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Leiðandi
vettvangur í tíu ár



Fully documented fisheries trials in Denmark

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SJÁVARÚTVEGS
RÁÐSTEFNAN



HAMPIÐJAN

Þrifa Óhásið

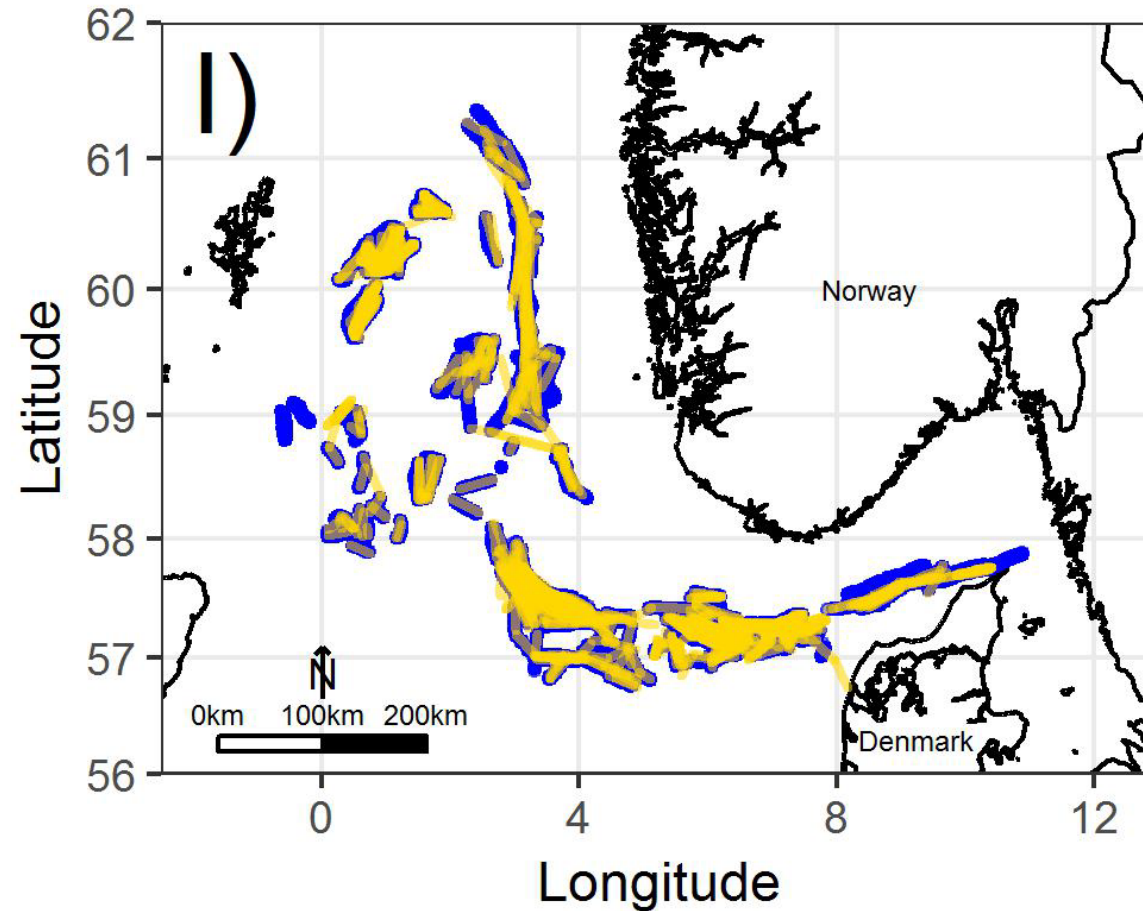
What is meant by Fully Documented Fisheries?

Independent documentation of fishing activities either

- with electronic monitoring (EM)
- by means of cameras and sensors
- or with observers

What is meant by Fully Documented Fisheries?

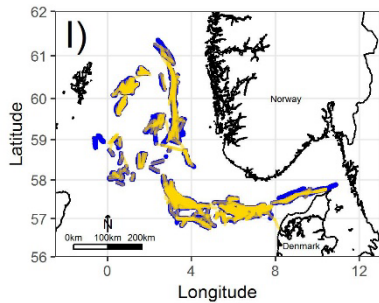
Area and gear



What is meant by Fully Documented Fisheries?

Catches (including unwanted)

Area and gear



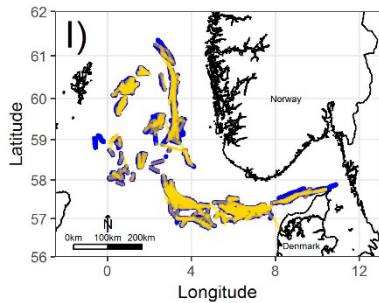
What is meant by Fully Documented Fisheries?

Independent verification of informations

Area and gear



Catches (including unwanted)



Electronic Monitoring

The use of imagery, sensors, and global positioning systems (GPS) to independently monitor fishing operations, effort, and/or catch.

