

Advances in fishing gear technology (13 July 2022). [Gear adaptations and selective technologies](#) help to reduce catches of unwanted fish. Gear trials over many years have influenced the gear now being used in commercial fishing. Selective gear innovations can help advance sustainability (economic, environmental, and social) in all wild capture fisheries. This [Fisheries Management and Innovation Group](#) bite-size meeting looked at recent developments, and government priorities going forward.

Launch of the UK Gear Forum. Stuart McLanaghan, Seafish.

Five (work) interconnected themes have been initially identified for discussion and are seen as central to drive greater sustainability fishing through selective gear innovations:

1. Support an evidence-based policy framework: to retain evidence-based decision making at a time of heightened social-media awareness on environmental sustainability issues. As well as to support a policy / regulatory framework that aids the demonstration / deployment of technical innovations / measures in commercial fishing operations.
2. Research and good practice dissemination: identify and build collaborative research partnerships focussed on industry needs and supporting national gear selectivity trials aligned with key policy areas (e.g., Fisheries Act 2020.) Also, to identify collaborative partnerships opportunities to address common supply chain challenges and lever scalability and replicability. Share intel' and build understanding on both what works well and doesn't work, to avoid duplication / reinventing wheels, as well as reducing the cost of failure.
3. Develop fit-for-purpose training resources: to ensure existing / new Seafish (non-) fishers' courses and training resources reflect the latest advances in gear innovation. We have also committed to annually offer a foundational basic fishing methods training course for related policy teams in each Devolved Administration.
4. Sustainable production / use / end-of life management of fishing gears: support more responsible production / use of gear and their end-of-life (EOL) management, including through the work of the new UK EOL Policy Steering Group and (ISO / BSI) standards bodies.
5. Annually convene a UK conference: discuss the UK Gear Forum's activities, report progress against key objectives and identify future industry needs.

Discussion

- **Q. There is lot of work ongoing with the Scottish Government, UK Government and at EU level on the circular economy and gear management. It is crucial we don't duplicate work and that we engage with what is already going on. Can we ensure this?**
A. The last think we want to do is to duplicate existing work. We need to collaborate and share information. We need to be clear on what does work and what doesn't work.
- **Q. I've been developing and using square mesh cod ends for beam trawling for several years. How can I get a scientific trial started to prove the benefits which are obvious to me? How can anyone with ideas for gear selectivity modification use this hub principle?**
A. We want to see how the hub idea works going forward, and develop the gear database idea going forward. Last year we published the findings of numerous gear trials and will look further at how to best disseminate those results, and in what format. The Seafish report [What can we learn from past gear trial projects?](#)
- Seafish played a formative role, together with the four Devolved Administrations, in 2021 UK-wide workshops which led to the new UK-wide End-of-Life Fishing and Aquaculture Gear Policy Steering Group. These funding schemes are potentially worth looking at: <https://www.gov.uk/guidance/uk-seafood-fund-fisheries-industry-science-partnerships-scheme> and <https://www.seafoodinnovation.fund/>. Also FISP@defra.gov.uk
- Seafish already convenes an informal UK Gear Group (convened by David Warwick) which brings together leading UK gear technologists and research practitioners; this operates very much on a knowledge sharing basis. It is envisaged that this Group's knowledge would be invaluable to the new UK Gear Forum, for example, to provide expertise on the design /

practical management of innovative gear trials. To provide the necessary conduit, a representative of the UK Gear Group has been approached to sit on the new UK Gear Forum.

- **Q. There was mention of an annual conference. Is there a timeline attached to the gear forum, or will this be ongoing?**
 - **A.** We want this to be a delivery forum, and the membership will determine the appropriate timelines. This will certainly continue for the foreseeable future.
 - **Q. What is classed as blue carbon?**
 - **A.** Amongst others: 1) the Parliamentary Office of Science and Technology, in its recent 'blue carbon' research briefing refers to carbon that is stored in marine ecosystems, where management of those ecosystems impacts that carbon; and 2) similarly, the UK's Climate Change Committee (CCC) defines 'blue carbon' as marine and coastal carbon which can be managed to contribute to greenhouse gas emissions mitigation.
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UK Government policy priorities. Georgina Karlsson, Team Lead Sustainable Fisheries, Domestic Fisheries Reform, Defra.

Defra areas of interest for gear are:

- Improving selectivity of gear
- Reducing impact on sensitive species
- Reducing impacts of bottom-towed gear - identify potential mitigation measures and innovations to reduce the impact of fishing on the seabed; and facilitate specific innovations and trials through identified fisheries
- End of life fishing gear
- Climate change mitigation
- Fisheries funding – further details on the various schemes can be found below.

Discussion

- **Q. I was advised by MMO that gear that reduces fuel consumption is covered by FASS, but now I'm confused, is it or not?**
A. If the gear is tried and tested it can be funded under the [Fisheries and Seafood Scheme \(FaSS\)](#). If the gear is innovative applications can be made to the [Fisheries Industry Science Partnerships \(FISP\)](#)
 - **Q. Will you be talking to the other administrations to avoid duplication across this work?**
 - **A.** Our aim is to take a collaborative approach through the Seafish Gear Forum in terms of what is being funded, so we know what works and what doesn't work.
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Addressing undersized whiting by-catch in the Northern Ireland nephrops fishery. Ben Collier, Northern Ireland Gear Trials.

- This six-year Industry led project, led by ANIFPO and NIFPO, is EMFF funded. The project commenced in February 2017, and it is funded up to December 2022. This is a collaborative project and involves engagement with DAERA, AFBI and Seafish. The major emphasis is on industry engagement using the PO network. The next change will be the transition from EMFF to the MFF scheme.
- Overall, the coverless trawl design has benefits over the incline net grid trawl. It is less expensive to manufacture and has reduced drag in the water, so it is an attractive option for fishers. Over time we hope voluntary adoption of this design by a proportion of the fleet is possible. The next step is facilitating longer duration trials.

