- There are too few vessels to be the only data source for stock estimations for some species (Bowering et al. 2011)

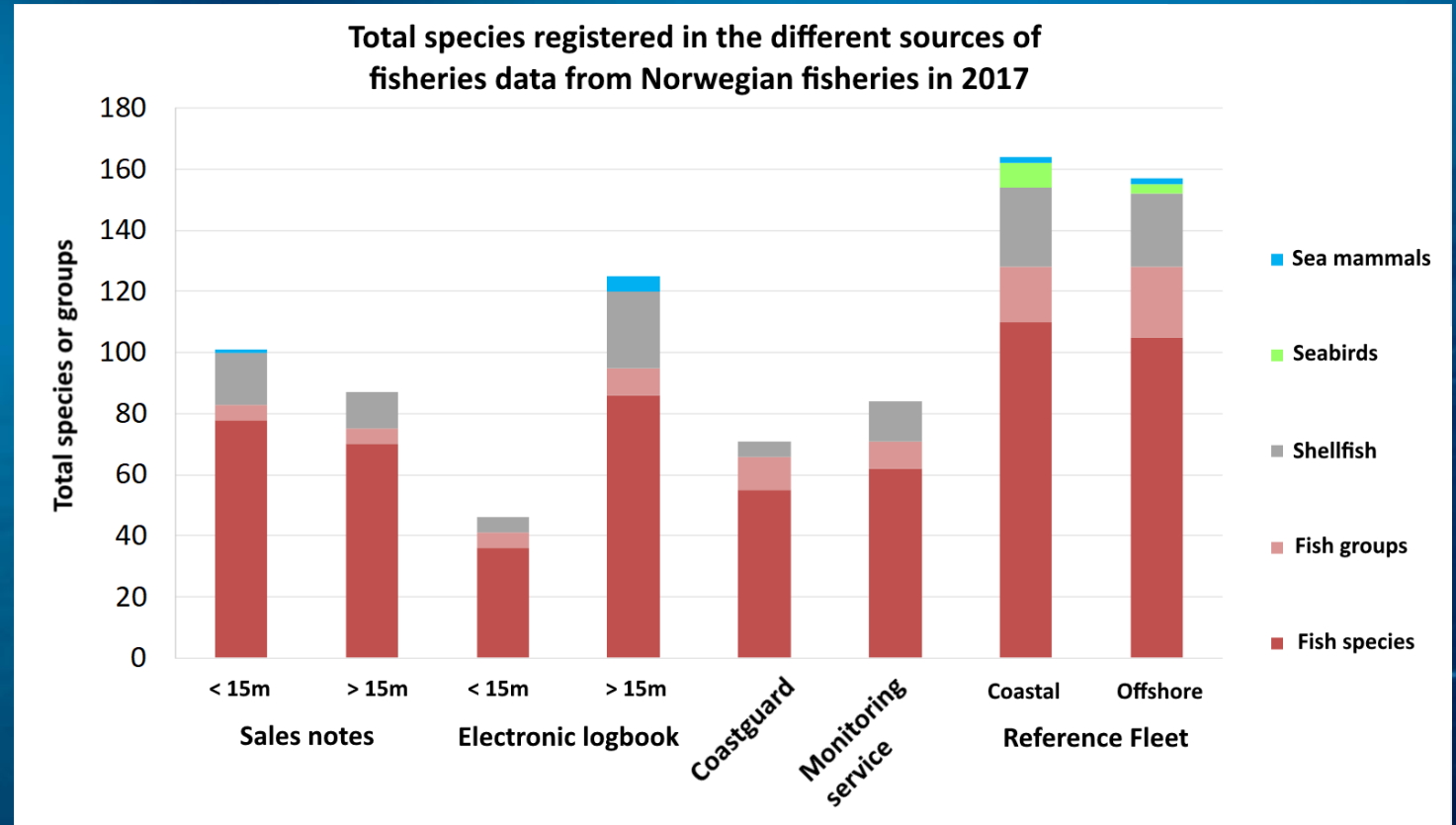


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## *Catch composition*

Reference fleet data gives a much better and complete overview of total catches and discards than all other sources of fisheries data

Fishermen in the Reference fleet also register bycatches of seabirds and sea mammals