WORKING GROUP ON TECHNOLOGY
INTEGRATION FOR FISHERY-DEPENDENT
DATA (WGTIFD)

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ICES INTERNATIONAL COUNCIL FOR THE EXPLORATION OF THE SEA
CIEM CONSEIL INTERNATIONAL POUR L'EXPLORATION DE LA MER

Mandatory EM system in place

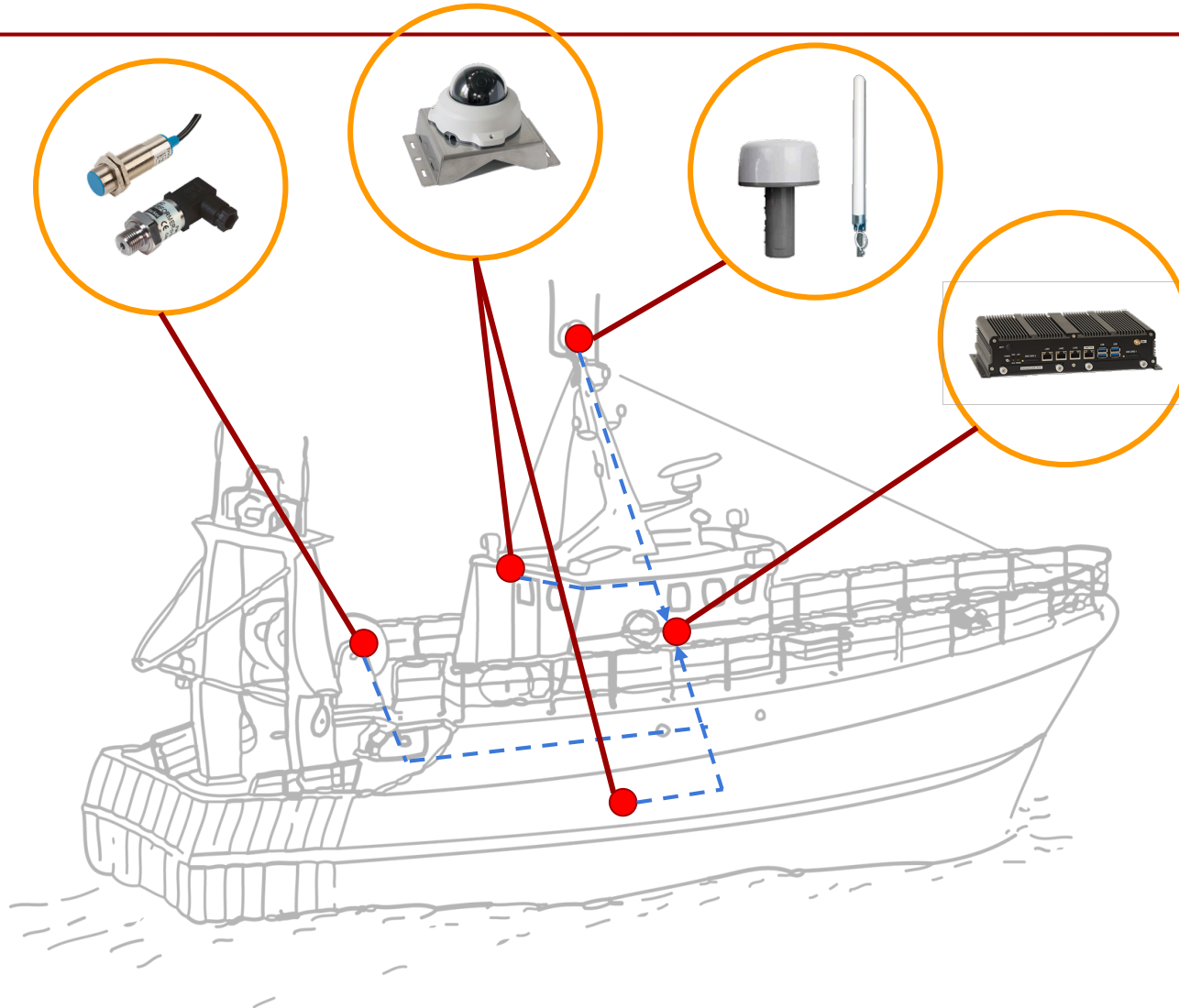
Common mussels fishery in Denmark

Verified and detailed information on fishing effort and fishing grounds

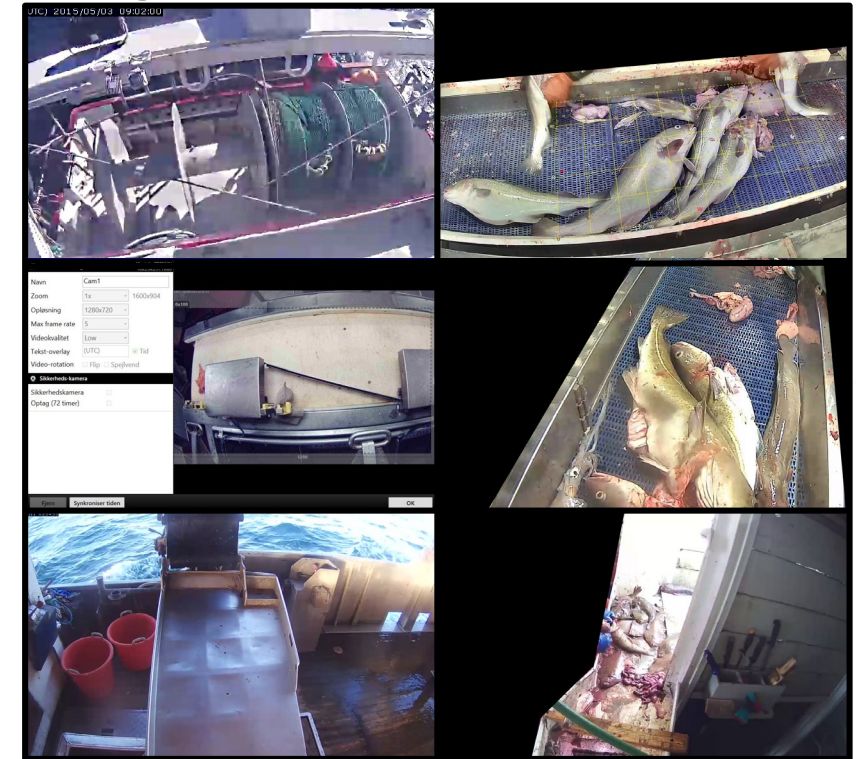
Sensor and positional data (10th second)

