Evaluation of the impact of electro shrimp trawl fishery

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1 Introduction

Electric pulse fields have proven to be the most promising option for alternative stimulation in fishing gear. Since 2008 ILVO has been successfully testing their **Hovercran** electro pulse trawl for brown shrimp (*Crangon crangon*).

- Low-frequency 5Hz Pulsed DC
- Provokes a startle response in the shrimps
- Elevated foot rope

→ 35% reduction of by-catch

→ 75% less seabed disturbance!

Electrical induced startle response trick field

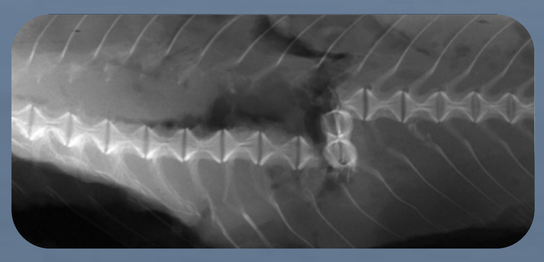
By-catch reduction

2 Concerns?

The effect of pulse trawling on marine organisms is largely unknown.

- IMARES report: 7-11% spinal injury, lesions or mortality in cod with flatfish pulse trawling (40Hz)

Higher pulse frequency, more injury risk! ?



3 Effects of "Hovercran" low frequency pulses?

No immediate effects in plaice, pogge, armed bullhead, dragonet, fivebeard rockling, cod and sole after exposure for 10s to a 60V/m, 5Hz pulse :

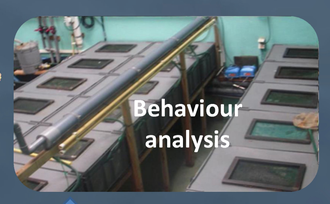
- Minor and brief fright reactions
- No mortality or spinal injury
- 0,5% - 1% haemorrhages in resp. sole and plaice

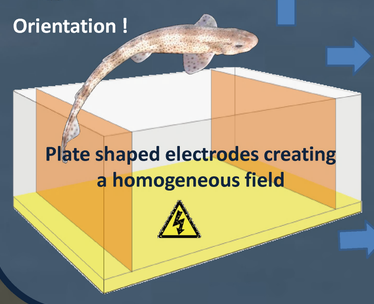
4 Future Research:

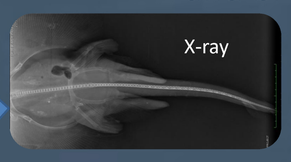
To lift the standing ban on electrofishing, **additional information is still needed**!

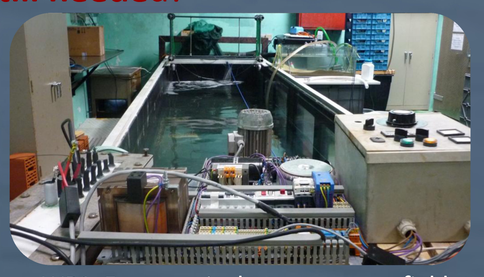
WP 1: Fright reaction in **heterogeneous** field?

- Closer to the electrode the field strength is stronger
- Can fish avoid contact with the electrodes?









WP1: Exposure in heterogeneous field

WP 2: Impact on **invertebrates** (sandworm) and **electrosensitive fish** (dogfish & thornback ray) in a homogeneous field

WP3: Also **embryo's, larvae and juveniles** of cod, sole, sandworm and brown shrimp will be included.

- Behavioural analyses: feeding response + activity
- Macroscopic & microscopic organ examination

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