

Promoting innovation, sustainability and improving efficiencies in Irish freshwater aquaculture

www.morefish.ie

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MOREFISH NEWS

2016 was a busy year for the MOREFISH project. The project has entered its second year of operation and has made significant headway in completing its objectives.

The team has presented its research on the Irish aquaculture sector to interested audiences both at home and abroad. The team exhibited their work at Environ 2016 in the University of Limerick, the NUI, Galway Ryan Research day and at the European Aquaculture Society conference in Scotland. All presented material can be viewed on the project website.

The project has also further strengthened its ties to industry by actively engaging with some of Ireland's trout, smolt and perch producers. October 2016 saw the second Stakeholder meeting of the project, which saw one of the largest gatherings of Ireland's freshwater aquaculturists in recent years. Moving forward the MOREFISH project has become a platform for the Irish freshwater sector to engage with international expert.

MOREFISH also welcomed a third research masters student with Conor Behan of Keywater Fisheries Ltd. Conor is a Zoology graduate of NUI, Galway. His area of research focuses on improving production efficiencies by developing a farm based tool which allows aquaculture units to monitor their inputs and outputs.

2016 was also a sad year for the MOREFISH team in that it saw the passing of one of Ireland's leading ichthyologists and aquaculture experts and a core member of the MOREFISH project Dr. Richard FitzGerald.

Project Team

The MOREFISH team are: Dr. Eoghan Clifford (NUIG), Professor Neil Rowan (AIT), Dr. Andy Fogarty (AIT), Alan Kennedy (NUIG), Dr. Alexandre Tahar (AIT), Dr. Siobhan Kavanagh (AIT), Conor Behan (NUIG), Sarah Naughton (AIT) and Ronan Cooney (NUIG).

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To keep up to date with MOREFISH, check out our website www.morefish.ie or follow us on Twitter @MOREFISHproject



Picture 1: Left Dr. Richard FitzGerald at one of the MOREFISH meetings. Right Richard with Minister Sean Connick at the opening of the EIRCOD project.

DR. RICHARD FITZGERALD (22/01/1957 – 5/12/2016)

On the 5th of December 2016, our dear colleague, friend and mentor Dr. Richard FitzGerald passed away at University Hospital Galway, following a short illness.

Richie was a key member of the MOREFISH team and was pivotal in the formation of the project. Originally from Co. Kerry, Richie was a graduate of UCC. Following on from his undergraduate he commenced work on his PhD on ecological interactions of fish-parasite communities (1 of only 2 PhDs awarded in Ireland on this area). He also held an MBA in Finance and Accounting.

Richie had over 30 years' experience in the aquaculture sector and was a significant figure in the area. He was instrumental in the establishment of UCC's Aquaculture Development Centre and AquaTT. He served on the Aquaculture Licensing Appeals Board, numerous state boards and agencies and served as an EU expert on multiple occasions.

In 2006, he joined NUI, Galway as a Senior Research Fellow, manager and research co-ordinator of the Carna Research Laboratory. Richie published over 35 peer reviewed publications and over 100 technical reports. His experience and knowledge of fish biology and aquaculture made him Ireland's leading expert in this area.

Personally, Richie was warm and welcoming. He was quick of wit, with an incredible amount of knowledge stored in his head. He had story for every situation and was a sounding board for his friends and colleagues. A true character, his passing is a loss to the field of aquaculture and to countless friends.

He will be greatly missed by his wife Frances, his family, his friends and a legion of colleagues.



Picture 2: The recent testing of a surface aeration unit which uses the principal of mechanical shearing to aerate water with microbubbles in the 50-500µm range.



Picture 3: Recently fertilised salmon (*Salmo salar*) eggs at one of Ireland’s largest smolt hatcheries.

MOREFISH Dissemination

The team were very active with dissemination of the project. The team had two items shown at Environ 2016 in the University of Limerick. Sarah Naughton showcased her poster on “Disinfection of Selected Finfish Pathogens Important in Irish Freshwater Aquaculture using Pulsed Ultraviolet Light Technology” and Ronan Cooney presented “Use of Life Cycle Assessment in Irish Freshwater Aquaculture Systems”. In September Dr. Alexandre Tahar presented his work on “Long term evaluation of the impact of traditional rainbow trout farming on river quality in Ireland – a 10 years case study”, an excerpt of which can be seen in Figure 1.

MOREFISH also had an article in the EPA Catchments Newsletter ([Here](#)). This publication aims to share science and stories amongst the public and those involved in catchment management.