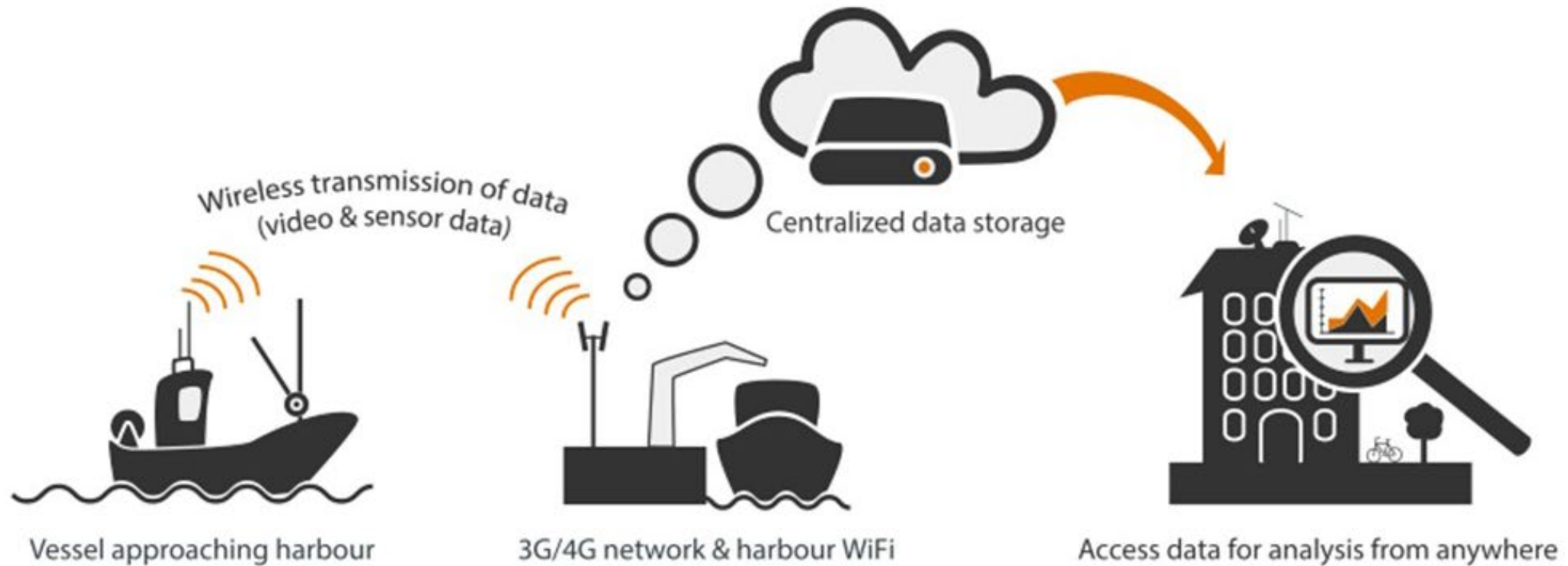
Allow fishing to occur in otherwise closed areas





Trap
Dishing area





EM in Denmark

🐟 Preliminary trials 2008 - 2009. 4 trawlers, 1 Danish seiner and 1 gillnetter



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The Cod Catch Quota Management trial



Voluntary

Cod quota increase (+30%) and derogation from days at-sea regulations as incentive

Cod discards allowed but deducted from quota





The Cod Catch Quota Management trial



EM with video as verification of self-reported discards recorded in electronic logbook (eLog)

