

# 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: Spinal injury, lesions and 6% mortality



in cod with flatfish pulse trawling (60Hz)

**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



Orientation!



Behaviour analysis

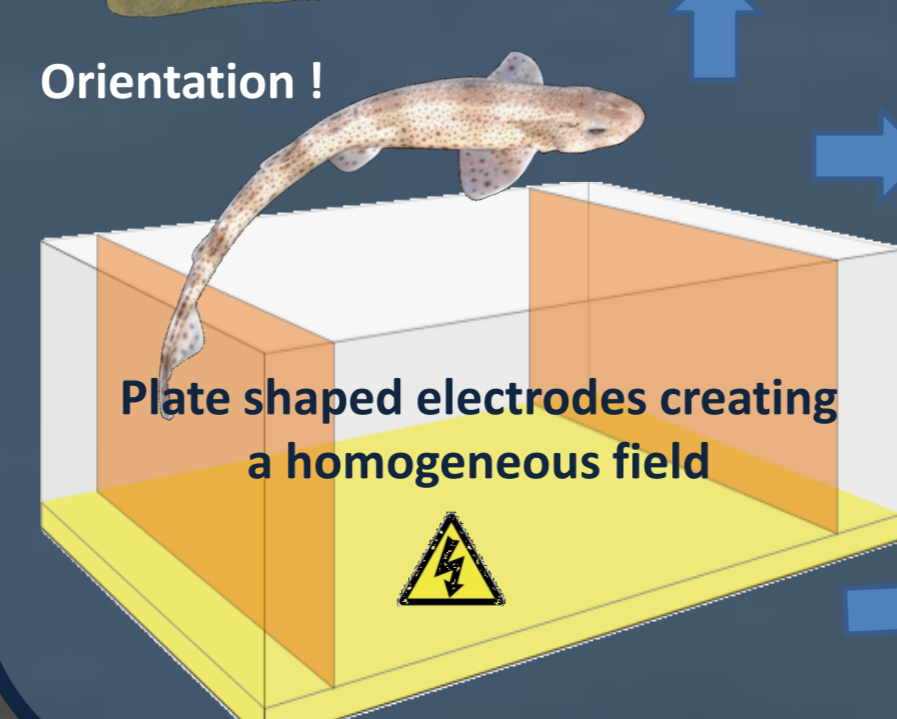
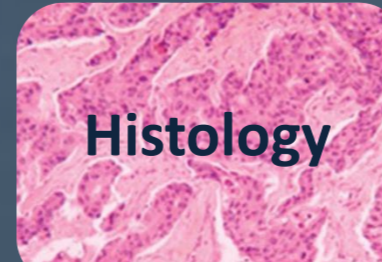
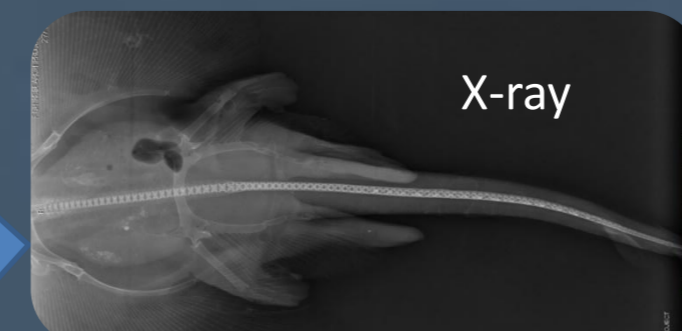


Plate shaped electrodes creating a homogeneous field



Histology



X-ray

**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