REPORT

Meeting: **Pulse fishing: Effects of electrical stimulation on marine organisms (PhD presentation)**
Parties: **MEP Peter van Dalen, Pim Boute, fisheries and NGO stakeholders**
Date: **28 March 2023**
Location: **European Parliament**
Chair: **MEP Peter van Dalen**
Rapporteur: **Tamara Talevska**

MEP Peter van Dalen (PvD) hosted a presentation of a PhD by Pim Boute (PB) from Wageningen University, in light of recently published Commission's Action Plan, CFP and Energy Transition communication, calling for improved sustainability of fisheries. The aim of the event was to explore the scientific findings of recent research conducted by the PhD student on the effects of electrical stimulation on marine organisms.

PvD informed that pulse fishing has been discussed since 1955, and that since 2009 many Dutch bean trawlers switched to pulse fishing for sole, as a derogation from the LO. Lots of research has been done from 2008-2022. Advantages identified were improved selectivity and reduced fuel consumption. PvD believed that there is a future for improved pulse as a good alternative and response to EC initiatives.

PB went on to present his PhD dissertation on the effects of electrical stimulation on marine organisms. He acknowledged the controversial nature of the topic, through stressed that the focus is purely scientific.

Pulse fishery target species were common sole in the North Sea and other flat fish buried in sediments. Pulse trawler has replaced tickler chains with electrodes, causing electrical instead of mechanical stimulation. Technique was developed in 1960-1980 with fishing trials with behavioral and psychological studies as of 1930; experiments were conducted all around the world. Findings:

- Fuel consumption reduction
- Increased catch efficiency

At the end of 1980, electro-trawling research was globally discontinued due to fears of overfishing (lack of harvest control rules). In 1990, Chinese shrimp electro-trawling ceased due to overfishing. In 2010, electro-trawling conducted in the North Sea, discontinued in 2019 due to a ban.

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Pulse fishing still has the potential of increased economic benefits and reduced technical challenges and seafloor contact. There has also been research on potential negative impact of electro-pulse stimulation on marine organisms.

Selected species in research were benthic and demersal species in southern North Sea, as well as previously studied species for better comparison and extrapolation, including investigations of body plan variation and body shape and sensory systems variation of living and dead specimens. Species-specific behavior reflexes were researched as well.

Results: all animals resume normal behavioral patterns after 30 seconds, only the crab shows reduced activity. After 14 days there seemed to be no negative effects of pulse exposure. It was concluded that it is unlikely that survival is substantially compromised using pulse. There were species specific differences, but not between electroreceptive and non-electroreceptive fish. There was no evidence that fish outside the electrodes are affected.

The study found internal injuries in whiting and Atlantic cod caused by pulse. Spinal injuries were rare (less than 3%), and they were primarily caused by mechanical part (not electricity). In addition, bigger whiting had more injuries than smaller.

Severe bleeding may be partially related to electric pulsing: low probability (less than 1,8%) and low probability of spinal injuries.

It was found that pulse was unlikely to impose increased mortality on whiting.

Spinal injuries in other fishes (16 species):

- Low injury probability (common sole, dab, plaice, bib, …)
- Higher probability: sandeel and other elongated species, but more in traditional tickler chains/mechanical damage
- Atlantic cod had high probability of spinal injuries due to pulse
- Smaller specimens are less sensitive

Proposal: fishing gear modifications

- Insulation of top parts of the electrodes
- Prevention of cod from entering trawl or divert away from electrodes
- Low voltage detection methods: impedance measurements (detecting fish located in the sediment)

There is ongoing project on Impact Assessment Pulse-trawl Fishery (IAPF).

Further steps: PECH committee nominated rapporteurs on Fisheries Package, which will present an opportunity for giving pulse fishing another chance as a smart fishing method.

PvD informed that he will send the dissertation to Sinkevicius, Metsola and other relevant officials. He informed that Sinkevicius already responded that he was open to discussing the conclusions of this dissertation.

A discussion took place on the reasons for 2019 ban and objections of the French industry. It was admitted by one of the French industry representatives that the French likely did not

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oppose the pulse as a fishing method per se, but that the objection was directed towards a lack of spatial restrictions (i.e. fishing in French waters) / lack of level playing field.

Finally, close cooperation between the NL and FR authorities and fisheries was proposed on the matter.

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