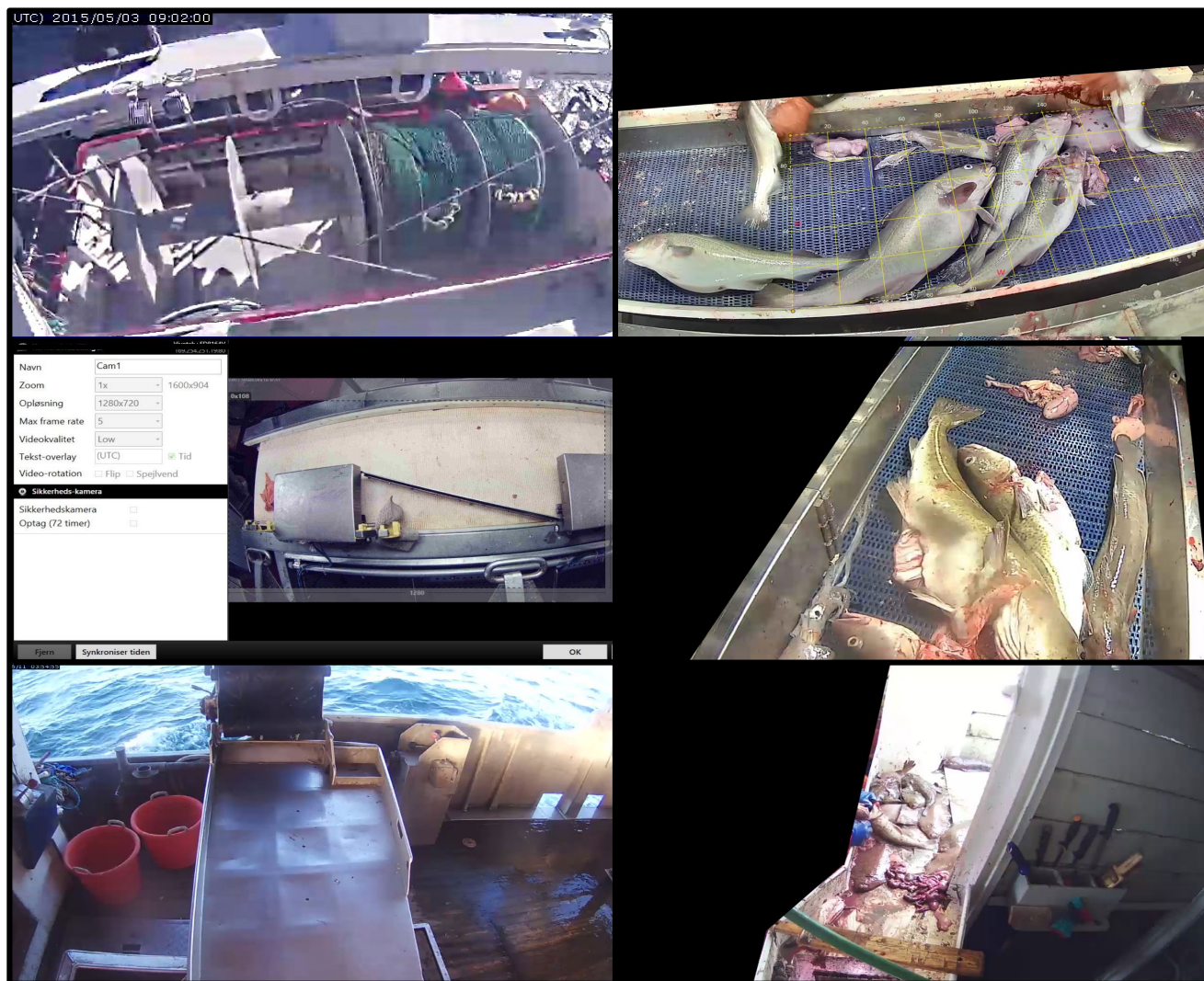
Minimum audit: 10% of all fishing operations



Logo: Rami Dimon



The Cod Catch Quota Management trial





The Cod Catch Quota Management trial

Video audit

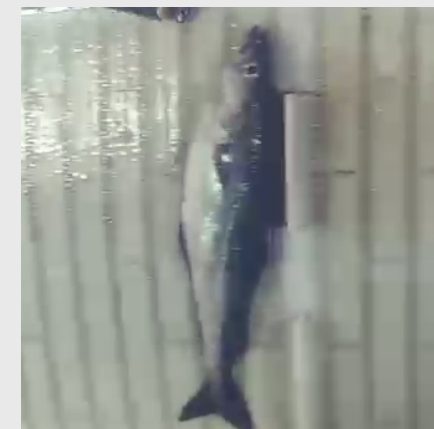
Raw video footage

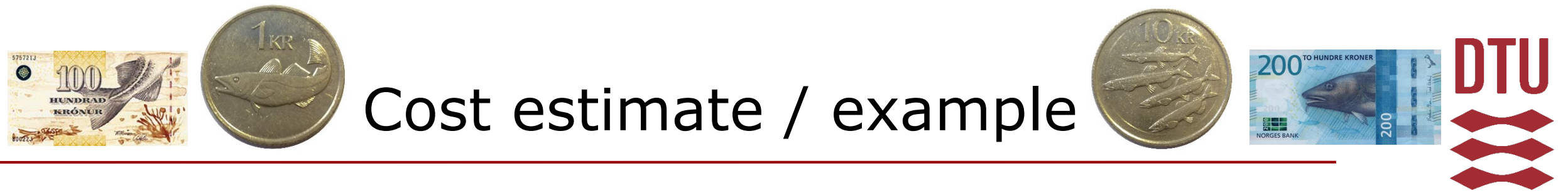


Data

Picture of every discard with:

- Species
- Length measurement
- Weight estimate
- ID-marker
- Time stamp
- Haul, start/stop time
- Haul, start/stop position
- ID link to eLog





Cost estimate / example

2016 trial: 12 vessels

5 roundfish species audited

(hake/lýsingur, haddock/ýsa, whiting/lýsa, cod/porskur, saithe/ufsi)

Average of ~30% of the fishing operations audited

Average of 21-35 minutes to analyze a operation

Ref. Bergsson et al. (2017), DOI:
10.13140/RG.2.2.23628.00645



Cost estimate / example



~400 vessels, 10% haul coverage

Estimate 1,200 TB data collected annually

EM system + installation: ~8,200 € per vessel

Total cost 1st year estimate: 4.9 Mill. €

Running cost/ 2nd year estimate : 1.7 Mill. €/year

Ref. Plet-Hansen et al. 2019,
DOI: 10.1016/j.fishres.2019.03.009



Cost estimate / example



~400 vessels, 10% haul coverage

Estimate 1,200 TB data collected annually

EM system + installation: ~8,200 € per vessel

Total cost 1st year estimate: 4.9 Mill. €

≈ 12,400 €/vessel

Running cost/ 2nd year estimate : 1.7 Mill. €/year

≈ 4,300 €/year/vessel

Ref. Plet-Hansen et al. 2019,
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Cost estimate / example



Other Danish, Dutch, British trials:

