# Norwegian use of Reference Fleets

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"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





#### Joint understanding

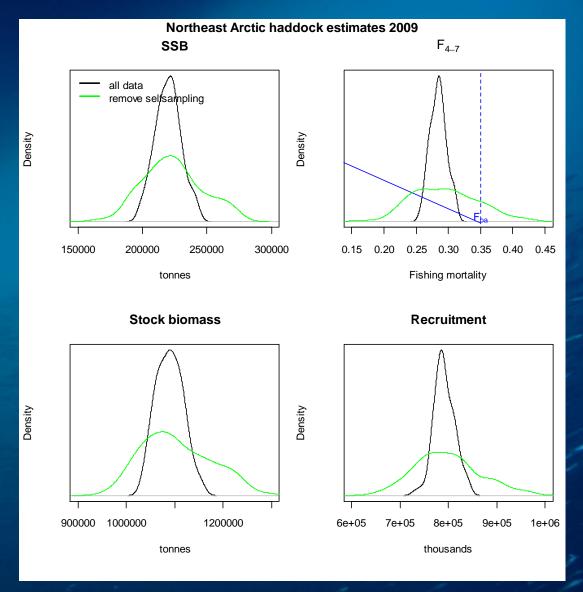




## The Norwegian Reference Fleet Stock assessments

### 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)

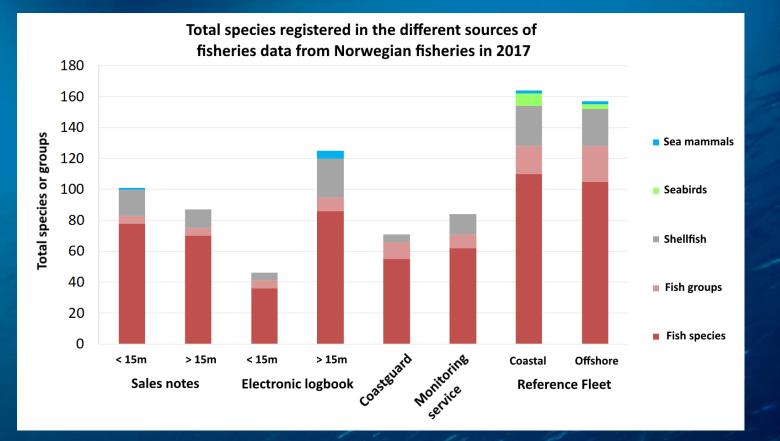




## The Norwegian Reference Fleet Catch composition

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





## **Catch composition**

#### PLOS ONE

#### RESEARCH ARTICLE

Spatial and temporal variations in seabird bycatch: Incidental bycatch in the Norwegian coastal gillnet-fishery

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#### Original research article

Assessing incidental bycatch of seabirds in Norwegian coastal commercial fisheries: Empirical and methodological lessons

CrossMark

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journal homepage: www.elsevier.com/locate/biocon



Check for

Estimated bycatch of harbour porpoise (*Phocoena phocoena*) in two coastal gillnet fisheries in Norway, 2006–2008. Mitigation and implications for conservation



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





## How can discards be estimated under a discard ban?

## The Norwegian Reference Fleet *Discarding*

## **TRUST**

Reference Fleet records their discarding activity

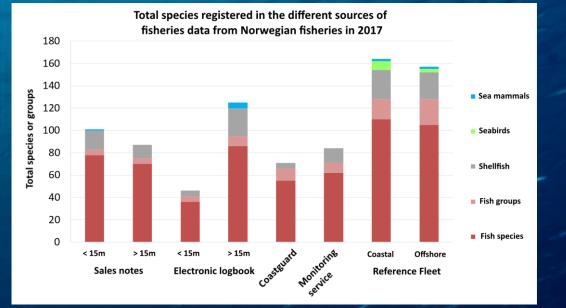
- Coastguard
- Fisheries Dir
- IMR
- Fishers

