



ELECTRIC 'PULSE' FISHING: WHY IT SHOULD BE BANNED

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Europe needs to decide on a 'Frankenstein' case, a problem we have entirely created for ourselves: electric 'pulse' fishing'. Electric fishing, which is forbidden in most fishing nations in the World, including China, was also banned in Europe until the European Commission and Council, at the end of 2006, made an illegitimate decision to authorize the use of electric current to catch fish and grant unjustified exemptions. This ruling went against scientific advice, only to satisfy the pressure exerted by a private interest group: the Dutch industrial beam trawl fleet. The use of electricity in the wild has serious environmental and socio-economic consequences: not only is the seabed impacted by huge industrial nets, but all marine life is now electrocuted.

Europe needs to fix the problems it has created. The survival of the small-scale fishing sector requires that Europe definitively bans this destructive fishing technique.

Electric 'pulse' fishing is a technological trick which halves fuel consumption, so that a fleet of otherwise cash-strapped fishing units can be kept in operation. Under the guise of "experimental fishing" a whole fleet in the Netherlands has been converted to a fishing method that is banned in Europe (and elsewhere in the world). Several million euros of public money have been allocated to equipping Dutch vessels with electric 'pulse' trawls, with the complicity of the public authorities.

Reducing costs in a situation of chronic overexploitation is a seductive argument to convince European fishers to equip their vessels with electrodes. Unfortunately, this fishing method is so effective that above all, it promises to accelerate the exhaustion of marine resources and ruin the fishing sector in the medium term.

Accepting electric 'pulse' fishing is an admission of failure: it recognizes that there are no longer enough fish for fishers to fill their nets without recourse to increasingly sophisticated and effective technology. There is an urgent need to understand the risk associated with the mermaid's song of industrialists, and to say no to the desertification of the ocean, the disappearance of small-scale fishing and the collapse of a whole economic sector.

Undoubtedly, 'regular' beam trawls are devastating and alternatives must be sought. But solutions should not threaten entire ecosystems as well as the livelihoods of many to benefit a few.



Electric 'pulse' trawls in the North Sea.

10 THINGS TO KNOW ABOUT ELECTRIC 'PULSE' FISHING

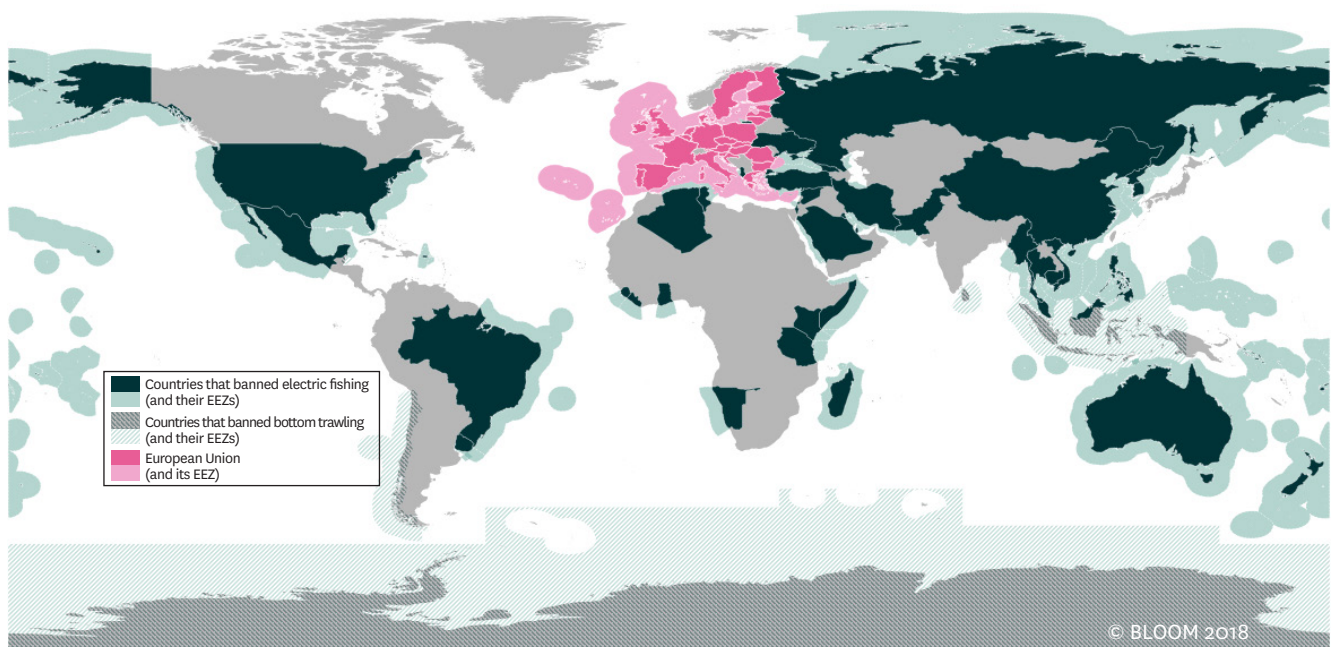
1 A fishing method prohibited for good reasons...

