

# Evaluation of the impact of electro shrimp trawl fishery

Desender Marieke<sup>1,3</sup>, Hans Polet<sup>1</sup>, Koen Chiers<sup>2</sup>, Maarten Soetaert<sup>1,2</sup> and Annemie Decostere<sup>3</sup>

<sup>1</sup> Institute for Agricultural and Fisheries Research (ILVO), Animal Sciences - Fisheries, Ankerstraat 1, B-8400 Oostende, Belgium

<sup>2</sup> Department of Pathology, Bacteriology & Poultry Diseases, Faculty of Veterinary Medicine, Ghent University, Salisburylaan 133, Merelbeke, Belgium

<sup>3</sup> Department of Morphology, Faculty of Veterinary Medicine, Ghent University, Salisburylaan 133, Merelbeke, Belgium  
E-mail: [marieke.desender@ugent.be](mailto:marieke.desender@ugent.be)

Brown shrimps are caught with bottom trawls, as is the case for 90% of all demersal fish, shell and crustacean landings in the North Sea. These demersal trawl fisheries are known to produce large amounts of discards and to disturb the seafloor habitat of benthic organisms. This results in severe ecosystem damage and the indirect reduction of quota in other fisheries. Furthermore fuel consumption is high. In order to increase the sustainability of these fisheries and consider ecological certification, technical adaptations are necessary to avoid these problems. Electric pulse fields have proven to be the most promising option for alternative stimulation in fishing gear, replacing the mechanical stimulation.

Since 2008 the Belgian ILVO research institute has been successfully testing their Hovercran electro pulse trawl for brown shrimp fishery. In this device the heavy bobbin rope is replaced by light weight electrodes creating a low-intensity electric field which selectively induces a startle response in the shrimps. Other benthic organisms are left untouched and can escape underneath the hovering trawl that collects the jumping shrimps without disturbing the seabed (Verschueren *et al.*, 2009).

Nevertheless, the effects of such like electric pulse field on marine organisms are largely unknown (Snyder, 2003). Preliminary exposure and survival experiments indicated that the use of this low frequency pulse has no immediate significant effects on most adult fish and invertebrate species (Vercauteren *et al.*, 2010). However, electro sensitive fish, like sharks and rays, and polychaete species, which have a key role in the benthic ecosystem, were not included in these studies. Additionally, the influence on different life stages has never before been investigated. Electrofishing over active spawning grounds may affect survival of embryos, larvae or juveniles if exposed during their more sensitive stages (Bohl *et al.*, 2010). Further research to fill these gaps in knowledge hence is crucial to revalue pulse fishing and to provide information enabling to lift the standing ban on electric fishing in the EU.

## References

- Bohl R., T. Henry and R. Strange. 2010. Electroshock-induced mortality in freshwater fish embryos increases with embryo diameter: a model based on results from 10 species. *Journal of Fish Biology* 76:975–986.
- Vercauteren G., K. Chiers, B. Verschueren, A. Decostere and H. Polet. 2010. Effects of low-frequency pulsed direct current on captive-housed sea fish. *Journal of Comparative Pathology* 143(4):354.
- Verschueren B. and H. Polet. 2009. Research summary on HOVERCRAN, hovering pulse trawl for a selective crangon fishery. (Unpubl. manuscript, 30p.).
- Snyder D.E. 2003. Electrofishing and its harmful effects on fish. Information and Technology Report USGS/BRD/ITR--2003-0002: US Government Printing Office, Denver, CO, 149p.