Evaluation of the impact of pulse fishery on a selection of North Sea fish & invertebrates

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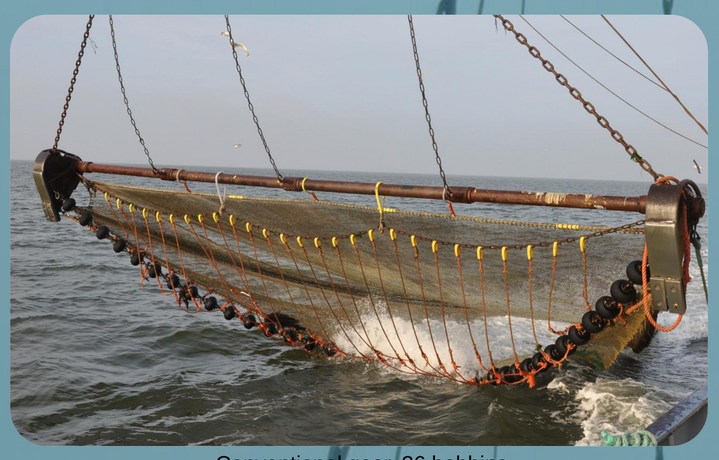
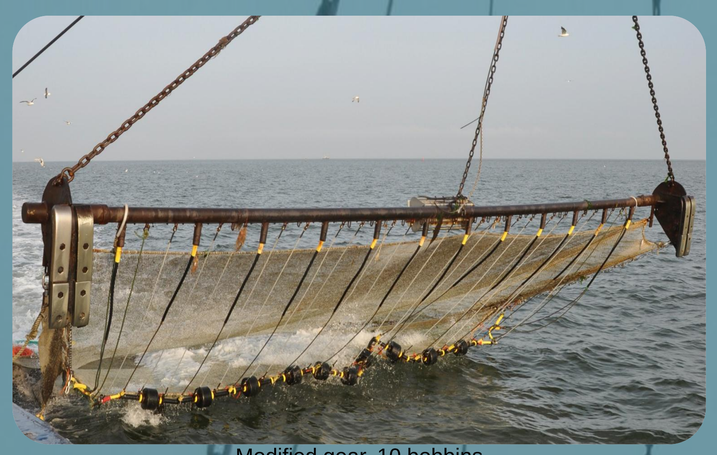
1 Introduction