Electric fishing has been prohibited in Europe since 1998, alongside other destructive fishing methods "including the use of explosives, poisonous or stupefying substances", for the "conservation of fishery resources through [...] the protection of juveniles [...]".¹

China, which used it in the 90s, banned it in 2000² because of its serious harmful effects for biodiversity.³ Hong Kong had already banned it in 1999⁴ because of its damaging consequences:⁵ "Electric fishing harms or even kills most fish, including fish fry and other marine life. Such methods of fishing have a long-term deleterious effect on fisheries resources and the marine ecosystem".

In Vietnam, "electric impulses and toxics to exploit aquatic resources is an act of exterminating the resources, damaging the ecology and polluting the habitat of aquatic resources",⁶ and electric fishing was banned in 1996.⁷

Brazil, the United States and Uruguay have also banned electric fishing to "prevent habitat degradation".⁸ The list of countries that have banned electric fishing is long, as seen below.



World map showing countries that banned electric fishing (green) as well as Europe (pink), which is about to mainstream its use.

¹ Council Regulation (EC) No 850/98.

² Article 30 Article 30 of the Fisheries Law of the People's Republic of China of January 20, 1986, amended on October 31, 2000. Available at: http://www.npc.gov.cn/englishnpc/Law/2007-12/12/content_1383934.htm.

³ Yu (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(8): 1592–1597

⁴ Fisheries Protection (Specification of Apparatus) Notice, Cap. 171B, regulation 4A. Available at: www.elegislation.gov.hk/hk/cap171B/en?po=1&p1=1.

⁵ Legislative Council brief, fisheries protection ordinance (Chapter 171). Available at: www.legco.gov.hk/yr98-99/english/bc/bill_o4/general/o4_brf.pdf.

⁶ Directive N°1/1998/CT-TTg of January 2, 1998 to strictly

ban the use of explosives, electric impulses and toxics to exploit aquatic resources. Available at: <http://extwpr-legs1.fao.org/docs/pdf/vie14284.pdf>.

⁷ Brzeski (1996) Shocking fishing. Available at: www.icsf.net/images/samudra/pdf/english/issue_15/149_arto1.pdf.

⁸ United Nations (2006) *Oceans and the Law of the Sea*. A/61/154. Available at: www.un.org/depts/los/general_assembly/documents/impact_of_fishing.pdf.

2 ...but authorized for bad reasons

Despite the proven destructiveness of electric fishing and against the advice of the Scientific, Technical and Economic Committee for Fisheries (STECF),⁹ the European Commission and Council have authorized granting exemptions to use electric current in the southern part of the North Sea since late 2006.¹⁰ In 2013, the 1998 Regulation was amended to include this principle of exemptions in the law (thus allowing Member States to equip up to 5% of their beam trawl fleets with electrodes),¹¹ but the Commission and Council have allowed further licences beyond the legal framework (see point 8).¹²

The European Commission has thus caved in to lobbying from the Dutch fishing industry, whose trawl fleet has been teetering on the edge of bankruptcy since fuel prices rose in 2007.¹³ The economic model of the beam trawl fleet is extremely vulnerable, because of its structural dependency on fuel. Rather than questioning an inevitably doomed fishing method because of its unacceptable environmental impact and excessive fuel consumption, the Dutch have stubbornly pursued high-impact fishing methods rather than converting to more sustainable gears.

→ The Dutch fishing industry now wants electric 'pulse' fishing to be considered a 'conventional' fishing method so

that it can be widely authorized without requiring special authorizations.

