

The North Sea Advisory Council



Use of Pulse Trawls in the North Sea

This advice was approved at a meeting of the NSAC Executive Committee on 23rd September 2015.

1.0 Introduction

- 1.1 The NSAC Pulse Focus Group has noted that the catching of marine organisms using methods incorporating the use of electric current is forbidden according to Article 31 of *The Council Regulation (EC) No 850/98 of 30 March 1998 for the conservation of fishery resources through technical measures for the protection of juveniles of marine organisms* (the Technical Measures Regulation). In December 2006 a derogation from this ban allowed fishing with beam trawl using electrical pulse current in a part of the ICES divisions IVc and IVb, where no more than 5% of the beam trawler fleet per Member State was permitted to use the electric pulse trawl. This was the basis of the first licences granted to the Dutch fleet. In 2011, 20 more licences were attributed to the Dutch fleet under Article 43 of the Technical Measures Regulation, which relates to scientific investigations. In 2014, 42 more licences were attributed to the Dutch fleet in the framework of a pilot project under Article 14 of the CFP. This brought the total number of licences granted to the Dutch fleet to 84.
- 1.2 The NSAC Pulse Focus Group has noted that present knowledge on the use of pulse fishing gears in the marine environment is informed by scientific research on catch composition in comparison to flatfish-beam trawling as well as multiannual experience in commercial fisheries in the scope of pilot projects in the Netherlands. To date, there is a notable lack of knowledge on species that are not actually caught in the gear, yet may be impacted on and remain on or in association with the sea floor.
- 1.3 At present in the brown shrimp fisheries there are fewer vessels involved and as a consequence less data on the use of pulse trawls.

2.0 Observed Benefits

- 2.1 In flatfish fisheries, pulse trawling offers the opportunity to reduce fuel costs and improve the carbon footprint of the catch, by reducing the weight of the gears lowering

seabed penetration¹ and decreasing fishing speed² of the gear compared to the traditional beam trawl.

- 2.2 So far the economic performance of pulse trawls in sole fisheries is significantly better than traditional Dutch beam trawls.
- 2.3 There is evidence that the use of pulse trawls reduces both unwanted by catch in flatfish and shrimp fisheries, though this is dependent on the technical specifications of the gear involved and the fishing grounds.
- 2.4 The lower fishing speed of pulse trawl vessels effectively means a decrease in the swept area per time-unit. Recent data indicates that pulse trawl vessels land more sole (and less plaice) per day at sea compared to traditional beam trawlers³.

3.0 Observed Risks

- 3.1 A number of risks remain including,
 - a) Clear enforcement and control regulations are not yet fully developed and must be improved; this is progressing in the Netherlands. With varying pulse settings and electrode arrangements management problems in pulse fisheries may occur. Guarantees should be given that all fishing vessels involved can be properly controlled and all the Member States concerned must be kept informed of the procedures, which has been recognised by the Dutch Authorities
 - b) Pulse trawling can damage fish (e.g. cod spinal damage).
 - c) Pulse gear allows expansion into other areas previously inaccessible to beam trawling; this expansion compared with traditional beam trawling may increase the footprint of trawling and the collective impact.
 - d) The potential for different effects on fish in all stages of development, on benthic organisms and detrimental long-term effects to the ecological role of the seafloor, including the biogeochemical functioning and the microbial loop remains unknown.
 - e) In a shrimp fishery the increase of gear efficiency, in the absence of fishing limitations, may contribute to overfishing of the stock.
 - f) The 84 licences assigned to Dutch vessels offer a risk of unfair competition in common fishing grounds and disrupt the idea of a level playing field in Europe.

¹ Depestele, J., et al., *Measuring and assessing the physical impact of beam trawling*. ICES Journal of Marine Science: Journal du Conseil, 2015.

² Marlen van, B., et al., *Catch comparison of flatfish pulse trawls and a tickler chain beam trawl*. Fisheries Research, 2014. **151**(0): p. 57-69.