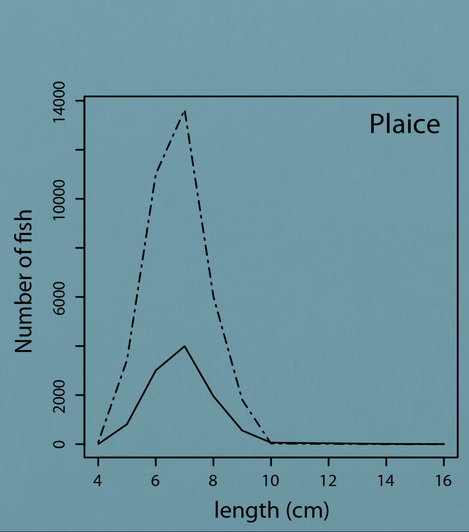


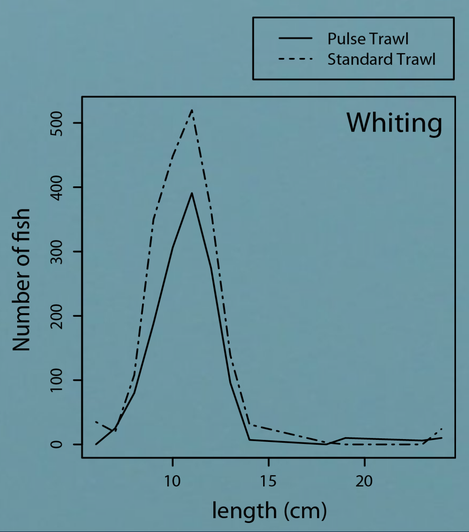
Conventional gear, 36 bobbins

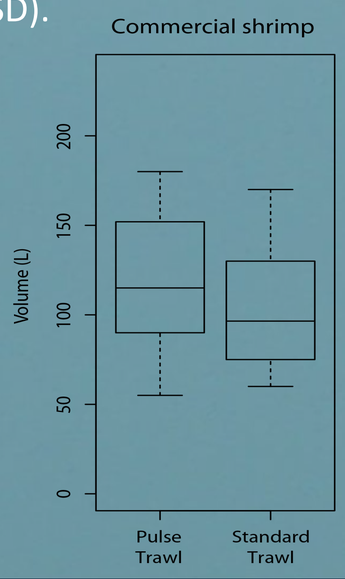


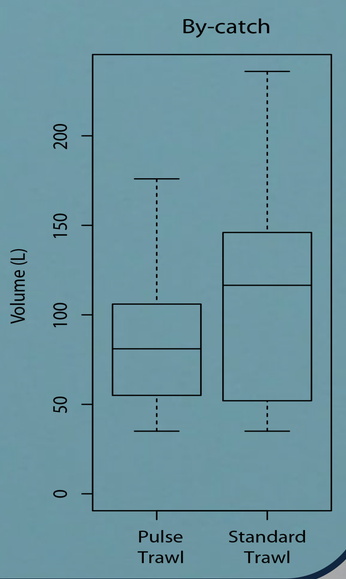
Modified gear, 10 bobbins

The application of an electric field (low-frequency, pulsed DC) in a brown shrimp beam trawl was successfully tested on commercial shrimp cutters. Preservation of commercial catches, reduction of bottom contact and discards were the decisive criteria in the evaluation of the electro-trawl. With a modified bobbin rope (10 bobbins compared to 36 in the conventional gear) the increase in commercial shrimp catch was 13,8% (± 10,1% SD). Plaice and whiting by-catch was reduced respectively by 62,0% (± 20,4 % SD) and 32,7% (± 33,1% SD).









2 Concerns

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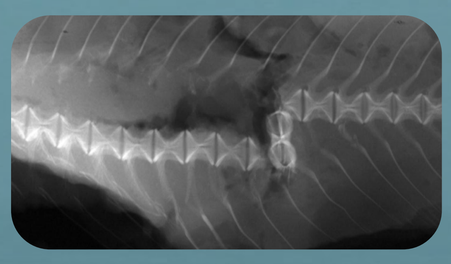
- Haemorrhages, bruises
- Spinal injury
- Deformations
- Mortality
- …



Spinal injury, cod (De Haan 2009)

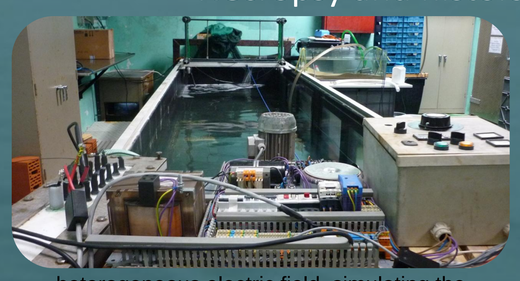
Brands, rainbowtrout (Snyder 2003)

The effect of pulse trawling for brown shrimp on marine organisms is **largely unknown**.

3 Short-term Effects of low-frequency pulsed DC

Only limited impact in plaice, pogge, armed bullhead, dragonet, fivebeard rockling, cod and sole

- After exposure for 10s to a 100V/m, 5Hz pulse
- In heterogeneous electrical field ∟ to electrodes
- Necropsy and histological examination



heterogeneous electric field, simulating the situation at sea

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- Minor and brief fright reactions
- No mortality or spinal injury
- 0,5% - 1% haemorrhages in resp. sole and plaice

4 Future Research:

To revalue electrofishing, **additional information is still needed!**

- Long-term effects
- Investigate impact on:
  - Invertebrates & electro sensitive Elasmobranchs
  - Eggs, larvae and juveniles of cod, sole, sandworm and shrimp
  - By histology, X-ray and behavioural analyses
- Determine range of safe pulse parameters, enabling legislation of pulse fishing

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