

**NWIFCA Technical, Science and Byelaw
Committee**

6th February 2018: 10:00 a.m.

**AGENDA
ITEM NO.**

6

SCIENCE REPORT
14TH OCTOBER 2017 – 13TH JANUARY 2018

Purpose: to provide an update to members on the work of the Science team in the last quarter

Recommendation: that Members approve the report.

MARINE PROTECTED AREAS IN THE NWIFCA DISTRICT:

1. The Senior Scientist continues to participate in the monthly national “Marine Protected Areas Management Working Group” conference calls, with colleagues from Defra, Natural England, IFCAs, MMO and EA.

Marine Conservation Zones

2. Tranche 2 - West of Walney MCZ – Recover Objective. Cross-boundary site from 4.3nm to beyond 12nm. MMO have carried out an informal consultation on its management options (Dec. 6th – 12th January). Three options are presented in the letter regarding bottom trawling within the MCZ.

3. *Management Option 1* – Prohibition of all bottom towed fishing gear in the inshore section of the site. This option would involve prohibiting bottom towed fishing in the whole of the site inshore of 12 nm.

Management Option 2 – Partial prohibition of bottom towed fishing gear (zoned management). This option would involve prohibiting bottom towed fishing gear over the most ecologically sensitive features within the site. This would mean prohibiting bottom towed fishing over the sea-pen and burrowing megafauna communities, and subtidal mud features in the inshore sections of the site. No new management would be applied to the area of subtidal sand in the north east of the site.

Management Option 3 – Do nothing. This option would introduce no new restrictions on fishing within the MCZ.

4. MMO state that ‘at this time we do not believe that management option 3 ‘do nothing’ will meet the conservation objectives for the site. We are currently considering in more detail management options 1 and 2’.
5. Officers await the outcome of the informal consultation which presumably will result in the drafting of an MMO byelaw.
6. Tranche 3 – three estuarine sites Ribble MCZ, the Wyre / Lune MCZ, and the Solway MCZ have been discussed in the past. No further news has been received, although if the sites are taken forward for designation they will be announced in the next Defra MCZ consultation expected by spring 2018.

Assessment of Fishing Activities in Marine Protected Areas

7. Three assessments remain to be completed from the EMS Review. The assessment for beam and otter trawling in the Dee Estuary is in draft. HRAs for both netting and beam trawling in the Solway are on hold while we await the results of the extension to the Solway SPA. Work will soon begin on MCZ assessments for Cumbria Coast MCZ and Allonby Bay MCZ. Fylde MCZ and West of Walney MCZ assessments are being completed by the MMO with IFCA data (cross boundary sites).

Monitoring and Control Plan

8. Further work has been carried out to provide a more complete draft of the NWIFCA Marine Protected Area Monitoring and Control Plan. This draft has been submitted to Natural England for comment, and they have agreed to the approach that NWIFCA are taking. A final version will be submitted to TSB for approval in May. In the meantime, in line with the draft Plan's Review Schedule existing assessments for Drigg Coast SAC will be reviewed during January; Dee Estuary HRAs in February; Liverpool Bay SPA (where an extension to boundaries and species has just been designated), Lune Deep and Shell Flat in March etc. The reviews will all be documented within the spreadsheet document.

NWIFCA NEW VESSEL

9. Science Officers liaise with the NWIFCA Master to co-ordinate best times to visit Holyhead Marine and provide input to the science area conversions onboard North Western Protector. The Senior Scientist aims to include a substantial part of the science workplan for the year ahead as time aboard our new asset installing the equipment, familiarising officers with it and exploring what can be achieved with it, and starting to collect data with the sidescan sonar and drop-down camera units. The aim is also to plan some cockle surveys from the vessel when dried out at low water.