*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

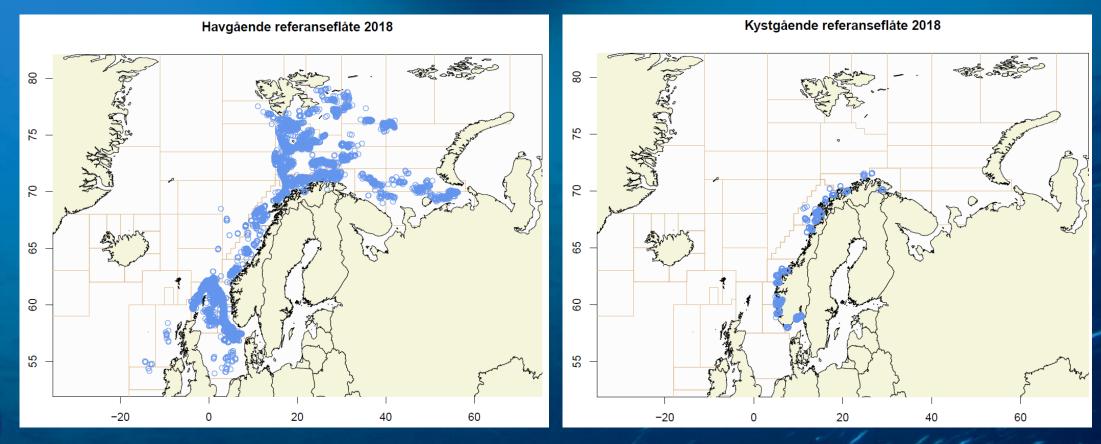






## The Norwegian Reference Fleet Reliability & representativeness

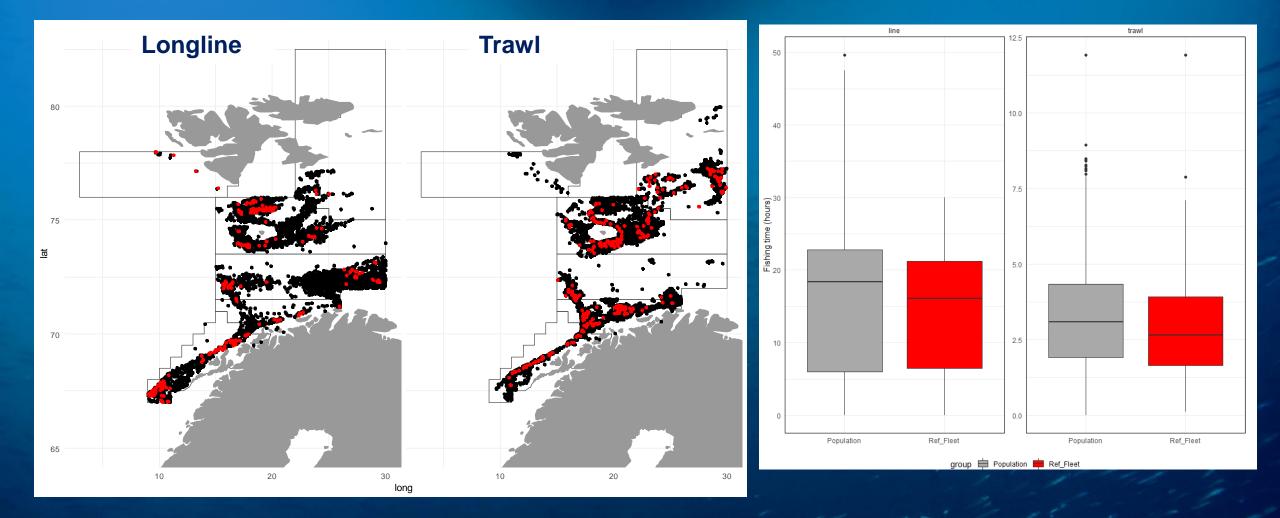
Coverage? 'Normal' fishing behaviours? Reliable data collection?





## **Reliability & representativeness**

Preliminary results from Barents Sea trawl & line fishery



"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