Running cost: 4,000 – 7,000 €/year/vessel

Ref. van Helmond et al. *In Press*

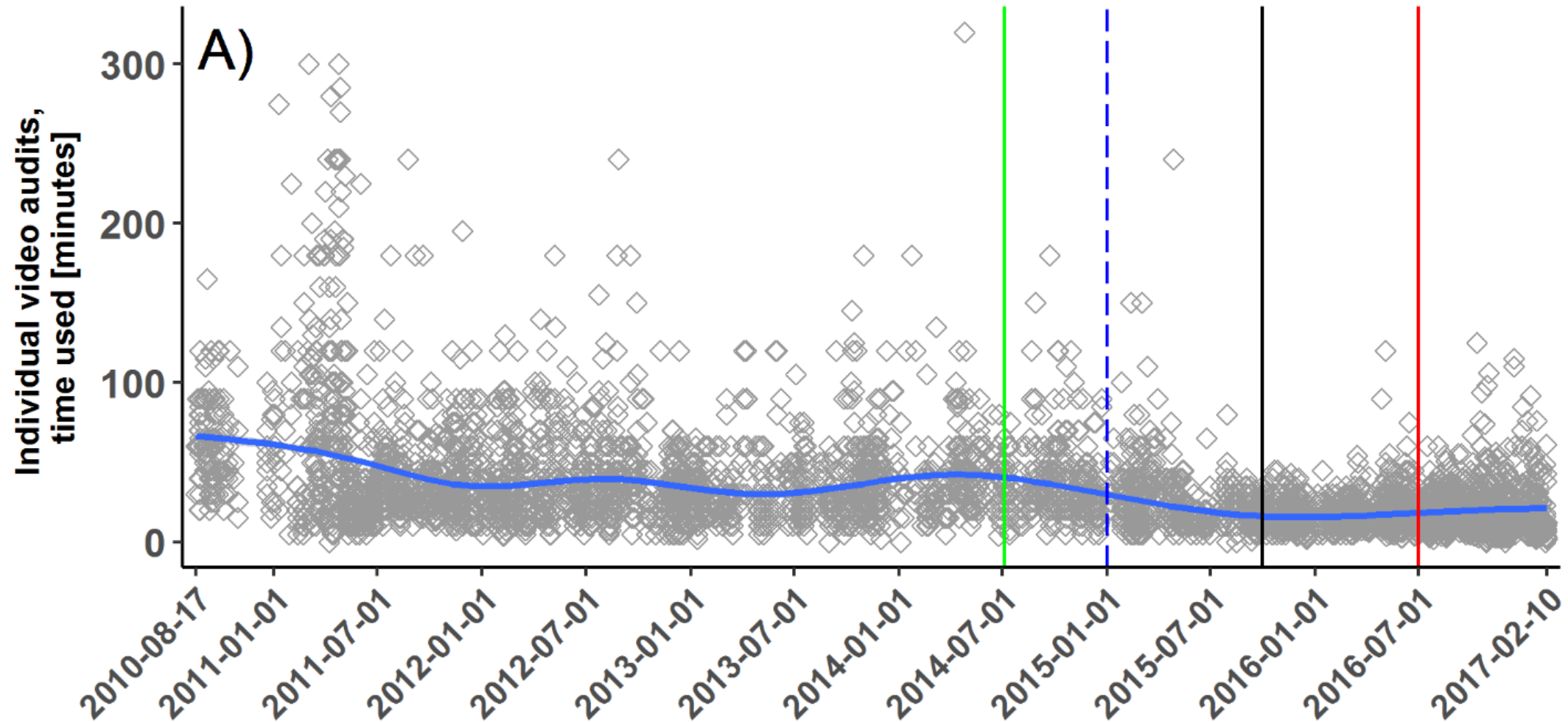
UK House of Lords report estimate

All UK vessels > 10 meters £5 Mill. ≈ 5.7 Mill. €/year

Current UK fisheries control cost £20 Mill. ≈ 22.5 Mill. €/year