SCIENCE WORKPLAN FOR 2018

10. In addition to existing workstreams the science team would like to develop new areas of work this year as shown below. Depending on emerging priorities it might not all be feasible in one year, in which case it will be carried over to 2019-20:
 - i. Familiarisation with new vessel, and equipment on board. Identification of further equipment that is needed and drawing up priority / timeline of acquiring it. Start of surveying with new vessel (eg. Cockle surveys; ground discrimination using Olex for suitable mussel ground; drop-down camera work for crab and lobster stock assessments);
 - ii. Crab and lobster stock assessments;
 - iii. Whelk stock assessment and work on increasing MCRS – working with TAG and CEFAS;
 - iv. Bass tagging with CEFAS;
 - v. Nephrops creels – feasibility of fishers diversifying – working with NE and WLT (NE are submitting a further bid for extended funding to an existing small project);
 - vi. Small fish surveys programme development;
 - vii. Shrimp boats investigation into by-catch – continue work with fishers in Solway / Morecambe Bay;
 - viii. Shrimp tractor – investigation into by-catch discards – working with fishermen.
11. Intertidal cockle and mussel surveys will be carried out to inform management, and new staff training will continue.

NORTH WEST MARINE PLAN

12. The Senior Scientist continues to remain engaged with the NW Marine Plan development and attended the SIMCelt conference in Liverpool, and has registered for a further workshop in Whitehaven in February.

BASS MEASURES 2018

13. Defra's position on the EU Bass measures 2018 as of 27th December 2017 are:

“Following the recent announcement about fishing opportunities agreed at this year's December Council the Marine Management Organisation (MMO) can confirm that Council Regulation (EU) 2017/127 will remain in place until the new regulation is published in the Official Journal of the European Union in January. As such, all current control measures, including the specific restrictions on fishing for Seabass, currently remain in force.
14. We will be publishing further guidance soon with information on what the council outcome will mean for both commercial fishermen and recreational anglers in 2018 and our plans for regulation of this”.
15. Should this guidance be published in time for TSB in February an updated verbal report will be provided.

PREESALL GAS STORAGE AND MARINE MONITORING GROUP

16. Officers met with Halite in early January to clarify the NWIFCA position and role for the development of the gas storage caverns and brine discharge and to again highlight the need for engagement with fishery stakeholders over the brine discharge off of the Rossall coastline.
17. The construction of the brine outfall was due to start this summer with first brine discharge around October / November. Halite state that the current position is that contractors have been appointed to proceed with land based work i.e. site access/haul roads this year with marine works - brine discharge outfall currently scheduled for 6-12months behind programme. The delay will provide opportunity to ensure due time/consideration is given for the EA to agree the detail of the brine discharge monitoring through the Discharge Monitoring Group.
18. Public engagement is carried out through the CLP (Community Liasison Panel) which will act as a forum for stakeholder engagement. CLP is chaired by Alvin Cassidy an independent consultant with no current or previous relationship to the Preesall UGS Project. The panel comprises a broad range of individuals who represent community/stakeholders including representatives of the fishing community. Halite Energy are not a member of the panel and any requests should be directed to the panel direct at: clp@halite.net Most recent request was for a presentation from the EA on their updated modelling of the brine discharge.
19. The Senior Scientist is hoping to encourage CLP to hold a fisher stakeholder specific meeting to help inform and allay fears. The main focus now is to be fully involved in the Marine Monitoring Group, to ensure real-time monitoring of the brine occurs to assess its conforming to the modelling, and if not, that immediate measures are in place to cease operations.

TAG – IFCA TECHNICAL ADVISORY GROUP

20. TAG meetings continue to be very interesting and provide a forum for discussion and exchange of ideas, as well as identifying collaborative science opportunities. Conference this year will focus on whelks – almost every IFCA has identified an increase in whelk fishing activity and there are widespread concerns over the EU minimum landings size (45mm) being

too low, and that immature stock are being fished legally. Crab and lobster will also be on the agenda.

21. National research into the non-native American lobster (*Homarus americanus*) progresses. NWIFCA science team and IFCOs have been keeping a close watch on the situation as far as it is known in the District, where occasional catches of this highly aggressive species are reported to us, and fishers are encouraged to take that one for the pot and not return it to the sea, regardless of its size.
22. Cefas are hoping to get the go-ahead from Defra for a new project working with fishers to define what is currently known by them about *H. americanus* and the different perceptions they have. They have confirmed that hybrids do exist, but as yet it is not known whether hybrids are viable – ie. able to successfully reproduce. NWIFCA had sent a sample down to Cefas for examination so this confirms what fishers have told us. Research is also underway into what biosecurity issues there are around this species. It is known that they do carry gaffkaemia in USA and Canada, and naturally there are concerns over the spread of this bacterial disease to our native lobsters. They also carry other NNS like hydroids.