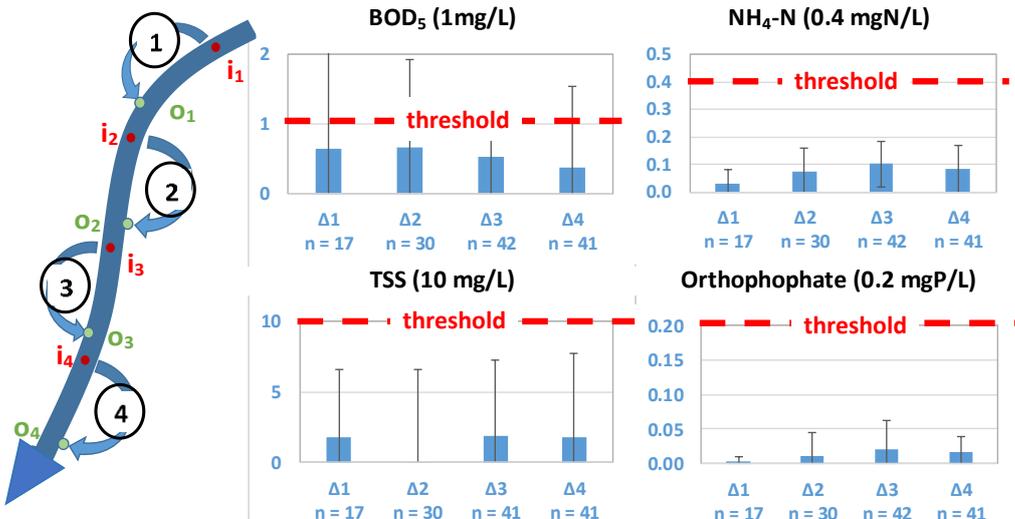
The team conducted trials of microbubble technology at numerous farms and tests sites with promising results (Figure2). The team also visited Ireland’s most advanced smolt units in December, just in time to see the fertilisation process (Figure 3). This site also possessed a state of the art water treatment plant.

In September the team attended an intensive workshop on the development and principles of recirculating aquaculture systems (RAS) led by IFREMER (France) and Wageningen University (The Netherlands) through the European AQUAEXCEL 2020 program at the IFREMER Sète research station.

In late January 2017, a new MOREFISH website will be launched.

Compliance with discharge licence?

Comparison of the differential concentrations (outlet-inlet)



Each sub-farm in compliance with the Co. Co. discharge licence

Figure 1: Data gathered by discharge licensing authorities was reviewed for the period 2005-2015. The red dashed line in each graph represents the 95th%ile. Each farm in this site was in compliance with discharge limits. This work was presented at the European Aquaculture Society conference in 2016.

DISCHARGE COMPLIANCE

One of the main areas of work as part of the MOREFISH project has been reviewing independent historical data held by local authorities. To establish if freshwater aquaculture units were meeting the conditions stipulated in their discharge licenses. From a dataset available for one of the largest rainbow trout production sites (which consists of 4 sub-farms) for the period 2005-2015 there was limited impact on receiving waters from these sites and a very high level of compliance with the discharge conditions set out in their licenses.

STAKEHOLDER MEETING

In mid-October 2016, the MOREFISH team hosted some of Ireland's largest fish producers for a day of talks by international and Irish experts in the area of aquaculture.

The day opened with MOREFISH Principal Investigators Dr. Eoghan Clifford and Professor Neil Rowan welcoming the 20+ attendants. The first session of the day consisted of the MOREFISH team introducing the attendants to their research. Conor Behan introduced his performance assessment index which allows farm operators to account inputs and outputs. Dr. Alexandre Tahar spoke on water quality within fish farms and the discharges. Alan Kennedy spoke on his work developing novel aeration technologies for the Irish aquaculture sector. Sarah Naughton showcased her work on the use of Pulsed Ultraviolet disinfectant technologies and the elimination of certain problematic pathogens using this technology. The final MOREFISH speaker on the day was Ronan Cooney who presented some of the teams work on reviewing discharge licenses and the disparity between and within issuing authorities, he also presented an overview of his work on developing a biodiversity impact metric in the use of lifecycle assessment.

The keynote speaker on the day was Dr. Jean Paul Blancheton. Jean Paul is a senior research scientist with IFREMER, the French marine research institute. Dr. Blancheton was lead scientist on a recent project called OrAqua, which looked at the promotion of organic practices in aquaculture and gauging the consumers' perception of what organic means (www.oraqua.eu). Irish speakers on the day included Martin Flanigan from the Aquaculture Initiative who spoke about the experiences of Northern Irish aquaculture with regards to discharge and abstraction rate. Damien Toner from Bord Iascaigh Mhara, gave an overview of the pressures facing freshwater aquaculture and an exciting new project by BIM called PeatAqua. Dr. Neil Bass of Watermark gave a very interesting talk on the Water Framework Directive and its application to the freshwater aquaculture sector and postulated that the future of Irish aquaculture may lie in lake culture and recirculating aquaculture systems (RAS).

During the roundtable discussion there was positive feedback from the industry members present for the work completed by MOREFISH to date. The issue which was of greatest concern to the industry was the continuing uncertainty and delay in the issuance of aquaculture licenses. It was agreed that MOREFISH would become a platform to facilitate discussion on challenges facing the freshwater aquaculture industry, Local Authorities in relation to the WFD interpretation and implementation.



Picture 4: The recent stakeholder meeting which took place in Athlone Institute of Technology in October 2016. L-R Dr. Neil Bass, Catherine McManus, Paul Kearney, Dr. Jean Paul Blancheton, Ronan Cooney, Joanne Casserly, Alan Kennedy, Dr. Richard FitzGerald, Conor Behan, Martin Flanigan, Sarah Naughton, Dr. Siobhán Kavanagh, Dr. Alexandre Tahar, Prof. Neil Rowan, Dr. Eoghan Clifford, Maurice Connolly, Michael Walsh, Sean O'Laoide, Geoff Robinson, Damien Toner, Michael Murphy, Hugh McGinley.

The project team would like to acknowledge the funding provided by the Department of Agriculture Food and the Marine. The project is funded from 2015-2017. It is joint collaboration between NUI, Galway and Athlone Institute of Technology. It draws on each institutes respective areas of expertise: engineering and ichthyology (NUIG) and microbiology and ecotoxicology (AIT). Working with industry MOREFISH aims to develop novel technologies and processes to enhance the sustainability of the sector.