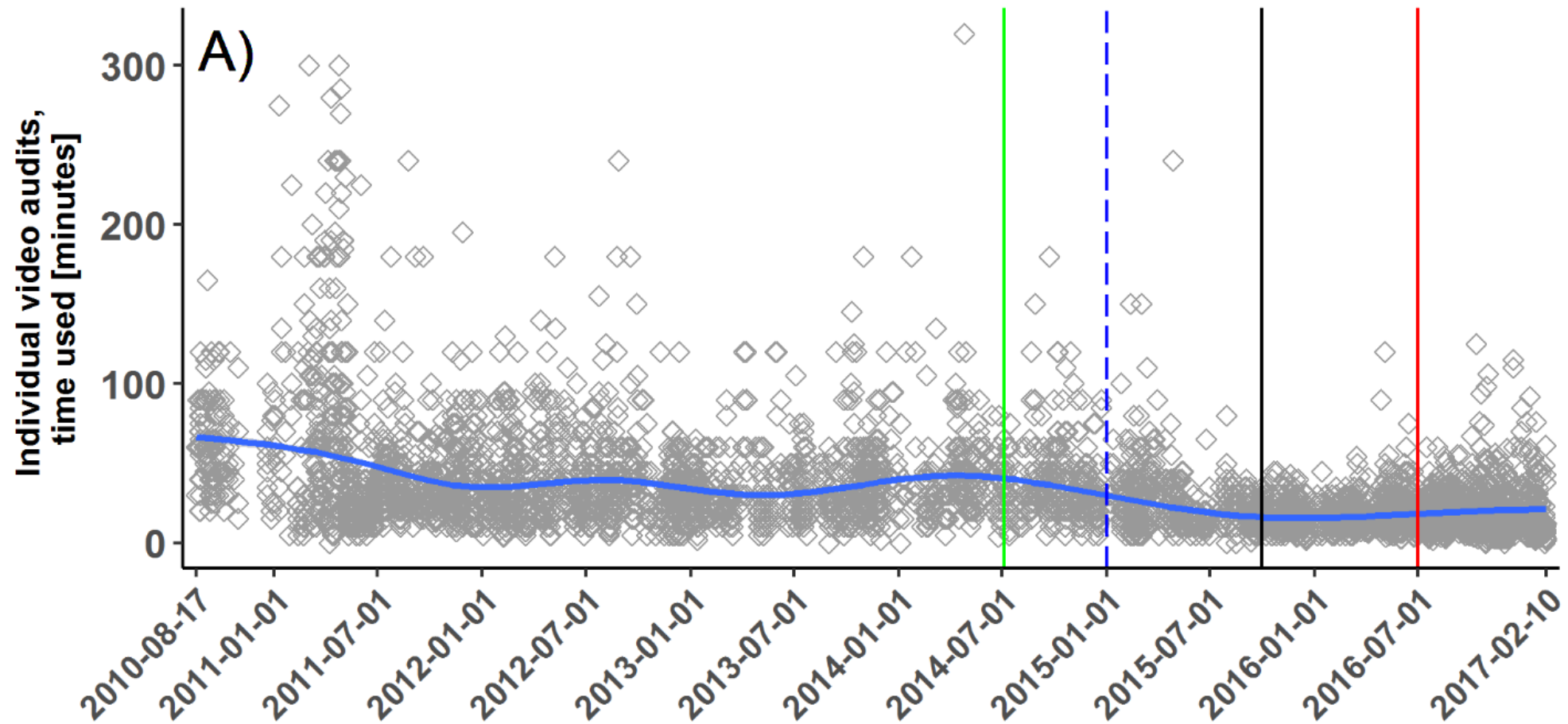
Ref. House of Lords European Union
Committee, 26th Report of Session
2017-19, HL Paper 276, 2019

Audit time per catch processing



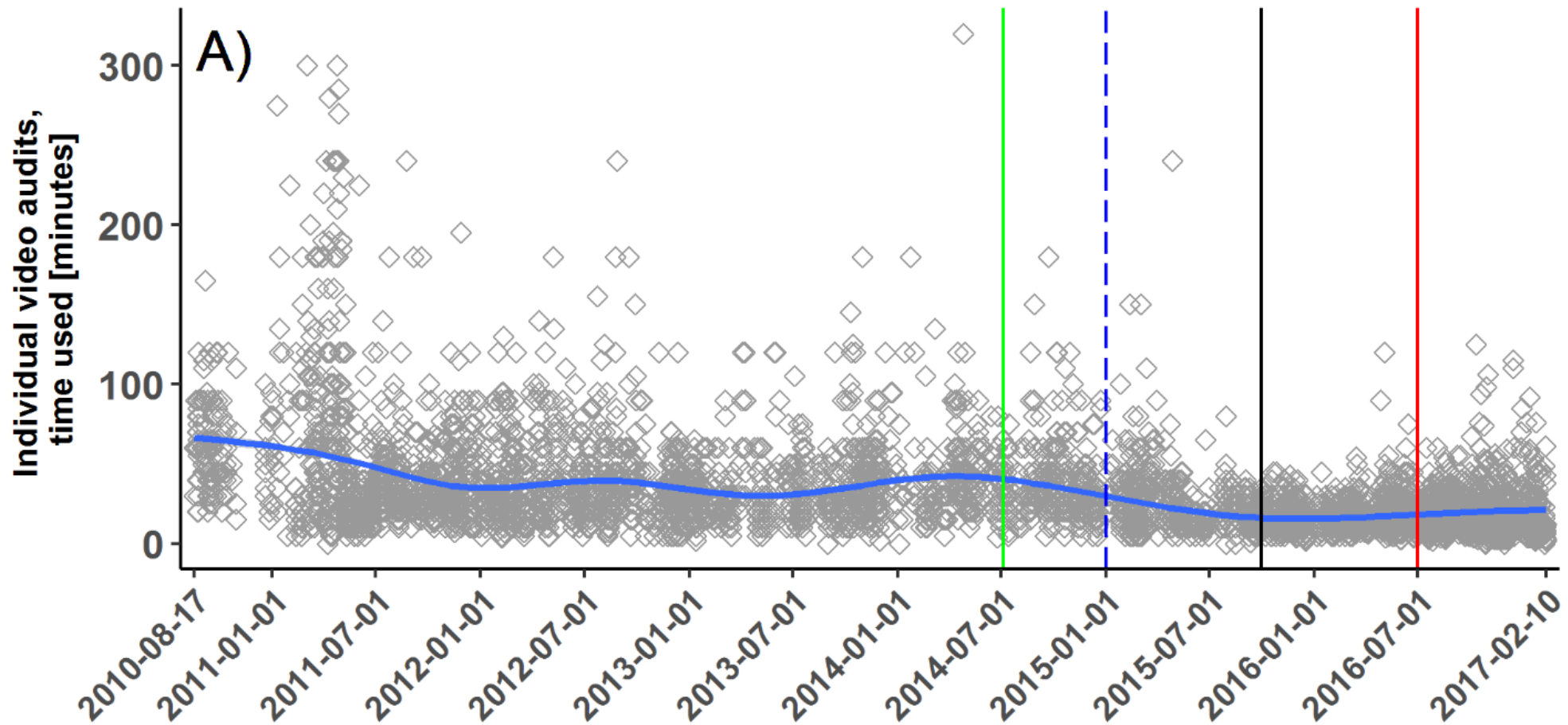
Audit time

Green line: Software change (grid overlay)



