# Consultation Response to electrofishing for razor clams in Scotland by the Scottish Environment LINK Marine Group

**September 2016**

**Summary**

- Continuing efforts should be made to **ensure compliance** as electrofishing for razor clams is currently illegal
- LINK Marine Group strongly contend that **More evidence is required** regarding the full range of potential direct, indirect and long term impacts on marine ecology of electrofishing before any decision can be made as to whether to legalise it.
- Prior to potential legalisation**, a thorough analysis of regulation and management** is needed to ensure the exploitation of Scotland's razor clam stocks is carried out in a sustainable and environmentally sound manner. An integrated, ecosystem-based approach to managing inshore fisheries, embedded in regional marine planning, including spatial measures and consideration of cumulative impacts, is urgently needed for all inshore waters.
- In the event of electrofishing as a method being legalised and passing Appropriate Assessments, **production of guidance by SNH regarding impacts on biodiversity, particularly in relation to Priority Marine Features within and outside of MPAs is required**

## Introduction

Scottish Environment LINK is the forum for Scotland's voluntary environment community, with over 35 member bodies representing a broad spectrum of environmental interests with the common goal of contributing to a more environmentally sustainable society. Its member bodies represent a wide community of environmental interest, sharing the common goal of contributing to a more sustainable society. LINK provides a forum for these organizations, enabling informed debate, assisting co-operation within the voluntary sector, and acting as a strong voice for the environment.

Acting at local, national and international levels, LINK aims to ensure that the environmental community participates in the development of policy and legislation affecting Scotland. LINK works mainly through groups of members working together on topics of mutual interest, exploring the issues and developing advocacy to promote sustainable development, respecting environmental limits. LINK members welcome the opportunity to comment on this consultation.

## General Comments

Although electrofishing methods are currently banned in the UK, evidence suggests it is happening illegally in Scotland. The environmental impacts of electrofishing, most notably on non-target species, ecosystem functioning and the sustainability of a targeted razor clam fishery, are currently not well known and, therefore, we welcome the opportunity to engage with government on this important and pressing issue.

**LINK strongly believes that more evidence is required regarding the full range of potential environmental impacts of electrofishing as a fishing method, in particular the direct, indirect, and long term impacts on marine ecology. In addition, LINK consider it vital that a thorough analysis of regulation and management is performed to ensure the future exploitation of Scotland's razor clam stocks is carried out in a sustainable and environmentally sound manner.**

At present, the practice of electrofishing is illegal, unreported and unregulated, which impedes the sustainability of fisheries by contributing to overfishing and creating unfair competition. The apparent prevalence and unmanaged practice of illegal electrofishing also negatively impacts the reputation of the Scottish fishing industry as well as the Scottish Government. LINK believes that a thorough analysis is needed to assess the sustainability of a razor clam electrofishery and how this will be managed and regulated. The following points must be considered prior to permitting electrofishing as a commercial practice:

- How the industry would be monitored
- How penalties for non-compliance would be enforced,
- How stock size and distribution will be monitored
- How methods that ensure sustainability will be implemented

## Consultation Question

**The Scottish Government welcomes your comments on whether electrofishing should in future be a permitted method for catching razor clams?**

The answer to this question is inconclusive until further studies are conducted. **More evidence is required** regarding the full range of potential direct, indirect and long term impacts on marine ecology of electrofishing before any decision can be made as to whether to legalise it.

*Sustainability of electrofishing method*

The results of the recent Marine Scotland Science (MSS) study[1] suggest electrofishing is likely to be more environmentally benign than other methods of razor clam harvesting (e.g. such as hydraulic dredging), but being more benign does not necessarily mean that electrofishing does not have an environmental impact. In our opinion, the study did not address the broader questions of long-term sustainability of razor clam populations under various levels of exploitation nor the medium and long-term effects on marine organisms. Additionally, the trials in the study were performed in a laboratory at an experimental-scale, rather than at a larger commercial-scale. From a stock management perspective, electrofishing is a very efficient means of harvesting razor clams, which raises serious concerns over rapid extirpation at a local level.

