# BIM EMFAF Work Programme Project Report 2023

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| **BENEFICIARY:** | Bord Iascaigh Mhara |
| **PROJECT REFERENCE NUMBER:** | 23/SFS/STS-BG011-BR120 |
| **NAME OF PROJECT:** | **Fisheries Conservation solutions to address key environmental challenges** |
| **IMPLEMENTATION PERIOD:** | 1st January to 31st December 2023 |

## Project Scope

Commencing in 2023, this three-year project aims to develop a longer-term strategic approach around development of solutions to key environmental challenges. Many fisheries conservations projects and solutions have potential to address multiple environmental challenges. For example, modified nets and rigging can improve both energy efficiency and bycatch reduction. Off-bottom gears can improve energy efficiency through reduced gear drag, reduce impacts on benthic fauna through reduced seabed contact, and reduce unwanted catches through avoidance or reduced herding of specific species. Therefore, it was planned to conduct projects across a number of themes:

1. Landing obligation and marine biodiversity
2. Carbon emission and seabed impact reduction
3. Marine spatial planning
4. New technologies
5. Fleet based assessment of gear changes
6. Knowledge sharing

## Objectives

1. Four projects at sea on board commercial vessels aiming to develop Fisheries Conservation Solutions (FCS) to key environmental challenges delivered.
2. New project aiming to develop off-bottom fishing techniques for demersal species initiated in collaboration with net maker(s) and in consultation with industry.
3. Review European Commissions (EC) new approach in relation to survival exemptions for species such as Nephrops and plaice and incorporate into planning for 2024.
4. FCS solution development supported through testing and implementation of new supporting technology - e.g., further development of side-scan sonar to rapidly evaluate gear modifications.
5. Continue collaboration with Department of the Environment, Heritage, and Local Government (DEHLG) on Marine Strategy Framework Directive (MSFD) measures.
6. New FCS officer appointed enabling building of new capabilities and scoping of potential FCS projects in relation to Marine Spatial Planning (MSP) challenges.
7. Collaborate with Sea Fisheries Protection Authority (SFPA) on incorporation of selective gears in their electronic logbook application.
8. Collaborate with BIM's Economic and Strategic Services Unit (ESSU) and Atlantic Technical University (ATU) Galway on development of bioeconomic modelling of gear changes at fleet level. This work will initially focus on the effects of gear changes on fish stocks and economic viability of the fleet.

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9. Extensive engagement with industry through regional gear workshops, industry Fisheries Science Research Partnership meetings, one to one meetings during gear trials, trade press articles.
10. Extensive engagement with internal and external actors towards uptake of applied fisheries conservation solutions and broader organisational development.

## Outcomes

1. The Fisheries Conservation team completed five studies at sea on board commercial fishing vessels in close collaboration with the Irish fishing industry. This work addressed key environmental issues such as energy transition and bycatch reduction.

   An assessment of pair-fishing operations in the Irish demersal seine fishery and demonstrated substantial reductions in fuel use and greenhouse gas emissions compared with solo vessel operations. Full report available at:
   https://bim.ie/wp-content/uploads/2023/11/Assessment-of-pair-seining-in-the-Irish-demersal-seine-fishery.pdf

   Gear trials of two models of Danish and Icelandic off-bottom trawl doors showed their potential to improve energy efficiency, reduce seabed impacts and unwanted fish catches in the Irish Nephrops fishery. Full reports available at:
   https://bim.ie/wp-content/uploads/2023/05/103954-BIM-Bottom-Trawl-Door-Report-v2.pdf
   https://bim.ie/wp-content/uploads/2023/12/Preliminary-assessment-of-reduced-drag-Pluto-trawl-doors.pdf

   Artificial lights tested on trawl gear and demonstrated substantial increases in catches of the targeted fish species. This is a simple inexpensive option for whitefish vessels to improve catch and energy efficiency. Full report available at:
   https://bim.ie/wp-content/uploads/2023/08/Assessment-of-artificial-light-on-the-headline-towards-improving-energy-efficiency-in-the-Celtic-Sea-trawl-fishery-for-demersal-fish-species.pdf

   A study on trawl image acquisition captured clear video footage of Nephrops entering the rear part of the trawl. Results feed into global research on using machine learning to identify species and optimise fisheries bycatch reduction and energy efficiency. Full report available at:
   https://bim.ie/wp-content/uploads/2023/10/report-for-website.pdf

   Substantial progress was made on two further Fisheries Conservation Studies in Q4 2023.