IFCO SHORE-BASED SIGHTINGS DATA ANALYSIS

23. Science Officer Jon Haines has been coordinating the collation and analysis of IFCO shore-based sightings data into a useable format for science and fisheries management purposes. Working with other Officers, in particular Cath Dobson, the development of spreadsheets that work for a variety of purposes and that can be analysed to provide geographically referenced fishing activity data is now nearing completion, and will significantly improve the data held, and the possibilities of its use.

MARINE LITTER CONSULTATION.

24. The European Commission has published a stakeholder survey "Reducing marine litter: actions on single use plastics and abandoned, lost or otherwise discarded fishing gear" as part of the follow up to the EU Strategy on Plastics scheduled for adoption in January 2018.
25. "The European Commission Action Plan for a Circular Economy (2015) therefore identified plastics as one of 5 priority areas. A Communication outlining the strategy for plastics is currently under preparation and scheduled for adoption in January 2018. Rising amounts of plastic waste and marine litter are among the key problems that the strategy seeks to address.
26. Consumption patterns have shifted towards single-use items, rather than reusable alternatives. Single-use plastics are usually thrown away after one brief use; they are rarely recycled and are particularly prone to end up as litter in the natural environment. They represent half of marine litter, which has become an issue of acute public concern.
27. Another issue of concern is plastic waste from the fisheries and aquaculture sectors, in particular from fishing gear, that is lost by accident (for example due to weather conditions) or discarded when it is no longer fit for use. The UN Environment Programme estimates that damage to marine environments from marine litter is at least USD 8 billion per year globally and it has been forecast that by 2050 there will be more plastics than fish in our oceans.
28. The Commission's Plastic Strategy will also address approaches to reduce single-use plastic items and marine litter including lost or abandoned fishing gear. On the basis of available data and analysis follow-up action will be considered in the near future. This consultation is intended to contribute to developing this knowledge base and guide such future actions.
29. As key stakeholders in the maritime sector, we would very much welcome your input to the consultation. The consultation consists of different parts, of which one is directed at the

general public and the two others at audiences with some expert knowledge or interest for single use plastic and fishing gear respectively. The consultation is currently available in English - and from 21 December in all official EU languages - and is open until 12 February”.

30. The consultation is here
https://ec.europa.eu/info/consultations/reducing-marine-litter-action-single-use-plastics-and-fishing-gear_en

PULSE FISHING

31. There have been widespread reports in the media recently about electro pulse fishing, which has been permitted under derogation against EU Technical Measures in the southern North Sea, since 2007, and increased since 2013. Officers considered it advisable to produce an up-to-date briefing for Members which is attached as Appendix 1 to this report.

Mandy Knott
Senior Scientist
15th January 2018

APPENDIX 1.

Electric Pulse Trawling

Summary Note of Legislation and an Overview of the Practice

The following summary note has been produced to provide Members with a brief summary of electric pulse trawling and the current legislation around the method and the potential proposal for the future of pulse fishing.

Overview

Electric pulse trawl is the technique which uses an electric field to catch fish. The pulse trawl gear consists of a number of electrodes, attached to the gear in the towing direction, that emit short electric pulses. It is mainly used in the flatfish fishery in the Southern North Sea with the main target sole, although there is potential for an adapted method to be used in the shrimp fishery (Hovercran Trawl).

Pulse fishing uses electrical stimulation to induce a reaction from the fish instead of using tickler chains as in conventional beam trawling. Electrodes are used to produce an electric field that induces a reaction in the fish which allows the net to catch the fish. In flatfish, particularly sole, the electrical current causes a muscle contraction making the body of the fish form a U-shape and immobilises the fish. This increases the ability of the fishing gear to catch the fish and reduces the ability of the fish to escape.

It has not been possible to find out the exact number of vessels that are pulse fishing in Europe but a fishing news article in July 2017 reported a figure of 112 vessels, with the majority being from Holland and the rest from the UK, Germany and Belgium.