³ Taal, K., *Pulswing boomkor en sumwing vergelijkingen 2011-2013*. 2015.

- g) It needs to be proven that fishing with such gear, as with any other gear, does not have a significant effect in European Marine Sites.

4.0 Areas for Consideration

4.1 The members of the Pulse Focus Group have identified some areas that require further investigation. These are:

- a) The procedures for introducing new gears in the EU are not clear in relation to general criteria for licensing and allocation of licences in European waters.
- b) Currently there is no agreed “best practice” in relation to public consultation and information gathering, for the introduction in European waters of new gears and techniques in general and in relation to Natura 2000.
- c) Apart from the requirements set out in Article 31a of Council Regulation 850/98, on a European level, the technical details of the gear are not standardised.
- d) The impacts on the diverse range of sea floor species not caught in the trawl net, as a result of single or repetitive exposure to electric shock from pulse trawl gear are not defined, the research is incomplete.
- e) What are the long-term effects (if any) of pulse trawling on the ecological role of the seafloor with special regard to the sediment water column interactions via e.g. bio-turbation and bio-irrigation, the microbial loop and biogeochemical cycling?
- f) What are the requirements of the research programme that all licence holders of pulse gear are obliged to take part in?
- g) A number of outstanding questions are listed in Appendix 1.

5.0 Conclusion

5.1 Taking into account the opportunities which are connected with pulse trawls in both the sole and brown shrimp fishery the NSAC asks for immediate action on the following points:

1. There should be no further allocation of Dutch licences in the North Sea, until the recently proposed (in 2015) Dutch research and monitoring program is completed and evaluated. The NSAC recommends that other Member States exercise caution if considering the development or expansion of pulse fisheries given the current knowledge gaps and uncertainties outlined in this document.
2. Licensing and research for sole and shrimp fisheries with pulse trawls has to be handled separately.
3. There should be a joint standard for an automatic computer management system as referred to in Article 31a of Council Regulation (EC) No. 850/98.

4. The linkage possibilities between an automatic computer management system and a positioning system should be analysed including the temporal and spatial resolution appropriate to draw conclusions on displacement.
5. If Member States wish to engage in a pilot project under Article 14 of the CFP Basic Regulation, the relevant Advisory Councils must be consulted in advance.
6. Pulse fishing, as with any other gear, can only be allowed within Natura 2000 sites and other (e.g. national) MPAs if the applicable legislation is being complied with.
7. The vast footprint and industrial scale of the pulse trawl fishery doesn't suggest a controlled experiment on a narrow area with good understanding of impacts on fauna, water and seafloor chemistry and ecosystem function *after* the passage of the gear.
8. Whilst it is acknowledged that the fishery is still in an experimental stage a sustainability assessment would give the opportunity for a fishery to be evaluated in a transparent and science-based way. If an assessment was successful it would show the progress towards sustainability made by the fishery. We acknowledge that the Dutch have entered the MSC process with their pulse fishery and we will follow this with interest.
9. A European expert group such as a subgroup of the "Scheveningen group" should be established and work as a steering group on all issues in relation to pulse trawls in cooperation with the NSAC.
10. A new request for ICES advice on state of the knowledge, evaluation of monitoring of present pulse trawling, technical details, impacts of pulse trawls and further research has to be prepared (in line with the questions and concerns set out in Appendix 1).
11. All research carried out to assess the impacts of pulse trawl should be done in a clear and transparent setting with opportunity for stakeholders to input to the research questions, discuss progress and outcomes and share this with the ICES Electra working group. The Dutch government recently hosted a benchmark workshop on monitoring and future research of pulse fishing. The NSAC welcomes this and wishes to fully participate in ongoing research and discussions.

Appendix 1.