The unregulated exploitation of razor clams can have damaging effects, as illustrated in the minimally regulated Irish hydraulic dredge fishery, where a once profitable razor clam fishery is now depleted with very slow signs of recovery. Although there are differences between hydraulic dredging and electrofishing methods, it is likely that the two methods will target the same populations[2], which will increase fishing pressure on razor clam stocks. Electrofishing has the potential to open new fishing grounds, potentially competing with other fishing and marine activities. Further information is needed on the potential expansion of an electrofishery and how this will impact other marine uses, for example will electrofishing be permitted in MPAs where dredging is prohibited.

[1] http://www.gov.scot/Resource/0047/00475246.pdf
[2] http://www.gov.scot/resource/doc/295194/0113795.pdf



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The current illegal status of electrofishing makes collecting accurate data difficult, but such information is essential to properly assess and manage the fishery. Additionally, to avoid a legal electrofishery becoming an added fishing pressure on the razor clam stock, we suggest that only existing razor clam fishing vessels are converted to electrofishing. Measures to protect stocks of razor clams must be enforced as part of an ecosystem-based management plan. Future research should focus on ecosystem links as a priority, including separating out the influences of climate change and anthropogenic pressures.

*Stock Assessment*

The MSS study recommended that the next stage should be to "carry out quantitative assessments of stock size towards the development of a sustainable fishery scaled to the size of the resource". In light of the increasing landings of razor clams and the use of electrofishing, we see the evaluation of the current stock status for razor clams and the setting of a sustainable extraction rate as high priority. Regardless of the method of fishing, it is clear that in order to maintain a sustainable fishery, the level of activity and removal rate of razor clams would need to be assessed and aligned with the available resource. Following the expansion of the razor clam fishery in recent years (both legal dredging and illegal electrofishing), it is likely that new fishing grounds will have been discovered. More up to date information is therefore required to assess the spatial extent and size of the razor clam resource in Scotland.

Some aspects of the biology of razor clams relevant to managing a sustainable fishery in Scotland are not fully understood. There are concerns that the current EU minimum landing size of 100 mm does not adequately protect the spawning stock - studies on the west of Scotland have indicated that substantial proportions of targeted razor clam species reach sexual maturity above this size. The relationship between stock size and recruitment is under studied, but based on available information recruitment appears sporadic in some areas. An earlier MSS report[2] recommended that a precautionary approach to harvesting is required until stock and recruitment assessments could be made. Recovery of razor clam beds is not well understood. However, as a relatively mobile species, individuals that live on the edge of fished grounds can rapidly move into depleted fished areas leading to overestimates of abundance and recoverability. As electrofishing is a very efficient harvesting method, concerns regarding the sustainability of the species are highly relevant to the question of legalising this method.

*Wider Ecosystem Effects*

The impact electrofishing has on non-target species has not been fully addressed and requires further investigation. Non-target species such as starfish, crabs (predominantly hermit crabs), flatfish, and sandeels (a Priority Marine Feature) are all susceptible to electric shock. Although direct mortality is not expected immediately following exposure, the short-term behavioural responses of non-target species increase their vulnerability to predators, which can have important ecological implications. Additionally, there are concerns over impacts on Priority Marine Feature habitats, particularly maerl and seagrass habitats with which razor clams have an association[3].Razor clams are an important prey item for the edible crab and play an important role in structuring benthic communities. Therefore, the mass removal of razor clams, through overharvesting, will have knock-on trophic effects over time that would not be detected over the short time scale of experimental studies.