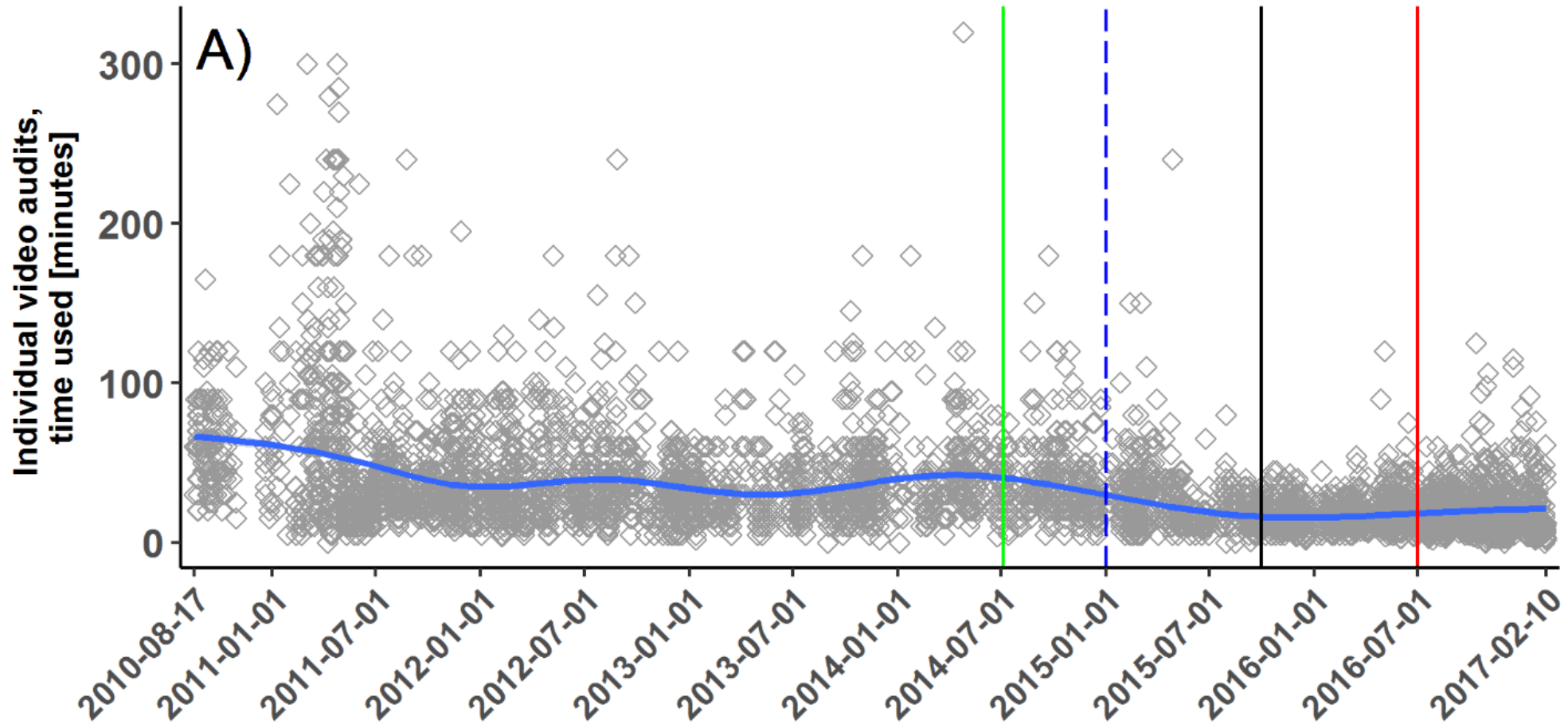
Audit time

Blue dashed line: Objective change (cod, haddock, saithe, whiting)