Discussion

- **With all this work fishers do know what to do to reduce bycatch, but to do it they potentially risk losing some of their commercial catch. Do you think fishers will move naturally in that direction?**

A. With whiting in the Irish Sea 50% of the fishery at maturity is still below MLS, so not a great deal of money is being generated from whiting. Nephrops vessels will supplement their catch with brown fish. They do know how to reduce catches of unwanted fish, but they do not have the time to change mesh configuration.

- **Q. What did the skipper think of the luminous netting?**

A. This did encourage the fishers to go out on a voluntary basis unprompted. It worked well on the first day, but over the course of a few days the benefits declined. This is because the luminous netting really needs light to re-charge in-between trips.

New technology to harvest scallops. Dagny-Elise Anastassiou, Sustainability Manager, Ava Ocean (formerly TAU Tech).

- Their Arctic Pro 85-metre vessel has been retrofitted with their gentle harvester. This suction technology is used to pick up shell without touching the seafloor. A selectivity process ensures all undersized shells and small benthic marine life are returned to the sea floor without being brought to the surface. Integrated AI technology is used for mapping and harvesting in key areas where the shells exist. There are multiple sensors for additional data collection. This is a scalable technology suitable for offshore and coastal fishing efforts, and has a lower fuel cost.
- The field tests in 2019 of the prototype showed: minimal impact on benthic sediment; limited change in benthic species composition; and a high survival rate of sorted unsized scallops and other species. During their semi-controlled test runs, 97% of the targeted species were unharmed.
- The important take aways are: The technology has enabled them to reopen a fishery which was closed for 30 years, gaining access to a new non-predatory species, and developing novel economic opportunities with possible cascading effects into other novel markets.

Discussion

- **Q. The vessel looked massive. How small a vessel could this technology be used upon?**
A. We are currently looking at trials with on sea cucumbers using a 15-metre vessel, and also looking at trials with Scottish vessels between 15 and 20 metres in length.
- **Q. How does the technology function/fishing process or is this information still closed as this is still ongoing?**
A. Patents are pending so there is only so much that can be disclosed at the moment. Dagny is happy to have individual conversations about the technology.
- **Q. Can you tell us a little bit about how their harvesting system works? Is this a suction system?**
A. It is suction system with an integrated selectivity process built in, helped by using one of the SINTEF models.
- **Q. Can you clarify which species of scallop they are targeting. From some images they appear to be queens (Queen scallops - *Aequipecten opercularis*)?**
A. It is the Arctic scallop (or the Iceland scallop). It is very similar to the Queen scallop. Much smaller than larger scallops. The minimum catch size is 60mm (so anything below 6cm is selectively sorted out and returned to the sea floor without being brought to the surface).
- **Q. Could suction technology be used on more mobile species i.e. crabs, nephrops, benthic fish?**
A. We have had some enquiries and are open to ideas.
- **Q. Are there any issues due to depth or sediment type.**
A. Usually we operate at 60 – 80 metres depth, so quite shallow, but we can go down to 200 metres. There will be a plume with suction technology so do have to think about that.

Funding streams

Fisheries and Seafood Scheme (FaSS)

The FaSS is committed to supporting the catching sector and ensuring funding for fishermen is targeted to the areas that need it most. For this reason, the FaSS has currently placed a pause on funding for fishing gear and is exploring opportunities to deliver a funding round for sustainable fishing gear later in the scheme

- A funding round for sustainable fishing gear would be competitive and time limited, with applications which best demonstrate value for money and alignment with the round's objectives receiving funding.
- Funding under FaSS for sustainable gear technology (e.g. technical modifications to existing fishing gear), does remain open and applications that demonstrate Good Environmental Status (GES), e.g. a reduced impact on marine environment, a reduction in bycatch or increased species selectivity are particularly desirable. For further information please check out our website [Fisheries and Seafood Scheme - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/consultations/fisheries-and-seafood-scheme) or contact our MMO Grants Team directly to discuss potential applications: Telephone: 0208 026 5539; Email: FaSS.queries@marinemanagement.org.uk

Fisheries Industry Science Partnerships (FISP)

The FISP scheme funds data collection and research projects to support sustainable fisheries management. All projects must be a collaboration between the fishing and seafood industry and research organisations.

- Defra plan to open a third funding round from 1 August 2022 until midday on 5 September 2022 and a fourth round for funding contracts from 21 November 2022 until the end of December 2022. These dates may change. You can find out what research is eligible for funding by viewing documentation on Bravo when the round opens, although any research which was eligible in previous rounds will remain so in future rounds. Find out about [successful projects from the previous round](#).

Seafood Innovation Fund (SIF)

The UK Seafood Innovation Fund supports the UK's fishing, aquaculture and seafood industries to deliver cutting-edge technology and innovation. By supporting ambitious projects with a long-term view and by helping to take innovative ideas from early stage research to commercial viability the fund aims to kick-start a step-change in the productivity and sustainability of UK seafood into the future.

- The UK Seafood Innovation Fund runs open competitions, and welcomes applications from both inside and outside of the seafood sector. Your idea, technology or product must benefit the sustainability and/or productivity of the UK seafood industry. The fund is open to all organisations who have an innovative idea meeting the objectives of the fund.
- Calls for applications are currently closed. There are plans for an open call for applications later this year. For all general enquiries please contact: seafoodinnovationfund@cefasc.co.uk