The results of the MSS study are encouraging but it also highlights the need for further research on the effects of electrofishing on burrowing species, the medium-to-long-term ecological implications, and the effects of electrofishing on fertility and fecundity of both razor clams and non-target species. In laboratory tests by Van Marlen et al (2009)[4], the impact of electric pulses on benthic species found lower survival rates (up to 7%) were observed for

[3]Fahy, E., Norman, M., Browne, R., Roantree, V., Pfeiffer, N., Stokes, D., Carroll, J. & Hannafy, O., 2001 Distribution, population structure, growth and reproduction of the razor clam Ensis arcuatus (Jeffreys) (Solenaceae) in coastal waters of western Ireland. Irish Fisheries Investigation, 10, 24pp

[4]Van Marlen, B., de Haan, D., Van Gool, A. and Burggraaf, D., 2009. The effect of pulse stimulation on marine biota – Research in relation to ICES advice – Progress report on the effects on benthic invertebrates, IMARES C103/09, 53 pp.



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ragworms, green crabs and razor clams. Food intake was also found to be significantly lower (10–13%) for green crabs.

*Management, Compliance and Regulation*
There are serious compliance issues with the current ban on electrofishing and therefore this consultation should result either in the legalisation of electrofishing through an effective inshore fisheries management plan or increased policing efforts. There have been concerns raised over the broader ecological impacts of electrofishing, particularly in the Luce Bay SAC.

If electrofishing were to be legalised, commercial electrofishing practices should be subject to an Appropriate Assessment, in line with Article 6 of the Habitats Directive, to determine the environmental impact on SACs and to ensure appropriate management measures are put in place to protect the site.

Effective marine planning and Strategic Environmental Assessment (SEA) are crucial to sustainable management of any activity at sea, including fishing, and guide potentially damaging activities away from the most environmentally sensitive areas. These processes should be placed in the wider context of marine ecosystems and the need to achieve and maintain Good Environmental Status of Scotland's seas under the Marine Strategy Framework Directive. Clear and effective management measures must be introduced promptly to ensure the requirements under the Habitats Directive to maintain site integrity are met, while allowing sustainable use of the area without preventing the achievement of the site conservation objectives. Resources would need to be made available for preparation of management schemes; statutory instruments; voluntary measures; monitoring, compliance and enforcement and promotion of public understanding.

Electrofishing presents a range of dangers to human health, especially when performed in an illegal and unmanaged manner. We suggest that, if electrofishing were to be permitted on a commercial scale, an education and training programme should be established (in partnership with the HSE) to promote a code of safe working practice within the fishery.

*Potential cumulative effects*
More needs to be done to map the cumulative pressures of multiple fishing activities to highlight potential areas of gear conflict and marine ecosystem decline. An integrated, ecosystem-based approach to managing inshore fisheries, embedded in regional marine planning, including spatial measures and consideration of cumulatve impacts, is urgently needed for all of Scotland's inshore waters. Within such a framework, the spatial and temporal occurrence of electrofishing activity would need to be assessed and considered as a pressure with regards to assessing cumulative effects from other pressures (e.g. hydraulic dredging and "salting").

*Future Recommendations*
- Small-scale pilot studies on electrofishing as a commercial fishery must be performed, within a management and regulatory framework, with regular monitoring of target and non-target species populations
- Continuing efforts should be made to ensure compliance, as electrofishing for razor clams is currently illegal
- Further monitoring and research is needed at a population-level to assess razor clam stock size and distribution, and to determine the impacts on non-target species and benthic habitats, including infauna
- Requirement for Appropriate Assessment for both the decision in its entirety (throughout Scottish waters) and within SACs
- In the event of the fishery passing an Appropriate Assessment, following a stock assessment etc, production of guidance by SNH regarding impacts on biodiversity, particularly in relation to Priority Marine Features within and outside of MPAs, should be produced



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- Standardisation of equipment is needed to accurately identify the true environmental/ecological impact of electrofishing. This should include the identification of the weakest current required to maintain an effective fishing method yet reduce mortality and injury rates of non-target species, and also investigation into the depth of current penetration into the seafloor.

**This response was compiled on behalf of LINK Marine Group and is supported by:**
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