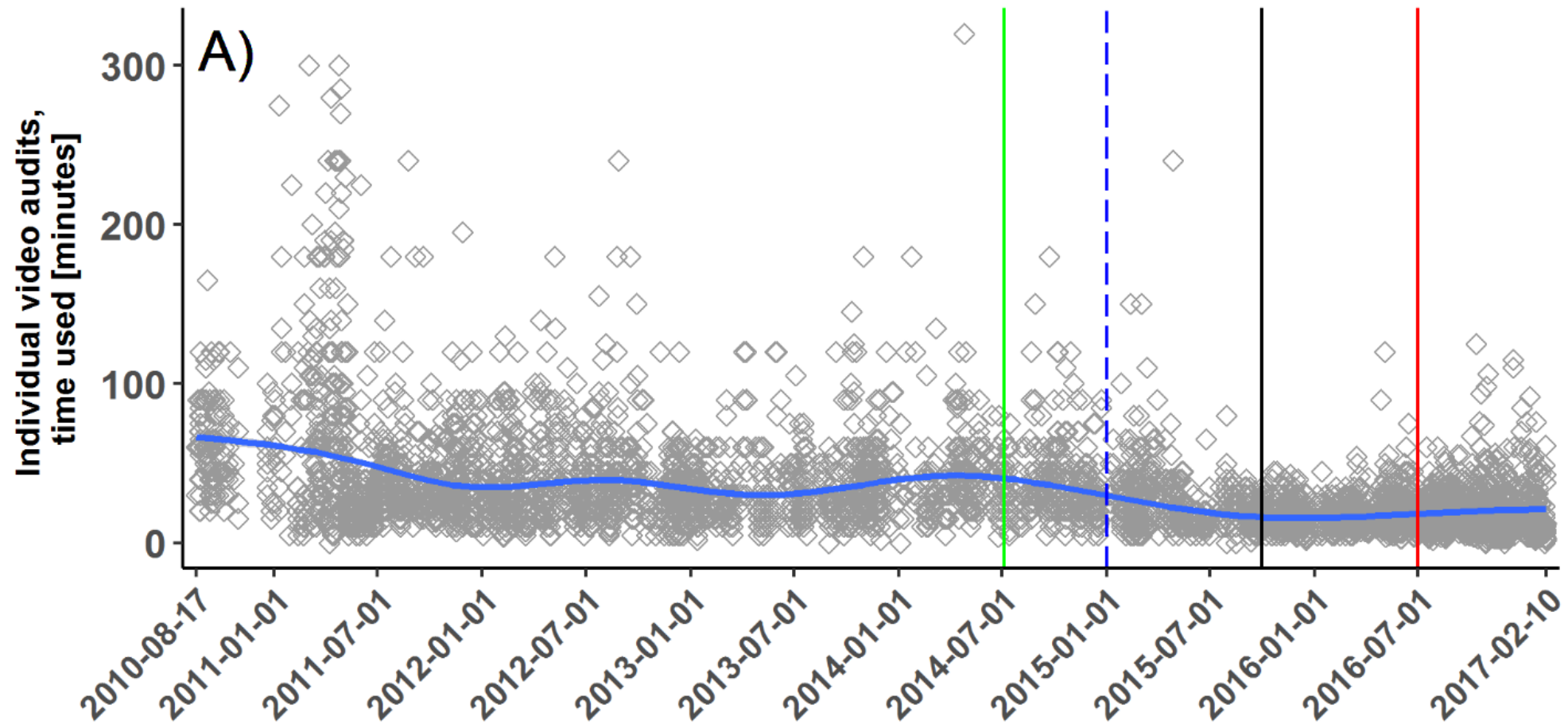
Audit time

Black line: Objective change (hake is added)



Audit time

Red line: Software change (measuring line)

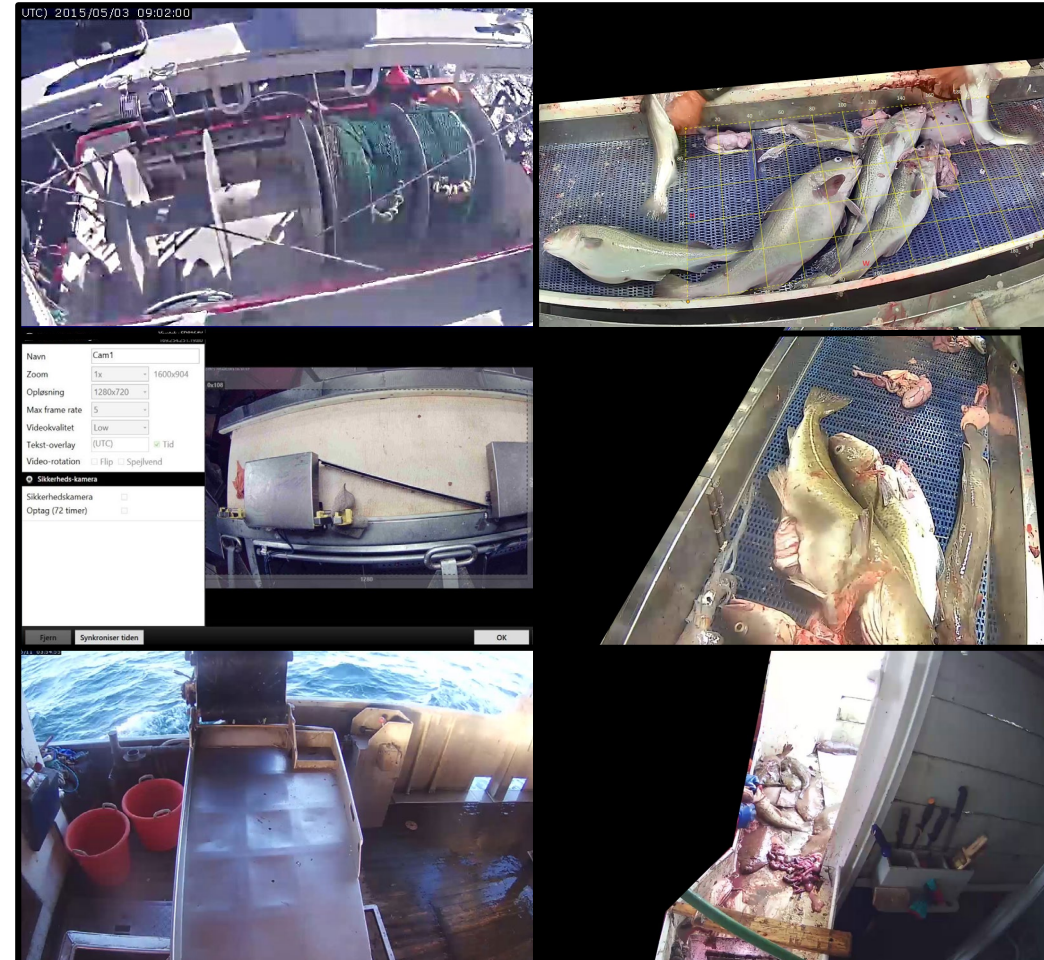


- Management?
- Species?
- Gear?
- Vessels?
- Detail level?



Purpose of EM?

- Discard ban
- Catch Quota
- Verify logbooks
- Improve scientific data
- Bycatch and protected species
- Others?



Thank you for your attention