   Work commenced on assessment of spurdog survival in the newly opened spurdog fishery. To date, the post capture physical condition of almost 500 spurdog has been assessed at sea. This work is complemented by our pop-up satellite tagging program which has made excellent progress in assessing the long-term survival of spurdog. A report on this work will be issued by Q2 2024.

   A trial was conducted to support the Irish fishing industry in assessing scallop size selectivity using different dredge ring sizes in the English Channel. Preliminary results suggest that increasing the ring size from 85 mm to 92 mm could reduce unwanted catches of undersize scallops and improve sustainability of the scallop stock. A report on this work will be issued in Q1 2024.

2. A three-year project commenced with Swan Net Gundry (SNG) on developing off-bottom fishing techniques for demersal fish species. Work commenced in Q4 2023 by meeting key vessel skippers at

the SNG premises in Donegal to discuss potential trawl development options. Further assessment of options, flume tanks testing of net model(s) and development of a new trawl will occur in 2024.

3. An application was submitted for a survivability exemption for spurdog under the landing obligation on the basis of BIM condition assessment work conducted to date. STECF assessed the application and concluded that more information on fish survival, catches and discarding was needed in the new spurdog fishery. They were supportive of plans to conduct a survival experiment using pop-up satellite tags which is due to be completed in 2024.

   Development of the methodology on assessing fish survival towards survival exemption applications as part of a study assessing post-capture survival of cod in the Irish seine-net fishery. The Fisheries Research Journal peer reviewed and published our work in 2023:
   https://bim.ie/wp-content/uploads/2023/10/Oliver-et-al.-2023.pdf

4. The new technologies tested in 2023 were: artificial lights mounted on trawl gear, and the development of a trawl image acquisition and sediment suppression system.

5. BIM met with the Department of the Environment, Heritage, and Local Government (DEHLG) on Marine Strategy Framework Directive (MSFD) measures and presented new work on building evidence-based approaches around appropriate location of marine spatial developments in relation to seafood production.

6. Elizabeth Tray was appointed as the new FCS officer specialising in Marine Spatial Planning (MSP). Substantial progress was made in 2023 on building BIM MSP capabilities and developing applied technical solutions to MSP challenges.

   Work in 2023 included provision of detailed work plans and updates on our MSP work at two BIM Board meetings, and delivery of a high-quality response to the consultation on the south coast Designated Maritime Area Plan for Offshore Renewable Energy.

   Work commenced on development of a spatially enabled database to house data and facilitate mapping and analysis of new MSP developments in relation to seafood production.

   On foot of a request for assistance from the South East Regional Inshore Fisheries Forum, work commenced on a participatory mapping project which aims to collect information on fishing activities by vessels under 12 m for marine spatial panning purposes.

   Commencement of a global assessment of coexistence between offshore wind farms and seafood production. Fishing activity levels will be assessed pre and post construction of wind farms with technical characteristics and policies around farm construction analysed in relation to changes in fishing. This work will feed into development of Irish policies on coexistence.

7. Collaboration with the Sea Fisheries Protection Authority (SFPA) on incorporation of selective gears in their electronic logbook application by providing an updated list of selective devices used by Irish vessels.

8. Collaboration with BIM's Economic and Strategic Services Unit (ESSU) and Atlantic Technical University (ATU) Galway on development of bioeconomic modeling of gear changes at fleet level. An internal report was completed on practitioner workflow for incorporating gear changes in the BIM FLBEIA BioEcon model. This work will be further developed in 2024.

9. Engagement with industry through regional gear workshops held by FCS in Castletownbere and Howth, by participating and presenting FCS work at four Industry Fisheries Science Research Partnership Meetings. Publication of three trade press articles on FCS solutions developed during 2023.

10. Further engagement with industry at the annual Skipper Expo, and with external actors through active participation in STECF, the ICES WG on Fishing Technology and Behaviour, the North Western Waters Advisory Council, and the UK fishing gear group.

## Summary of Project Spend

| Summary of Spend | |
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| Total Approved Costs | €520,000 |
| Total Eligible Expenditure | €512,447 |
| EMFAF Eligible Expenditure | €256,224 |
| Exchequer | €256,224 |

Project Partners: ATU Galway

Report by: Ronan Cosgrove, Fisheries Conservation Manager, BIM

Date: February 2024

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