Potential Benefits and Impacts of Pulse Fishing

There are a limited number of papers and scientific articles looking at the potential benefits and impacts of pulse trawling along with many views and comments from government specialists, research professionals, fishermen for and against the method and NGOs, especially now with the ever increasing media focus on the method. Even with the presence of research there is still an uncertainty of the potential impacts of the use of electricity in fishing, and how these impacts compare to the traditional beam trawling method. Provided below is a list of potential benefits and impacts from the fishing activity.

The main potential benefits are:

- reducing fuel costs due to lighter gear
- less physical impact on the sediment (no tickler chains and lighter beam)
- reduced towing speed
- reduced amount of discards (larger fish respond more readily to electro stimulation)
- an increase in areas which can be fished as the gear allows for softer sediment types to be fished.

The main potential impacts are:

- effects of electric current on other species with and without a commercial value, following reports of spines of other species (gadoids) being broken by voltage
- lack of research into the amount of voltage needed to produce a reaction in different species
- lack of knowledge of the longer term impacts to the fishery and habitat
- an increase in areas which can be fished as the gear allows for softer sediment types to be fished.

Current Regulation in the EU

The use of electric currents is prohibited by Council Regulation (EC) No. 850/98 – for the conservation of fishery resources through technical measures for the protection of juveniles of marine organisms.

Article 31 – Unconventional fishing methods

‘The catching of marine organisms using methods incorporating the use of explosives, poisonous or stupefying substances or electric current shall be prohibited.’

It is understood that a low level of pulse fishing was permitted from 2007 onwards in the southern North Sea. In 2013, 850/98 was amended to include Article 31a – Electric Fishing in ICES divisions IVb and IVc:

‘By way of derogation from Article 31, fishing with beam trawl using electrical pulse current shall be allowed in ICES divisions IVb and IVc south of a rhumb line joined by the following points, which shall be measured according to the WGS84 coordinate system:

- a point on the east coast of the United Kingdom at latitude 55° N;
- then east to latitude 55° N, longitude 5° E;
- then north to latitude 56° N;
- and finally east to a point on the west coast of Denmark at latitude 56° N’.

A further amendment included conditions: ‘Electrical pulse fishing shall be allowed only when:

- no more than 5% of the beam trawler fleet per Member State uses the electric pulse trawl;
- the maximum electrical power in kW for each beam trawl is no more than the length in metres of the beam multiplied by 1.25;
- the effective voltage between the electrodes is no more than 15 V;
- the vessel is equipped with an automatic computer management system which records the maximum power used per beam and the effective voltage between electrodes for at least the last 100 tows. It is not possible for non-authorised personnel to modify this automatic computer management system;
- it is prohibited to use one or more tickler chains in front of the footrope’.

Following the introduction of the Landings Obligations which regulates by-catch and discards some Member States used Article 14 – Avoidance and minimisation of unwanted catches* to increase the use of electric beam pulse trawling, by instigating ‘pilot projects’ for pulse trawling.

‘In order to facilitate the introduction of the obligation to land all catches in the respective fishery in accordance with Article 15 ("the landing obligation"), Member States may conduct pilot projects, based on the best available scientific advice and taking into account the opinions of the relevant Advisory Councils, with the aim of fully exploring all practicable methods for the avoidance, minimisation and elimination of unwanted catches in a fishery.’

*[of Regulation (EU) No 1380/2013 of the European Parliament and of the council of 11th December 2013 on the Common Fisheries Policy, amending Council Regulation (EC) No 1954/2003 and (EC) No 1224/2009 and repealing Council Regulations (EC) No 2371/2002 and (EC) No 639/2004 and Council Decision 2004/585/EC].

Proposed Future European Legislation

In 2016 proposals^φ were put to the EC regarding changes to technical measures covering a variety of fishing gears:

Article 24 – Innovative Fishing Gears

1. When Member States submit joint recommendations in accordance with Article 19 to allow for the use or extend the use of innovative fishing gears including the pulse trawl as described in Part E of Annex V within a specific sea basin, they shall provide an assessment of the likely impacts of using such gears on the targeted species and on sensitive species and habitats.
2. Those assessments shall be evaluated by the STECF (Scientific Technical and Economic Committee for Fisheries).
3. The use of innovative fishing gears shall not be permitted where those assessments indicate that their use will lead to negative impacts on sensitive habitats and non-target species.