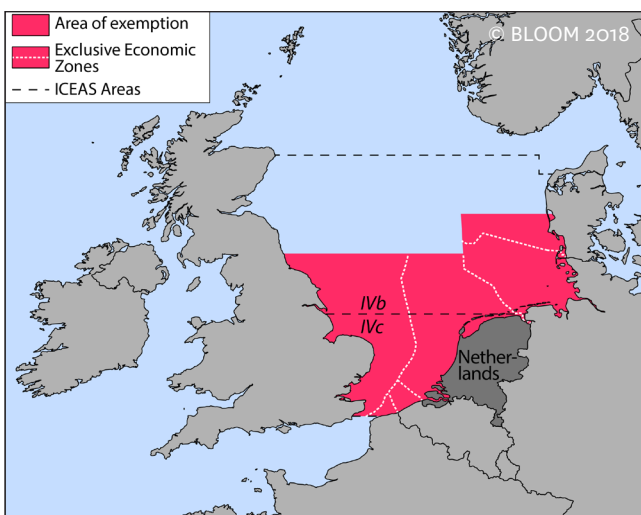
3 Devastating impacts on the resource

The electric current used, a 'pulsed bipolar current', is identical to that used by Tasers[®] (electroshock weapons).¹⁴ This type of current causes **such violent, uncontrolled convulsions that 50 to 70% of large cods are left with a fractured spine and internal bleeding after the shock.**¹⁵

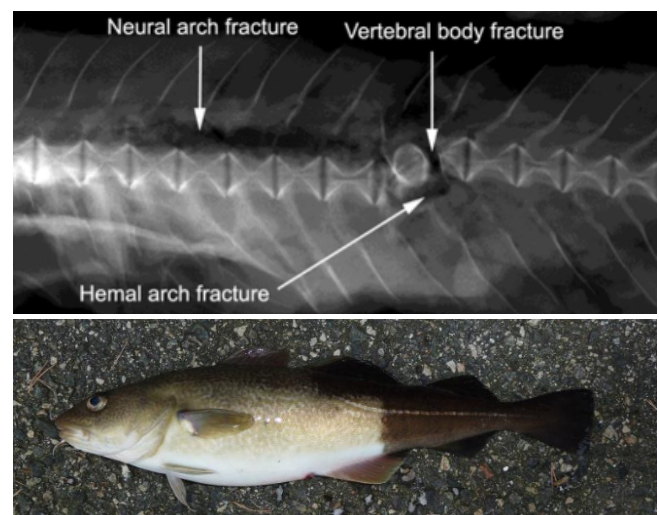
Electricity can also weaken the immune system of worms and common shrimp, and increase their sensitivity to pathogens.¹⁶ And this is just the tip of the iceberg, because we know nothing about the effect of the electric current on eggs, juvenile growth, fish reproduction, plankton or electro-sensitive species such as rays and sharks.

4 Dangerous consequences for ecosystems

The research conducted so far by the Dutch has essentially focused on the economic performance of vessels, but **electric 'pulse' fishing poses a systemic problem of unprecedented severity: its extreme efficacy inexorably empties**



North Sea area where electric 'pulse' fishing exemptions can be granted.



Top picture: radioscopy showing a cod with a broken spine after an electric shock.

Bottom picture: blacktail pattern indicating vertebral injury (source: de Haan 2011)

⁹ STECF (2006) 23rd report of the Scientific, Technical and Economic Committee for Fisheries (second plenary meeting), Barza d'Ispra, November 6-10 2006. Commission Staff Working Paper. 99 p. Its conclusion was that "there [were] a number of issues that need[ed] to be resolved before any derogation [could] be granted". These issues concerned "the unknown effect of pulse trawl fisheries on non target species and the potential impact on vertebrates and invertebrate species".

¹⁰ Council Regulation (EC) No 41/2007.

¹¹ Council Regulation (EC) No 850/98 amended by Regulation (EU) No 227/2013.

¹² Kraan et al. (2015) Perceptions of European stakeholders of pulse fishing. Report number C098/15, IMARES Wageningen UR, IJmuiden (The Netherlands). 44 p.

¹³ Haasnoot et al. (2016) Fishing gear transitions: lessons from the Dutch flatfish pulse trawl. ICES Journal of Marine Science, 73(4): 1235-1243.

¹⁴ Dermengiu et al. (2008) Electroshock weapons: physiologic and pathologic effects — literature review. Romanian Journal of Legal Medicine 16(3): 187-193.