NSAC Questions on the Effects of Pulse Trawl

Outstanding Questions

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| Derogations |
| Article 14 refers to "taking into account the opinions of the relevant Advisory Councils when conducting pilot projects". What opinion did the NSAC provide and on what basis prior to the pilot projects being implemented? |
| Why is such widespread current effort permitted in the clear absence of any meaningful scientific research? |
| Pilot project |
| IMARES stated that discards are monitored through self-sampling by 12 pulse vessels and 10 observer trips a year. How many vessels will be subject to the discard monitoring program when it is extended in 2015? |
| How are salinity levels and effects of pulse gear outputs and effects related? |
| According to the information provided, why did beam trawl caught Sole make more euros per kilo than similar fish caught by pulse or Sum wing methods? |
| Ecosystem impact |
| What baseline research has been undertaken, where, when and by whom for the purposes of being able to assess benthic impacts of pulse trawling and could it have been undertaken by fewer vessels? |
| What methods will be used to capture, monitor and record damage to round fish and other species that are not retained within the trawl but still affected by pulse gear? Reference is made to "Van Marlen et al 2014:"commercial catches of pulse vessels show that spinal injuries on cod can occur" and other comments; "of the bigger cod positioned close to the conductor, 50-70% developed vertebral fractures and haemorrhages". |
| What is the impact of the pulse gear on plankton? |
| What are the short- and long-term biochemical effects from using electricity on or near the seabed? |
| What are the effects of killing species on the (reduced) recirculation of both nutrients and oxygen as is highlighted in Braekman et al. (2014) as being a positive result of the natural species assemblages, and their functional roles in sandbanks? The impact of individual studies needs to be scaled up to the size of SAC's. |
| What are the cumulative impacts of pulse trawling and traditional beam trawling? |
| What research is planned to incorporate potential effects of beam trawl vessels using pulse gear being able to access previously unfishable areas? |
| What are the long-term effects of the pulse trawl on invertebrates? |

Questions Addressed

Answer provided at Pulse Focus Group meeting 5th March Papers 4.1, 4.2

<http://www.nsrac.org/reports/meetings-c/pulse-group/pulse-focus-group/>

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| Control and enforcement |
| Could fishermen increase the settings of their pulse trawl gear beyond levels at which the gear is tested? |
| Why is it necessary to have 42 more vessels in order to implement the black box? |
| What voltage is permitted under the licences? (IMARES referred to the voltage used being below the legal limits). |
| Does the gear itself have a voltage upper limit? |
| How is the voltage of the pulse trawl gear monitored to ensure it does not exceed the allowance? |
| Derogations |
| On what legal basis were the Dutch fleet's licences granted in 2007, 2011 and 2014? |
| On what scientific basis were the Dutch fleet's licences granted in 2007, 2011 and 2014? |
| The IMARES research proposal distributed at the focus group meeting refers to the 5% allowance for beam trawlers to use pulse trawl not being 'sufficient to cover the interest for the pulse trawl in the Dutch fleet. What does this mean? On what basis was it concluded at each stage that additional licences for the Dutch fleet were necessary? |
| What percentage of the Dutch fleet currently has a pulse trawl licence? |
| Pilot project |
| Justification should be given for the size of the fleet in the pilot study. |
| One of the conclusions of SGELECTRA in 2012 was 'consideration should be given to experimental increases, beyond 5% in the beam trawler feet, in selected area to further investigate the outstanding issues above'. What is the link between ICES and the pilot study? |
| What time-scale is envisaged for the pilot project? |
| What are the expected outcomes of the pilot project? |
| Resource management |
| Could the increase in efficiency of the pulse trawl have a significant impact on the stocks exploited in the South of the North Sea? |
| Discards and data collection |
| Given the lack of knowledge about the effects of pulse trawling on ecosystems, along with the different variables involved, the use of pulse trawl gear should be subject to comprehensive monitoring. What monitoring systems are proposed? |
| Ecosystem impact |
| What are the lethal and sub-lethal effects of the pulse gear on benthic species, their biomass and their functional roles in the ecosystem? |
| More clarification should be given to the effect of the pulse trawl on cod ('undervalued impacts of the pulse beam trawl on cod catches') |
| More information is needed on the development of the new pulse stimulation in twin rig gears. |