Part E of Annex V specifically refers to pulse fishing:

Innovative fishing methods - The use of electric pulse trawls in ICES divisions IVb and IVc:

Notwithstanding Article 13, fishing with an electric pulse trawl shall be allowed in ICES divisions IVb and IVc under conditions defined in accordance with the second indent of paragraph 1 of Article 27 of this Regulation, regarding the characteristics of the pulse used and control monitoring measures in place south of a rhumb line joined by the following points, which shall be measured according to the WGS84 coordinate system:

- a point on east coast of the United Kingdom at latitude 55°N;
- east to latitude 55°N, longitude 5°E;
- north to latitude 56°N;
- east to a point on the west coast of Denmark at latitude 56°N.

φ[COM(2016)134 Final - Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on the conservation of fishery resources and the protection of marine ecosystems through technical measures, amending Council Regulations (EC) No 1967/2006, (EC) No 1098/2007, (EC) No 1224/2009 and Regulations (EU) No 1343/2011 and (EU) No 1380/2013 of the European Parliament and of the Council, and repealing Council Regulations (EC) No 894/97, (EC) No 850/98, (EC) No 2549/2000, (EC) No 254/2002, (EC) No 812/2004 and (EC) No 2187/2005].

MEPs Vote against Pulse Fishing – January 2018

As this report was being written a news report came through that MEPs had voted against Pulse Fishing in the European Parliament on 16th January 2018. According to BBC News - the European Parliament will now enter into long negotiations with the European Commission and the member states to agree a package of measures to streamline regulations for fishing. The Netherlands can continue testing pulse fishing until the new legislation comes into force.

<http://www.bbc.co.uk/news/world-europe-42692924>

List of Papers and Links on Pulse Trawling

- 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.
- Desender, A., Chiers, K., Polet, H., Verschueren, B., Saunders, J.H., Ampe, B., Mortensen, A., Puvanendran, V., Decostere, A. (2016) Short-term effect of pulsed direct current on various species of adult fish and its implication in pulse trawling for brown shrimp in the North Sea, Fisheries Research, Volume 179, 2016, Pages 90-97, ISSN 0165-7836.
- Haasnoot, T., Kraan, M., Bust, S.R. (2016). Fishing gear transitions: lessons from the Dutch flatfish pulse trawl, ICES Journal of Marine Science (2016), 73(4), 1235–1243.
- ICES. 2017. Final Report of the Working Group on Electrical Trawling. WGELECTRA 2017 Report 17-19 January 2017. IJmuiden, the Netherlands. ICES CM 2017/SSGIEOM:11. 36 pp.
- ICES. 2012. Report of the Study Group on Electrical Trawling (SGELECTRA), 21-22 April 2012, Lorient, France. ICES CM 2012/SSGESST:06. 50 pp
- Quirijns F., Streitman W.J., Van Marlen B., Rasenberg M. 2013. Flatfish pulse fishing: Research results and knowledge gaps. IMARES Report [C193/13]
- Soetaert, M., Lenoir, H., and Verschueren, B. Reducing bycatch in beam trawls and electrotrawls with (electrified) benthos release panels. ICES Journal of Marine Science.
- Soetaert, M., De Haan, D., Verschueren, B., Decostere, A., Puvanendran, V., Saunders, J., Polet, H., Chiers, K. (2016) Atlantic Cod Show a Highly Variable Sensitivity to Electric-Induced Spinal Injuries, Marine and Coastal Fisheries, 8:1, 412-424.
- Van Marlen, B., Wiegerinck, J.A.M., Van Os-Koomen, E., Van Barneveld (2014). Catch comparison of flatfish pulse trawls and a tickler chain beam trawl, Fisheries Research, Volume 151, 2014, Pages 57-69, ISSN 0165-7836.
- http://www.seafish.org/media/Publications/Electrofishing_in_Marine_FisheriesFS88_11_15_V3.pdf

Jon Haines
16th January 2018