¹⁵ de Haan et al. (2011) The effect of electric pulse stimulation to juvenile cod and cod of commercial landing size. IMARES Report C141/11. IMARES, Institute for Marine Resources & Ecosystem Studies. Available at: www.wur.nl/en/Publication-details.htm?publicationId=publication-way-343137383633.

¹⁶ Soetaert et al. (2015) Determining the safety range of electrical pulses for two benthic invertebrates: brown shrimp (*Crangon crangon* L.) and ragworm (*Alitta virens* S.) ICES Journal of Marine Science, 72(3): 973-980.

the ocean. Small-scale and recreational fishers denounce a fishing method that turns European waters into a "graveyard" and a "garbage dump".¹⁷

Electric 'pulse' fishing reduces the impact on habitats compared to 'regular' beam trawls, but still has harmful impacts on both habitats and marine life.¹⁸ Asking a legislator to choose between electric fishing and beam trawling is like giving them a choice between plague and cholera: on the one hand, beam trawls have an unacceptable impact on habitats and go against all European sustainability objectives; on the other, electric fishing causes massive destruction of the marine environment by using industrial towed gears, and causes the desertification of the ocean. **Neither electric fishing nor beam trawling are a viable or acceptable option for Europe.**

Furthermore, electric 'pulse' trawlers are not selective at all. For 100kg of fish caught, 50–70kg are discarded (including plaice, dab and soles).^{19, 20} In comparison, sole netters discard only 6kg of fish per 100kg of fish caught.²¹ Survival rates were measured for several discarded species and were very low, especially for undersized specimens: 15% for plaice, 29% for sole, and 16% for dab.²²



Focus on cables on an electric 'pulse' trawl.

5 An increased threat for small-scale fishers

Since electric 'pulse' trawls are lighter than conventional trawls, they can operate in zones that were previously inaccessible, near the coasts. However, these areas are sometimes reproduction zones or nurseries for numerous marine species. Only low-impact, small-scale fisheries were operating there. This unfair and unreasonable competition is worrying, because it rings the death knell for small-scale fishing.

6 Already dramatic consequences for fishers in the Channel and the North Sea

Bled dry, French fishers are forced to redeploy their fishing effort in the Channel, so that they can continue their activities. They denounce an irresponsible fishing method with dangerous consequences for the whole ecosystem and the economic balance of the sector. UK fishers from Lowestoft are equally angry at the expansion of electric fishing. According to them, "going beyond 12 nautical miles is a waste of time. It's a graveyard". Same story in Belgium and the Netherlands: electric 'pulse' fishing threatens their very viability in the short term.²³

7 Illegal licenses

The current regulatory framework allows each Member State to equip a maximum of 5% of its beam trawl fleet. **If the Netherlands were to comply with this legal limit, they would have 15 electric 'pulse' trawl licenses, not 84,** as indicated by the European fleet register. According to Dutch researchers, there are now only 8 beam trawls fishing for sole without electricity in the Netherlands.²⁴

→ In October 2017, BLOOM filed a complaint to the European Commission against the Netherlands, for the illegal and unjustified allocation of exemptions. The Commission has not yet responded to this complaint.

¹⁷ A summary of their accounts is available at: <http://bloomassociation.org/en/our-actions/our-themes/electric-pulse-fishing/impact-on-fishers>.

¹⁸ Electric trawls are still bottom trawls: they are dragged along the bottom and impact marine habitats. In fact, it is reported that the electrodes still penetrate into the sediment and that the trawl shoe goes six centimeters down the sediment. See Baarseen *et al.* (2015) *Verkenning economische impact aanlandplicht op Nederlandse kottervloot*. Flynth & LEI Wageningen UR. 69 p.

¹⁹ Cappell *et al.* (2016) *MSC sustainable fisheries certification — Off-site surveillance visit — CVO pulse sole and*

plaice fishery — Public comment draft report. Edinburgh (UK): Acoura Marine Ltd.

²⁰ Baarseen *et al.* (2015) *Op. cit.*

²¹ Kelleher (2005) *Discards in the world's marine fisheries: an update*. Rome (Italy): Food and Agriculture Organization of the United Nations (FAO).

²² van der Reijden *et al.* (2017) *Survival of undersized plaice (*Pleuronectes platessa*), sole (*Solea solea*), and dab (*Limanda limanda*) in North Sea pulse-trawl fisheries*. *ICES Journal of Marine Science*, 74(6): 1672–1680. High bycatch and low survival rates can be guessed from this video taken aboard F/V TX-19: www.facebook.com/frank.wezelman/videos/1435434289877260.

www.facebook.com/frank.wezelman/videos/1435434289877260.

