ELECTRICAL TRAWLING FOR BROWN SHRIMP: IMPACT ON YOUNG LIFE STAGES IN NURSERIES & SPAWNING AREAS

Desender Marieke[1,2], Chiers Koen[3], Verschueren Bart[2], Polet Hans[2], Duchateau Luc[4], Velmurugu Puvanendran[5], Mortensen Atle[5], Decostere Annemie[1]

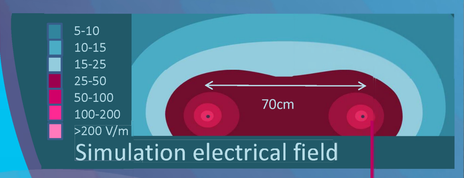
[1] Department of Morphology, Faculty of Veterinary Medicine, Ghent University, Salisburylaan 133, 9820 Merelbeke, Belgium
[2] Institute for Agricultural and Fisheries Research (ILVO), Animal Sciences – Fisheries, Ankerstraat 1, 8400 Oostende, Belgium
[3] Department of Pathology, Bacteriology & Poultry Diseases, Faculty of Veterinary Medicine , Ghent University, Salisburylaan 133, 9820 Merelbeke, Belgium
[4] Department of Comparative physiology and biometrics, Faculty of Veterinary Medicine, Ghent University, Salisburylaan 133 , 9820 Merelbeke, Belgium
[5] The Norwegian Institute of Food, Fisheries and Aquaculture Research (NOFIMA), Muninbakken 9-13, 9291 Tromsø, Norway

INTRODUCTION

Catching shrimp without touching the seafloor by electrical stimulation results in:

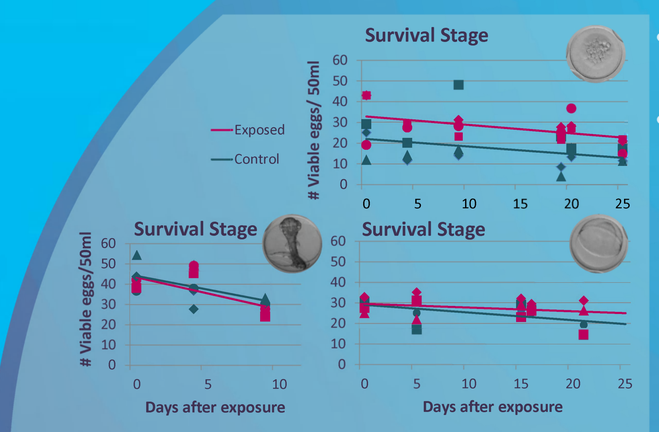
- Discard reduction 65%
- Less bottom contact 80%
- No immediate effects on adult fish!

Impact on younger life stages?



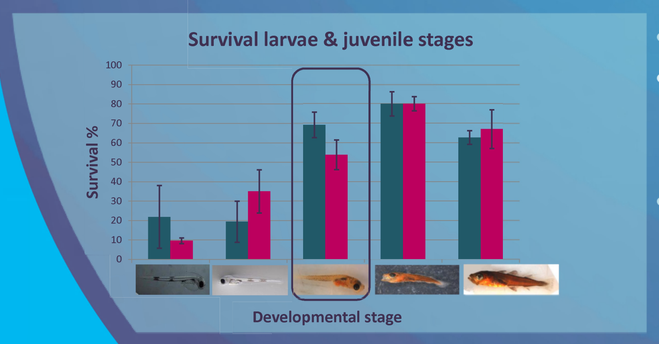
RESULTS

EMBRYONATED EGG STAGES



- No significant difference in **survival** over all egg stages
- No significant difference in **Hatching rate** between control and exposed groups

LARVAL & JUVENILE STAGES



- **Handling effect** of stage
- Mortality is significantly higher in the **exogenous stage** (OR 1.94 p<0.0014)
- **No difference** in survival between exposed and control groups in the other larval stages or the juvenile stage

FUTURE RESEARCH

THE EXOGENOUS LARVAL STAGE

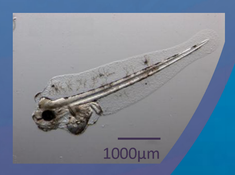
Morphological analysis:

Differences in yolk resorption, length, growth, …

Deformations

REPEAT THIS EXPERIMENT ON SOLE (*Solea solea*)

A flatfish with a special metamorphosis



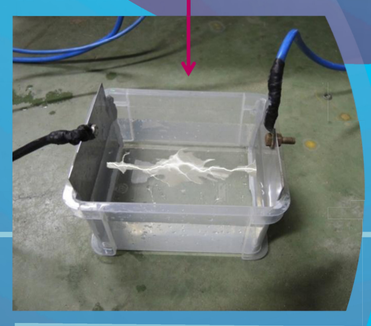
MATERIAL & METHODS

Cod (*Gadus morhua*) eggs, larvae and juveniles

Expose for 5 seconds to **150V/m**

Count **survival** after 1 week

Sample during further development



↑Plate shaped Electrodes creating a homogeneous electrical field of 150V/m
↘Development of cod
*DPF=days post fertilisation
**DPH=days post hatching

Day 0 Fertilisation

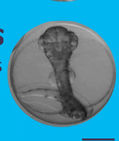
1DPF* Early cleavage

5DPF Epiboly

Development germ layers

18DPF Organogenesis

Heart is beating, eyes are pigmented



20DPF Hatching

2DPH** Endogenous

Feeding on the yolk

11DPH Mixed

Feeding on rotifers but the yolk is still present

25DPH Exogenous

No yolk, need to chase prey

46DPH Metamorphosis

Development of 3 dorsal fins, digestive system

60DPH Juvenile

After 4 Years Adult

marieke.desender@Ugent.be