# The Norwegian Reference Fleet

## Catch composition



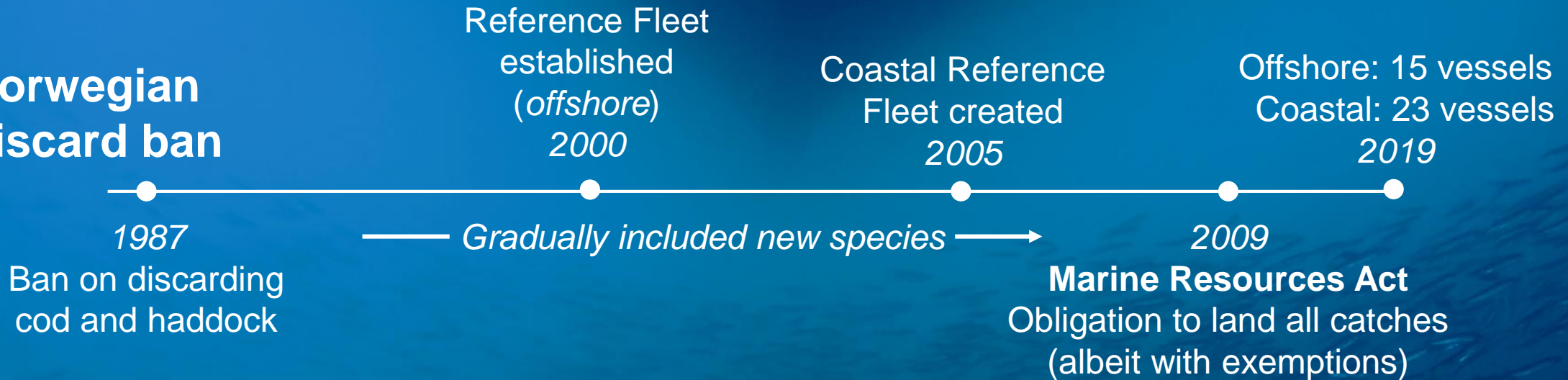
- Seabirds
- Marine mammals
- Commercial & non-commercial fish species



# The Norwegian Reference Fleet

## *Discarding*

### Norwegian discard ban



How can discards be estimated  
under a discard ban?



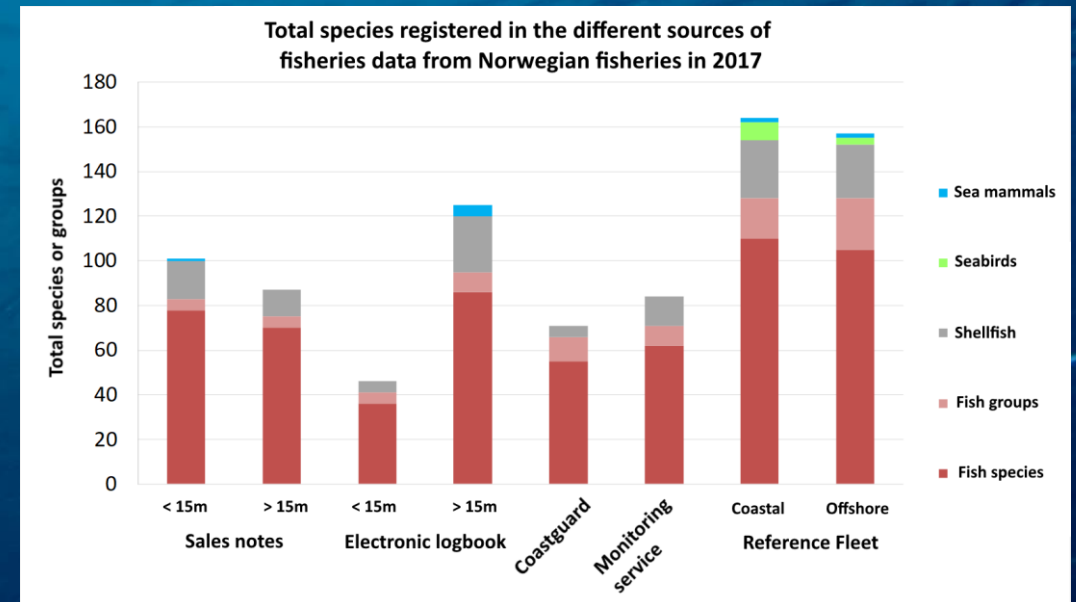
# The Norwegian Reference Fleet

## *Discarding*

## TRUST

Reference Fleet records their discarding activity

- Coastguard
  - Fisheries Dir
  - IMR
  - Fishers
- enforcement  
surveillance  
data users  
data collectors*
- } Agreement not to request/use RF data for prosecutions
- Only anonymous data are published/shared
  - Reference Fleet have no immunity