²³ LIFE platform (2017) *Testimonies about the development of fisheries catches in the southern North Sea*. Available at: <http://lifeplatform.eu/wp-content/uploads/2017/09/Testimonies.pdf>.

²⁴ Quirijns *et al.* (2015) *Flatfish pulse fishing: research results and knowledge gaps II*. IMARES Report C091/15. IMARES, Institute for Marine Resources & Ecosystem Studies. Available at: <http://library.wur.nl/WebQuery/wurpubs/489531>.

8 A falsely experimental fishery

The massive increase in exemptions since 2012 is attributed first to experimentation,²⁵ and second to the implementation of a "pilot project".²⁶ Under the pretext of scientific research, a destructive fishing method is authorized against the recurrent advice of scientists. The European Commission is thus displaying complicity with a fishing practice that is as questionable as "scientific whaling".

In 2015, the International Council for the Exploration of the Sea (ICES) acknowledged that *"the issuing of 84 licences to carry out further scientific data collection is not in the spirit of the previous advice and that such a level of expansion is not justified from a scientific perspective. [...] This is well in excess of the 5% limit included in the current legislation. At this level this is essentially permitting a commercial fishery under the guise of scientific research"*.²⁷

→ In total, there were over 100 electric 'pulse' trawlers operating in Europe in 2017: 84 in the Netherlands, 12 in the United Kingdom, 10 in Germany and 2 in Belgium. Most vessels conducting electric 'pulse' trawling in Europe are under Dutch ownership.

9 Uncontrollable electric parameters, fraudulent practices

As things currently stand, it is impossible to check the electric parameters used on the vessels and the current sent into the bottom of the ocean. ICES considers that *"the existing regulatory framework is not sufficient to prevent the introduction of potentially damaging systems"*.²⁸

Moreover, several fraudulent behaviors have been reported aboard electric 'pulse' trawlers, for example the use of netting below the legal size²⁹ or illegal fishing in zones with seasonal closures.³⁰ It is not just ecosystems that are put under strain by electric fishing: the situation has become explosive between European professionals, and between fishers and the authorities. Following the discovery of an infraction,

three inspectors were even dragged through the water in the nets of an electric 'pulse' trawler³¹ (the crew members were accused of attempted murder).³²

10 Destructive and illegal... ...but subsidized fishing!

Since August 2015 only, at least 5.7 million euros of public subsidies have been allocated to the development of the industrial electric 'pulse' fishing fleet in the Netherlands, including 3.8 million euros of European funding (67% of the total).³³ These public subsidies have been abusively granted for 'research', 'innovation' and 'better practices'. European Institutions and Member States need to stop using public funds for ecologically and socially harmful fishing practices. Public decision-making has to be consistent with the objectives of the Common Fisheries Policy and must show greater vision, courage and ambition for the future of European fisheries.

→ The Netherlands have not uploaded the file on public subsidies allocated from 2007 to 2015 under the "European Fisheries Fund" (EFF). For this reason, it is impossible to calculate the total amount of subsidies allocated to electric 'pulse' fishing since the introduction of the exemptions.



Sole with burnt skin.

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²⁵ Article 43 of Council Regulation (EC) No 850/98.

²⁶ Article 14 of Regulation (EU) No 1380/2013.

²⁷ ICES (2015) Second interim report of the working group on electrical trawling (WGELECTRA). IJmuiden, the Netherlands, 10-12 November 2015 Copenhagen (Denmark).

²⁸ ICES (2016) Advice 2016, Book 1. Request from France for updated advice on the ecosystem effects of pulse trawl.

²⁹ Un chalutier hollandais suspecté de fraude ar-

raisonné au large. Available at: www.lavoixdunord.fr/119637/article/2017-02-16/un-chalutier-hollandais-suspecte-de-fraude-arraisonne-au-large.

³⁰ Dutch firm and master fined with GBP 168,000 due to fisheries breaches. Available at: www.fis.com/fis/worldnews/worldnews.asp?monthyear=6-2017&day=13&id=92219&l=e&country=&special=&ndb=1&df=0.

