

Scottish Wildlife Trust

Briefing



Electric pulse fishing factsheet

What is electric pulse fishing?

Electric pulse fishing is a new technique that exploits the effects of electric fields on target species to aid their capture.¹ Fishing vessels tow electrodes along the seafloor and the pulses they emit cause muscle contractions in some marine species, including commercially important species like flatfish and razor clams, which releases them from the seafloor. The stunned and suspended animals are then collected either by a trawl net or divers.

What are the regulations and where is it happening?

Electric pulse fishing is currently banned in EU waters, although, since 2007, each Member State has been granted a derogation for 5% of their beam trawl fleet in the southern part of the North Sea to be converted to electric pulse fishing.¹ In 2010 and 2011 the EU granted a total of 42 experimental pulse derogations to the Dutch fishing fleet,² although this is estimated to have increased to approximately 100 vessels since.³

In Scotland there have been reports of illegal fishing of razor clams using electric pulse fishing,⁴ resulting in calls for tougher licensing measures. At present there are studies on the effect electric pulse fishing has on razor clams and the surrounding ecology in Scottish and Welsh waters.¹

Benefits and concerns

The benefits that come from using electric pulse fishing over traditional beam trawling include:

- Reduced bycatch of unwanted species^{2,5} (although there are contradicting reports⁶);
- Reduced physical damage to the seafloor;^{1,6}
- Increased efficiency and slower fishing speeds means less of the seafloor is being fished;⁷
- Equipment causes less drag, which in turn reduces fuel usage and CO₂ emissions.^{2,3}

Because electric pulse fishing is a relatively new technique, our understanding of its impact on the environment is still in its infancy, which has raised the following concerns:

- Little is known about the survival rate of non-target or uncaught animals that have been shocked;¹
- The impact on the different life-stages or reproductive capability of marine species is unknown;
- The short and long-term impact on the wider ecological health is unknown, e.g. recovery rates of local benthic communities post-trawl;
- The environmental and ecological impact at an industrial scale is unknown;³

- Further investigation into the strength of the electric pulse used and the identification of a 'safe range' is required;^{1,2}
- Spasms caused by electric shocks can lead to broken vertebrae in larger fish (e.g. cod);^{2,8}
- Technique may be too efficient and result in an area becoming completely 'fished out';³
- Potential for chemical effects, through electrolysis, resulting in the production of hydrogen, oxygen, chlorine, and sodium hydroxide;¹
- Reports by English fishermen of pulling up dead Dover sole when trawling in areas known for pulse fishing activity;⁹
- Currently banned in East China Sea due to lack of regulation and damage to juvenile shrimp and other benthic species.¹⁰

The introduction of a new technique of fishing will open up areas of the seafloor that were previously undesirable to fish in, potentially resulting in:

- changing fishery behaviour;
- different patterns and in-combination effects of pulse and non-pulse gears;
- exposing previously unfished ecologically important sites to fishing pressure (e.g. SACs or MPAs)

¹ Electrofishing in marine fisheries. Lart W. 2015. Seafish Information sheet FS88.11.15 version 2

² Quirijns F., Streitman W.J., Van Marlen B., Rasenberg M. 2013. Flatfish pulse fishing: Research results and knowledge gaps. IMARES Report [C193/13]

³ Nature Studies: Pulse fishing is the 'marine equivalent of fracking'. M. McCarthy. 2016. The Independent. <http://www.independent.co.uk/voices/nature-studies-pulse-fishing-is-the-marine-equivalent-of-fracking-a6930671.html>

⁴ Electro fishing. Marine Scotland. <http://news.scotland.gov.uk/News/Electro-fishing-c91.aspx>

⁵ ICES. 2012. Report of the Study Group on Electrical Trawling (SGELECTRA), 21-22 April 2012, Lorient, France. ICES CM 2012/SSGESST:06 50pp.

⁶ Sustainable Brown Shrimp Fishery – is pulse fishing a promising option? WWF Technical Report 2014 <http://www.wwf.de/fileadmin/fm-wwf/Publikationen-PDF/Technical-Report-Sustainable-Brown-Shrimp-Fishery.pdf>

⁷ North Sea Advisory Council Report: Pulse Fishing http://www.nsrac.org/wp-content/uploads/2014/04/16383_Imares_Factsheet_Pulse_Fishery.pdf

⁸ De Haan D., Fosseidengen J.E., Fjellidal P.G., Burggraaf D., Rijnsdorp A.D. 2016. Pulse trawl fishing: characteristics of the electrical stimulation and the effect on behaviour and injuries of Atlantic cod (*Gadus morhua*). ICES Journal of Marine Science. doi:10.1093/icesjms/fsw018

⁹ <http://www.thesundaytimes.co.uk/sto/public/searescue/article1067315.ece>

¹⁰ Yu C., Chen Z., Chen L., He P. 2007. The rise and fall of electrical beam trawling for shrimp in the East China Sea: technology, fishery, and conservation implications. ICES Journal of Marine Science. 64: 1592-1597