# The Norwegian Reference Fleet

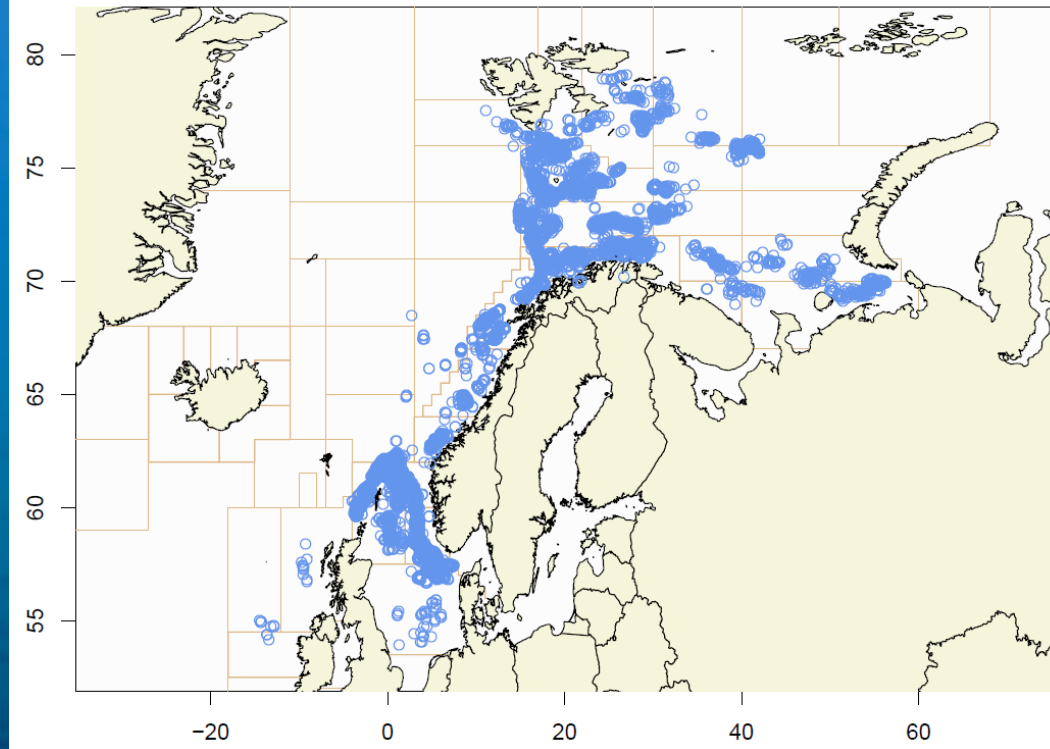
## *Reliability & representativeness*

Coverage?

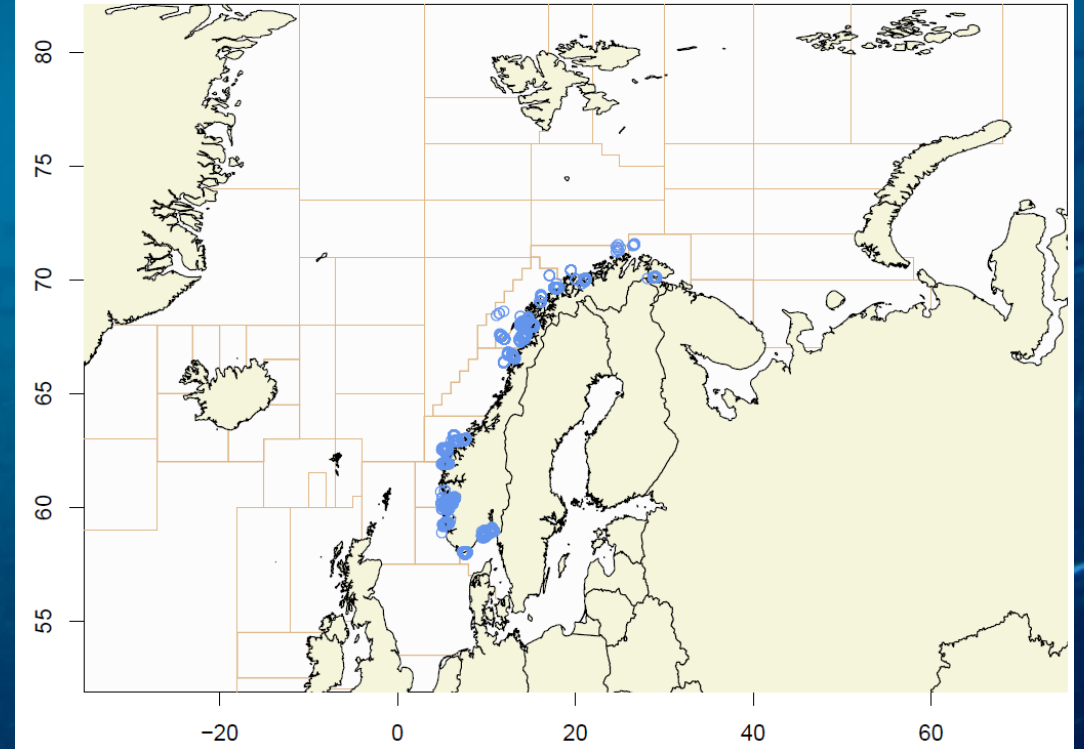
'Normal' fishing behaviours?