³¹ Kotter brengt NVWA-inspecteurs in gevaar: bemanning aangehouden door politie. Available at: www.nvwa.nl/nieuws-en-media/nieuws/2017/08/30/kotter-brengt-nvwa-inspecteurs-in-gevaar-bemanning-aangehouden-door-politie.

³² Eigenaar viskotter: Inspecteurs NVWA brachten zichzelf in gevaar. Available at: <https://www.omroepzeeland.nl/nieuws/100516/Eigenaar-viskotter-Inspecteurs-NVWA-brachten-zichzelf-in-gevaar>.

³³ Data from the the European Maritime and Fisheries Fund (EMFF) for the 2015-2020 period. Available at: www.rvo.nl/sites/default/files/2017/05/20170430_Openbaarmaking_EFMZV_2_v1.csv.

A fishing method in total contradiction with our international commitments...

As part of the Sustainable Development Goals adopted by the United Nations General Assembly in 2015, Europe committed to "end overfishing" and "destructive fishing practices" by 2020 (SDG 14.4).^{*} The development and public funding of electric 'pulse' fishing is in total contradiction with these objectives.

...and with our regulatory objectives

The basic regulations of the Common Fisheries Policy adopted in 2013^{**} set an objective for the European Union to restore fish stocks and end overfishing by 2020 at the latest.

The "Marine Strategy Framework Directive" (2008/56/EC) demands the "conservation of the marine ecosystems. This approach should include protected areas and should address all human activities that have an impact on the marine environment".

^{*} United Nations (2015) Sustainable Development Goals — Goal 14: conserve and sustainably use the oceans, seas and marine resources. Available at: www.un.org/sustainabledevelopment/oceans.

^{**} Regulation (EU) No 1380/2013.

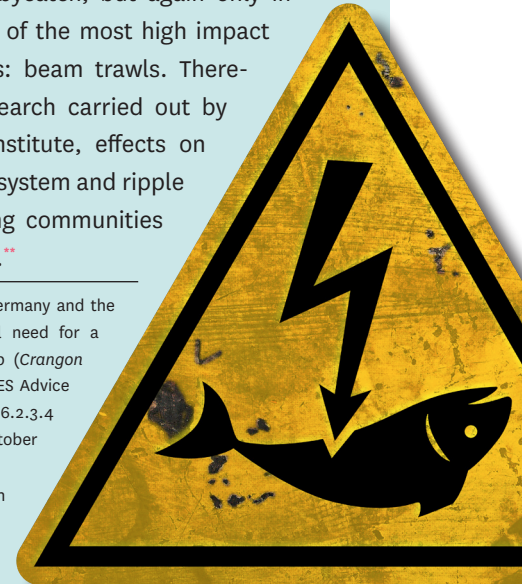
A destructive technological race

Electricity is also used to catch shrimp. Besides the Dutch, Belgian fishers have also shown some interest in this technique, but it uses a 'unipolar' (as opposed to 'bipolar' for flatfish) pulsed current. Although unipolar current is less harmful than bipolar current, such a technological race will also result in an increased fishing effort and thus aggravate the overexploitation of common shrimp.^{*}

The German Thünen Institute considers that electric fishing may be a viable alternative, but its position is solely based on i) reduced fuel consumption and ii) lower impact on habitats relative to beam trawling, as well as iii) potential decreased bycatch, but again only in comparison with one of the most high impact fishing gears there is: beam trawls. Therefore, similarly to research carried out by the Dutch IMARES Institute, effects on the whole marine ecosystem and ripple down effect on fishing communities are not accounted for.^{**}

^{*} ICES (2014) Request from Germany and the Netherlands on the potential need for a management of brown shrimp (*Crangon crangon*) in the North Sea. ICES Advice 2014, Book 6 — North Sea — 6.2.3.4 — Special request, Advice October 2014. 10 p.

^{**} See their public position at: www.thuenen.de/en/of/projects/fisheries-and-survey-technology/pulse-trawl-for-shrimp-fishery.



Electric 'pulse' fishing is not 'innovative', it is destructive! It leads to the electrocution of fish, the desertification of the ocean, and the fast demise of European fisheries.

Derogations are unjustified and mostly illegal. Electric fishing has been banned in Europe since 1998 and should remain so.

Stop electric 'pulse' fishing in Europe!

FOR FURTHER INFORMATION ON ELECTRIC 'PULSE' FISHING

www.bloomassociation.org/en/our-actions/our-themes/electric-pulse-fishing/



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