Reliable data collection?

Havgående referanseflåte 2018



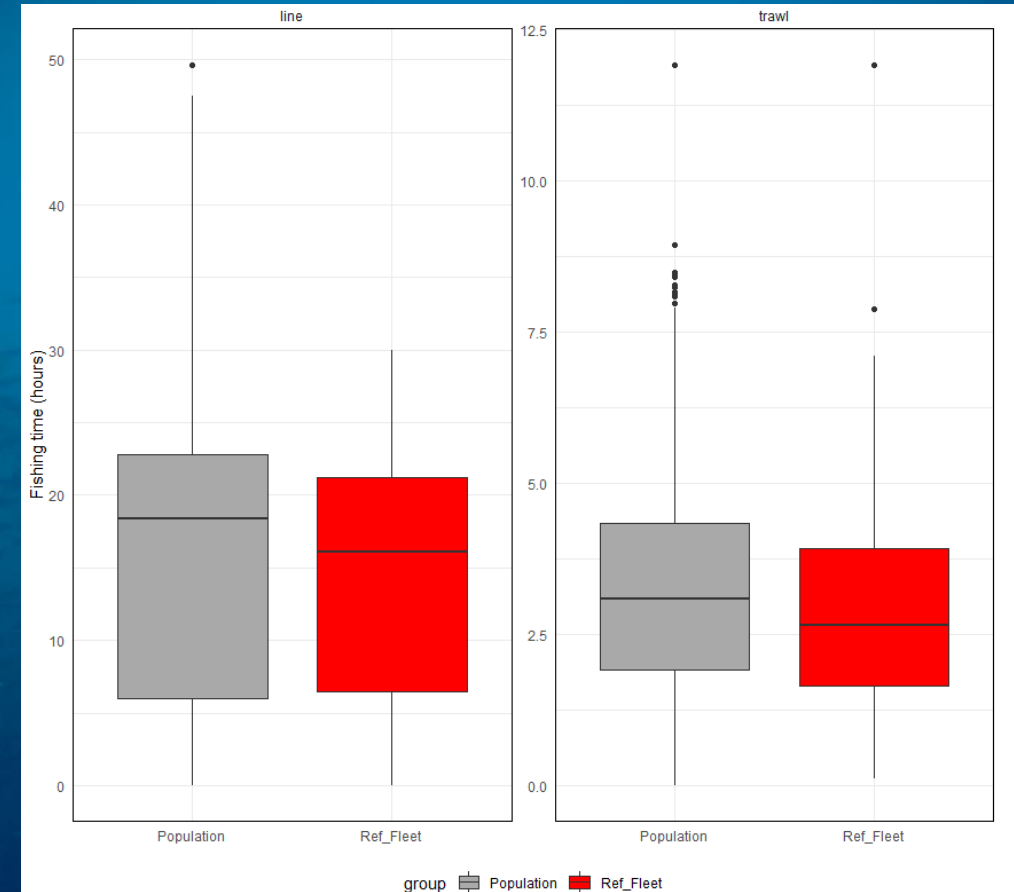
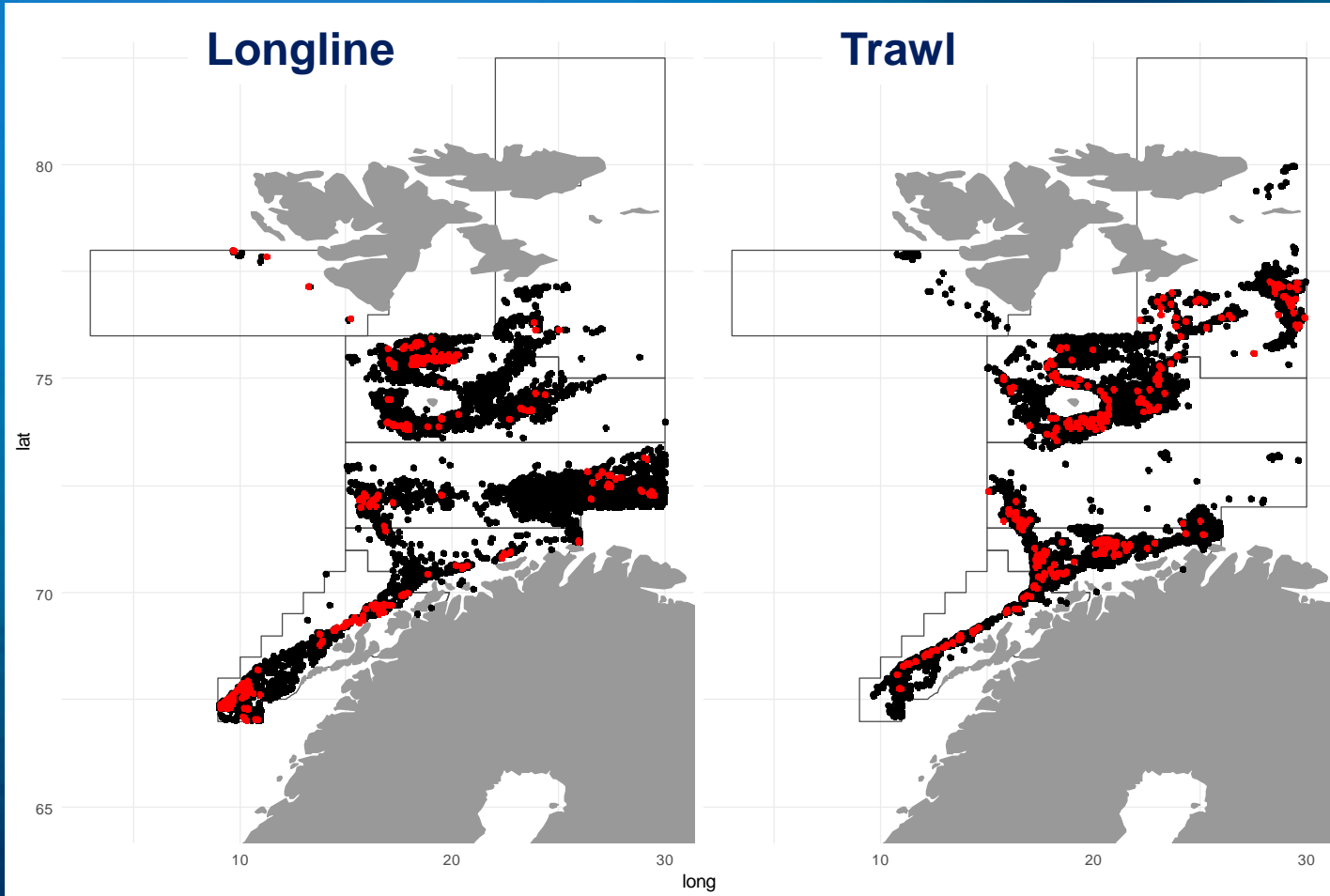
Kystgående referanseflåte 2018



# The Norwegian Reference Fleet

## *Reliability & representativeness*

Preliminary results from  
Barents Sea trawl & line fishery



# The Norwegian Reference Fleet

*"A trustful collaboration between fishers and scientists."*



All pictures courtesy of  
IMR/Reference Fleet



Gullestad et al. (2015). "The "Discard Ban Package": Experiences in efforts to improve the exploitation patterns in Norwegian fisheries." [Marine Policy 54: 1-9](#)  
Bowering, R., et al. (2011). Evaluation of the Norwegian Reference Fleet - Done by an International Committee. Institute of Marine Research, report nr. 16-2011